MINISTRY OF AGRICULTURE
RURAL DEVELOPMENT
AND THE ENVIRONMENT

DEPARTMENT OF
ENVIRONMENT

Revision and Update of the National Strategy on Adaptation to Climate Change in Cyprus

Version 1
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Acronyms

CAP	Common Agricultural Policy
CCA	Climate Change Adaptation
CFP	Common Fisheries Policy
CMMI	Cyprus Marine and Maritime Institute
CRVA	Climate Risk and Vulnerability Assessment
DoE	Department of the Environment
DG Reform	European Commission Directorate-General for Structural Reform Support
DLGO	District Local Government Organizations
TPHD	Department of Town Planning and Housing
DF	Department of Forestry
DLGO	District Local Government Organizations
DMP	Drought Management Plans
DMoT	Department Ministry of Tourism
DoA	Department of Agriculture
DoF	Department of Finance
DoM	Department of Meteorology
DRM	Disaster Risk Management
EC	European Commission
EMME	Eastern Mediterranean and Middle East
EOA	Limassol District Local Government Organisation
EU	European Union
EWSA	Early Warning Systems for Adaptation
FMP	Flood Management Plans
GDP	Gross Domestic Product
HHAP	Heat-Health Action Plans
IWGACC	Intergovernmental Working Group on Adaptation to Climate Change
IT	Information Technology
LULUCF	Land use, Land use change and Forestry
MARDE	Ministry of Agriculture, Rural Development and Environment
MEL	Monitoring, Evaluation and Learning
MFF	Multiannual Financial Framework
MOF	Ministry of Finance

MOH	Ministry of Health
MoI	Ministry of Interior
MPAs	Marine Protected Areas
MS	Member States
MSP	Maritime Spatial Planning
Mtoe	Million tonnes
NAP	National Adaptation Action Plan
NAS	National Climate Change Adaptation Strategy
NbS	Nature-based solutions
NGOs	Non-governmental organizations
PV	Photovoltaic
RBMP	River Basin Management Plans
RES	Renewable energy sources
SME	Small and Medium Enterprises
SWOT	Strengths, Weaknesses, Opportunities and Threats Analysis
TPHD	Department of Town Planning and Housing
UNFCCC	United Nations Framework Convention on Climate Change
WFD	Water Framework Directive
WWTP	Wastewater treatment plant

Glossary of Key Terms

Adaptive Capacity. In this report, adaptive capacity describes the *current* ability of systems, institutions, humans and other organisms to adjust to potential damages and climate impacts, to take advantage of opportunities, or to respond to consequences. Adaptive capacity therefore describes the status quo of all presently available adaptation options, including e. g. financial or human resources. The adaptive capacity might differ between risks and sectors (European Environment Agency (EEA)[1] (IPCC, 2021) and is highly dependent on volatile factors such as political direction, leadership and administrative actions, which decreases the reliability of predictions about its future development. Although the adaptive capacity can adjust and alter flexibly, limits to adaptation might be reached, when a system's needs or an actor's objective cannot be secured from intolerable risks, which threaten "core social objectives associated with health, welfare security or sustainability" (IPCC, 2022b). Those limits might be soft, when adaptation options exist but are currently not available, or hard, when no adaptive actions are possible or feasible to avoid intolerable risks. Climate change will exacerbate the occurrence of hard limits to adaptation, which have already been reached in some natural ecosystems (IPCC, 2022a). Additionally, not all adaptive measures show an immediate effect. To achieve large-scale adaptation, far-reaching adaptation actions might be necessary, which in turn require longer periods to unfold their full impact. This also encompasses the time needed for preparatory and implementation steps. Examples of sectors with prolonged adaptation times are forestry, the geological environment and soil.

Climate impact. A climate impact describes an already observed or possible future, relevant impact of one or more climatic influences on a defined system and/or system components (e. g. livelihoods, social/cultural objects, ecosystems). Climate impacts can be described as consequences or results and can be disadvantageous or advantageous. A climate impact always refers to a specific period. As a rule, the term climate impact is used based on the definition of the IPCC up to the point at which an assessment of the climate risk takes place (GIZ, 2023; Umweltbundesamt (UBA, 2021).

Climate impact chain. Climate impact chains (CIC) are used to visualise cause-effect relationships between climate impacts and associated risks as well as cross-sectoral interdependencies (GIZ, 2023). In this report, climate impact chains are structured as the ones developed in the course of the EUCRA (EEA, 2024b), whereby slight adaptations were made, particularly within the participatory work (for more details see Annex A of the CRVA).

Climatic impact driver. A climatic impact driver describes a changing aspect of the climate system that influences a component of a man-made or natural system. The stronger the climatic influence, the stronger the climate impact tends to be (UBA, 2021).

Exposure. In the present report, the exposure to climate impacts circumscribes both the changing climatic impacts or hazards present in the examined area (e. g. the country), as well as the "presence of people; livelihoods; species or ecosystems; environmental functions, services,

[1] https://www.eea.europa.eu/en/datahub/datahubitem-view/771f1ecf-b5ba-403b-8e00-08b23f9ba04c

and resources; infrastructure; or economic, social, or cultural assets in places and settings that could be adversely affected" (IPCC, 2021).

Hazard. A hazard is defined as the "[...] potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources" (GIZ, 2023).

Key risk. According to the Climate Risk Sourcebook, so-called key risks are defined as having "[...] potentially severe adverse consequences for humans and social ecological systems resulting from the interaction of climate-related hazards with vulnerabilities of societies and systems exposed" (GIZ, 2023). Contrary to climate risks (see below), key risks have consequences of high magnitude or likelihood, they affect essential systems and functions and might have a critical timing, i. e. severe impacts are already occurring.

Sensitivity. Sensitivity is defined as the extent to which a system might be positively or adversely affected by climatic changes and is therefore susceptible to harm. An example might be the demographic age distribution or forest structures (IPCC, 2022b; UBA, 2021). Factors and indicators determining the sensitivity of a system can be derived from the characteristics and attributes, which make the system susceptible to changing hazards (Deutsches Institut für Normung e. V., 2021).

Strategic directions. The strategic directions describe the fundamental objectives within each sector, supporting the targetted planning of measures and achieve short- and long-term goals. They should enable stakeholders to maintain greater consistency in decision-making processes.

Risk. Risk, or more precisely climate risk refers to the potential for adverse impacts on man-made or natural systems, considering the diversity of values and objectives associated with such systems. In the context of climate change, risks can arise both from the potential impacts of climate change and from human responses to climate change. In connection with the effects of climate change, risks arise from dynamic interactions between climatic influences and the spatial exposure as well as the sensitivity and adaptive capacity of the affected system. The term climate risk is used as soon as the risk is assessed (GIZ, 2023; UBA, 2021). It has to be noted that the mentioned aspects influencing the risk are subject to spatio-temporal changes and come along with uncertainties (e. g. likelihood of occurrence) (GIZ, 2023).

Executive summary

- The Department of the Environment of the Ministry of Agriculture, Rural Development and the Environment (MARDE) of Cyprus is leading a revision of the 2017 National Adaptation Strategy (NAS)to strengthen resilience against climate change, with a target of climate resilience by 2050. Supported by the EU's Technical Support Instrument, this updated NAS aligns with the 2021 EU Adaptation Strategy's focus on smart, swift, and systemic climate action. The NAS will be implemented from 2025 to 2050, with MARDE issuing biannual progress reports to track advancement and inform minor updates. Every six years, a comprehensive review will refine the NAS to respond to evolving climate challenges. The strategy's five chapters and six annexes provide a structured roadmap for Cyprus's adaptation efforts, focusing on addressing vulnerabilities, enhancing cross-sector cooperation, and establishing rigorous monitoring to guide effective implementation

- Public input has been an integral to the revision. Multiple stakeholders across government, civil society, academia, and local authorities have participated in the revision process, contributing to the understanding of challenges and opportunities in climate adaptation. Furthermore, two consultation phases (November-December 2024 and January-February 2025) will involve authorities, organisations, and the general public to gather input and refine the strategy. This inclusive process aims to incorporate broad perspectives, ensuring the strategy addresses both local needs and national goals.

- Cyprus initiated climate adaptation planning in 2013, aligning with EU policies and the UNFCCC. The first NAS and National Adaptation Plan (NAP) were adopted in 2017, with MARDE overseeing implementation. A gap analysis revealed that while Cyprus has made strides in climate policy, certain areas still need alignment with recent EU strategies, such as the 2021 Climate Law, the 2021 revised EU Adaptation Policy and other EU relevant sectoral policies.

- An updated Climate Change Risk and Vulnerability Assessment (CRVA) has shown that, in recent decades, Cyprus's climate has exhibited increased temperatures, more tropical nights, and extended dry spells, particularly in central and coastal regions, impacting water resources, human health and ecosystems. Future climate models indicate a warming and drying trend, with projections of a 1.5-4°C temperature increase by 2100. Two emission scenarios (RCP4.5 and RCP8.5) predict worsening conditions, particularly under RCP8.5, with extended droughts, reduced annual rainfall, and more extreme weather events.

- Cyprus's diverse sectors face unique climate sensitivities and exposures. Agriculture is particularly vulnerable due to water scarcity and heat stress, impacting crop yields and food security. Biodiversity faces risks from invasive species and habitat loss, while the island's rich cultural heritage is at risk from extreme weather and erosion. Water management challenges are intensified by drought and reduced groundwater, impacting both agriculture and human supply, while sectors like forestry and health are increasingly exposed to rising heat, wildfires, and ecosystem changes.

- Climate risks across sectors are expected to increase substantially, with agriculture facing risks of land loss and increased costs, while water management may struggle with extreme drought and flooding scenarios by 2100. Biodiversity and ecosystems risk further losses from wildfires and invasive species, while cultural heritage faces threats from extreme weather that could impact tourism. Health risks, especially for vulnerable populations, are predicted to worsen with more frequent extreme heat and respiratory challenges from sand and dust storms. The economic sector, including fisheries, forestry, and tourism, faces potential revenue losses and high adaptation costs, driven by extreme weather impacts on productivity and infrastructure.

- The urgency for action varies, with critical infrastructure, health, and water management among the highest-priority sectors for adaptation. Key risks like wildfire and drought present both immediate and long-term challenges, necessitating cross-sector coordination to manage impacts on infrastructure, human health, and natural resources. Cyprus's emphasis on integrated resilience-building, especially in disaster management and civil protection, highlights the need for adaptable, forward-looking strategies to mitigate the intensifying climate pressures on essential services, economic stability, and environmental assets.

- The revised NAS focuses on making Cyprus climate resilient by enhancing adaptive capacities, securing essential systems, and promoting sustainable development. Strategic goals focus on reducing vulnerability, strengthening governance, and fostering cross-sectoral coordination.

- The revised NAS expands the original 12 policy areas to 15, adding sectors like Cultural Heritage, Economy and Industry, and Spatial Planning, as well as governance cross-sectoral measures that aim to strengthen the implementation and coordination of climate adaptation across all levels of government, and highlighting the comprehensive approach to address climate impacts across all sectors.

- Over 125 measures have been identified, with each measure linked to strategic goals within 15 policy areas. Measures were drawn from the 2017 NAS, experiences of similar countries, EU best practices on adaptation, and input from Cypriot stakeholders. Stakeholder consultations helped identify potential synergies (such as shared water conservation practices across sectors) and conflicts (e.g., land-use competition) in implementing adaptation measures. A cross-sectoral approach is crucial to ensure cohesive and effective adaptation.

- Detailed impact assessment fact sheets (IAFs) have been prepared to evaluate each measure for its social, environmental, financial, and institutional viability. These assessments will guide prioritisation and resource allocation during implementation.

- The National Climate Change Adaptation Strategy is accompanied by a National Adaptation Action Plan (NAP) that outlines an operational structure for NAS implementation, detailing responsibilities across ministries, local authorities, and stakeholder groups. Coordination is centralised in MARDE but involves extensive cooperation with other agencies and sectors.

- The NAP includes a series of Implementation Milestones, including the nomination of climate adaptation focal points in each relevant authority and the creation of an Intergovernmental Working Group on Adaptation to Climate Change (Milestone 1, month 6); the approval of an Interim work and financing plan to guide implementation in months 1-24 (Milestone 2, month 6); the preparation of biannual Progress Reports (Milestone 3); the preparation of Biannual Work Program (Milestone 4); and revision of the NAS two years after the strategy comes into force, and every six years after that (2032/2038/2044/2050) (Milestone 5).

- Multiple financing options are identified, including EU funds, national budgets, and private investments. Funding gaps remain a challenge, and MARDE plans to explore innovative financing mechanisms to ensure sustainable funding for adaptation measures.

- A structured Monitoring, Evaluation, and Learning Framework (MEL) will be used to track progress, measure impacts, and inform iterative adjustments to the NAS. This includes clear timelines for reporting, metrics for evaluating effectiveness, and biannual reports from MARDE to ensure transparency.

- Local authorities, businesses, civil society, and the general public play a significant role in implementing the NAS, as Cyprus prioritises a collaborative approach to adaptation. The strategy underscores the importance of public awareness and education to support community-driven adaptation efforts.

1. Introduction

The Department of the Environment of the Ministry of Agriculture, Rural Development and the Environment of Cyprus (MARDE) is leading the project *Revision and update of the national strategy on adaptation to climate change in Cyprus*. The first National Adaptation Strategy (NAS) was approved in 2017. The project has the support of the European Commission Directorate-General for Structural Reform Support (DG REFORM) and a consortium of independent experts. The work began in December 2023 and will be completed by December 2025.

The project aims to review and update the existing NAS and create a framework to step up the efforts of the authorities in addressing the problems identified during its implementation. Cyprus aims to become climate resilient by 2050, while taking into consideration the principal objectives of the revised 2021 EU Adaptation Strategy (EC, 2021) "to make adaptation smarter, swifter and more systemic, and to step up international action on adaptation to climate change."

The draft NAS will be subject to two rounds of public consultation in compliance with the 2023 Public Consultation Guide issued by the General Directorate for Development of the Cyprus Ministry of Finance:

1. Targeted consultation. Between November and December 2024, the draft NAS will be shared with national, regional and local authorities, as well as other organizations and actors identified as relevant stakeholders in Phase I of the project (see Annex A) that have participated in the different workshops and consultations conducted during the revision of the NAS.
2. General consultation, A second round of public consultation directed at the public at large and using the e-consultation Platform (https://e-consultation.gov.cy/) will be launched in late January 2025 for a period of 4 weeks.

The revised NAS will be implemented between 2025 and 2050. The Department of the Environment (DoE) of MARDE will issue biannual Strategy implementation reports based on the results of the monitoring framework described in Section 5.3 *Monitoring, Evaluation and Learning,* of the Strategy. These implementation reports will inform minor updates of the NAS and accompanying National Adaptation Plan (NAP), as necessary. More comprehensive revision of the NAS will happen every 6 years.

This document is structured in 5 chapters and 6 Annexes, which serve to include more detailed information that is summarized in the main body of the report. Following this brief introduction, Chapter 2 presents the context for the NAS, describes the methodology followed for its revision and update, and identified the key target groups for implementation of the strategy. Supporting information is summarized in Annex 1 and 2.

Chapter 3 summarizes the results of the updated Climate Risk and Vulnerability Assessment developed in the context of this project (alpS et al., 2024). More extensive information on sectoral key risks is included in Annex C.

Chapter 4 presents the strategic vision, objectives and directions that should guide adaptation action in Cyprus and summarizes the adaptation measures identified in the 15 sectors that

require adaptation action, as well as the cross-sectoral governance reforms that are necessary to implement the NAS. A summary of the goals and description of the adaptation measures is found in Annex D. A detailed impact assessment of each individual measure, including social, environmental, institutional and financial implications, can be found in Annex E.

Finally, Chapter 5 describes the National Adaptation Action Plan (NAP), including implementation plan, financing options, and the framework for monitoring, evaluation and learning.

A final Annex F will include information on the public consultation process, summarizing the input received and the responses provided, once the process has been completed.

2. Climate change adaptation strategy in Cyprus

2.1. Context of the National Adaptation Strategy and Plan

Cyprus has recognized the importance of addressing climate change and respond to the calls of global and EU climate agendas to develop national policies and plans. The UNFCCC invites all its Annex I parties – which Cyprus is since January 2013 – to adopt and report regularly on their climate change policies and measures. The European Union (EU) Adaptation to Climate Change Strategy of 2013 (revised in 2021), the European Commission (EC) encouraged all Member States (MS) to adopt comprehensive adaptation strategies.

Cyprus began to work on its adaptation strategy in 2013, supplementing the required funding and expertise with the co-funded European project LIFE+ CYPADAPT.[2] The Department of Environment (DoE) of the Ministry of Agriculture, Rural Development and the Environment (MARDE) of Cyprus, undertook the coordination of efforts for the development of the adaptation strategy, aiming to reinforce the adaptive capacity of Cyprus to the observed and expected changes in climate.

The first National Climate Change Adaptation Strategy (NAS) accompanied by a National Action Plan (NAP) were formally adopted in May 2017. The DoE oversees the implementation of the measures and is responsible for tracking overall progress towards the targets set in the Strategy. Implementation has been evaluated through a formal process that involves periodic reports submitted to the Council of Ministers by the Minister of MARDE. The reports are prepared by DoE, but all implementing bodies are requested to contribute, providing information and feedback on the progress made in the implementation of the actions that fall under their responsibility. Five annual reports have been published: the 1st one in August 2018, the 2nd one November 2019, the 3rd one in February 2021, the 4th one in October 2022, and the 5th one was issued in late 2023 but has not yet been officially published.

Following the EU's approach to mainstream climate adaptation into sectoral policies, Cyprus has implemented relevant requirements in its national policies to enhance resilience and adapt

[2] http://uest.ntua.gr/cypadapt/

to changing climate conditions. Prior to the development of the NAS, climate adaptation policy was not clearly addressed across sectors in a single strategic framework, but within certain sectors, based on mainstreaming existing EU policies into selected sectoral policies.

A gap analysis was conducted in the context of this project to assess alignment of the Cypriot policies relevant for climate adaptation with the current EU framework (Trinomics et al., 2024). Table 1 below presents this analysis in colour-coded format, where green reflects alignment, red reflects non-alignment with EU policies that have been in place for longer than one year, and yellow indicates non-alignment with policies that have been adopted recently or whose implementation start date is still expected.

Table 1. Analysis of Cypriot adaptation policies and current EU framework

EU Policy	Alignment	Cypriot Policy
EU Climate Law		Cyprus NAP is from 2017 and is based on policy sectors identified in 2013 EU Strategy for Climate Adaptation. It needs to be updated to align to Climate Law from 2021, as well as to ensure that represented sectors are sufficient to ensure comprehensive and holistic addressing of climate risks and vulnerabilities in country through adaptation measures.
LULUCF Regulation		Policies and objectives for LULUCF sector will be included in the final revision of NECP (to be submitted in 2024)
Common Agriculture Policy		Common Agriculture Policy (CAP) Strategic Plan of Cyprus 2023-2027 in place
Forest Strategy 2030		Statement on Forest Policy developed before 2030 EU Forest Strategy, and must be reviewed and updated accordingly
Biodiversity Strategy 2030		Strategy and Action Plan for Biodiversity in Cyprus is from 2020 and must be updated in alignment with the 2030 EU Biodiversity Strategy. Additionally, the recently adopted EU Nature Restoration Law will add additional requirements that will need to be integrated into Cypriot framework.
Water Framework Directive		River Basin Management Plan in place.
Marine Strategy Framework Directive		Marine strategy in place.
Common Fisheries Policy		Multi-annual plan for the period 2021 – 2030 in place.
Energy Performance of Buildings Directive		National energy efficiency action plan of Cyprus and Nearly Zero Energy Buildings Action Plan (both included in NECP).
Regulation on the Governance of the Energy Union and Climate Action		National Energy and Climate Plan for the period 2021-2030.
Sustainable and Smart Mobility Strategy		Consider how to integrate strategic objectives into adaptation plans.
Corporate Sustainability Reporting Directive		New EU Directive with implementation expected in 2025, to be transposed.

EU Policy	Alignment	Cypriot Policy
Directive on the Resilience of Critical Entities		New EU Directive from 2023, to be transposed.
Floods Directive		Flood Risk Management Plan in place.
EU Soil Strategy		Consider how to integrate land-take guidelines in adaptation plans.

2.2. Development of the revised National Adaptation Strategy

The update and revision of the Cyprus NAS and NAP is part of a broader EU funded initiative that aims to increase the capacity of Cypriot public authorities and stakeholders to implement climate adaptation actions. This includes training activities, improvements in the monitoring and evaluation framework and changes in the adaptation governance system.

During the project, competent authorities at the national, regional and local level as well as other stakeholders (civil society representatives, research institutions, business organizations and other actors) are engaged in various ways to better understand the situation, needs, challenges, barriers and opportunities and to ensure that the final NAS adequately addresses Cyprus' climate adaptation needs.

Below is a summary of the actions implemented and planned in the framework of the project, developed in close collaboration with Cypriot competent authorities and other stakeholders:

Action 1: **Assessment of current climate adaptation policies**– including an assessment of progress in the implementation of the measures included in the current NAS – and the current governance framework, and identification of key stakeholders for development and implementation of an ambitious NAS (Trinomics et al., 2024). The list of identified stakeholders, who were invited to participate in the different stages of the planning process and kept informed of progress made, can be found in Annex A. This work was supported with inputs from stakeholders' interviews and completed in June 2024. As a result of this initial assessment the number of policy areas included in the NAS increased from the original 12 considered in the 2017 NAS, to a total of 15 sectors, with the incorporation of Cultural Heritage, Economy and Industry and Spatial Planning. Table 2 summarizes the policy areas considered in the original and in the revised NAS, including in parenthesis the number of measures identified for each one.

Table 2. Policy areas and adaptation measures in the 2017 and 2025 Cyprus NAS

Policy areas – NAS 2025 [1]	Policy areas – NAS 2017
Agriculture (9)	Agriculture (7)
Biodiversity and Ecosystems (10)	Biodiversity (6)
Cultural Heritage (8)	

Policy areas – NAS 2025 [1]	Policy areas – NAS 2017
Disaster Risk Management, Civil Protection and Critical Infrastructure (10)	Infrastructure (7)
Economy, Industry and Finance (6)	
Energy (4)	Energy (15)
Fisheries and Aquaculture (5)	Fisheries & aquaculture (1)
Forestry (10)	Forestry (8)
Health (6)	Public health (8)
Hydrological Regime and Water Management (13)	Water (11)
Sea and Coastal Areas (3)	Coastal zones (7)
Soil (7)	Soil (4)
Spatial Planning (5)	
Tourism (3)	Tourism (1)
Infrastructure, Transport and Buildings (10)	Transport (6)
Cross-sectoral governance measures (7)	
Total: 116	**Total: 81**

[1] Note: The number of measures identified in the updated NAS can change in the final version as a result of the public consultation process.

Action 2: Analysis of climate risks and vulnerabilities. **Climate risk and vulnerability assessments** (CRVA) (alpS et al., 2024) provide the basis for decision making, highlighting the vulnerabilities and adaptive capacities of systems to effectively plan adaptation measures. Information for this action was collected through desk research, literature review, and workshops conducted in April and June 2024. The workshops aimed to (1) assess climate impacts, the different sectors' exposure and sensitivity as well as the adaptive capacity and urgency to act, and (2) risk identification and evaluation. In total, there were five workshop sessions with representatives from national authorities, government, research institutions and civil society – stakeholders and public authorities that were identified in Action 1.

The CRVA report was completed in July 2024 and shared with all workshop participants for review. The final report was completed in October 2024. The report includes:

- A description of past and future climate developments in Cyprus and the effects of climate change on temperature, precipitation, and wind, among others.
- Relevant climate impacts observed in Cyprus and the EU for each identified sector or policy area; the climate risk assessment, where the key risks for each sector are presented, as well as the strategic directions or goals for adaptation are formulated. For each sector, climate impact chains were developed to illustrate interdependencies between the different risk drivers and climate impacts.
- Cascading, and emerging risks illustrated using key risks for Cyprus.
- Existing knowledge gaps and limitations of the assessment.

Action 3: Development of a draft revised National Climate Adaptation Strategy. The revised NAS builds from the results of the previous actions and the ongoing collaboration and exchanges

with national, regional and local authorities and other stakeholders. This action is implemented through the following steps:

a) Identification of adaptation measures for each policy area (June-July 2024). Considering the strategic directions identified for each of the policy areas in Action 2, 125 potential adaptation measures that addressed these strategic goals were identified. The following sources of information were used to identify these measures:

- Measures included in the 2017 NAS.
- Measures included in adaptation strategies of other countries with comparable risks and vulnerabilities – Spain (MITECO, 2021), France (Ministère de la Transition Écologique et Solidaire, 2006, 2017), Malta (Ministry for Resources and Rural Affairs Government of Malta, 2012), Greece (Ministry of Environment & Energy General Directorate of Environmental Policy Directorate of Climate Change and Atmospheric Quality, 2016).
- Measures found in the database generated by EU Mission on Adaptation to Climate Change Portal[3] and on Climate-ADAPT[4]; and
- Measures suggested through stakeholders' participation in bilateral meetings, workshops and written interactions.

b) Bilateral meetings with representatives of the competent ministerial departments for each policy area to discuss proposed measures and assess their viability and potential impact. Twelve bilateral meetings were held with representatives of the responsible authorities. The feedback from the remaining sectors was provided in writing (July-September 2024).

c) Meetings with District Local Government Organizations (DLGO) to discuss the strategies, plans and actions they are undertaking that can contribute to achieve the objectives of the NAS under their areas of competence and make municipalities and communities more climate resilient. Meetings were held in October 2024 with the Nicosia, Larnaca, Limassol and Paphos DLGO, and in November 2024 with the Famagusta DLGO. During the meetings, DLGOs identified current and planned projects and actions that can contribute to the strategic goals of the NAS, particularly in the areas of water supply and sanitation and wastewater treatment. Annex E: *District Local Government Organizations projects and plans that can contribute to the National Adaptation Strategy* includes a preliminary list of measures identified from the DLGO of Larnaka and Limassol. DLGO measures will be incorporated into the NAS (section 4.2 and Annexes D and F) when information on these initiatives has been received from all DLGOs.

[3] https://climate-adapt.eea.europa.eu/en/mission
[4] https://climate-adapt.eea.europa.eu/en

Draft impact assessment factsheets (IAF), including assessment of cross-sectoral synergies, social and environmental impacts, viability, cost, acceptability, monitoring indicators, and other criteria, were developed and shared with the competent authorities for their comment and review. A final version of the factsheets can be found in Annex E: District Local Government Organizations projects and plans that can contribute to the National Adaptation Strategy

Larnaka District Local Government Organization

Ongoing Projects

1. **Improved wastewater treatment and electricity generation using biogas**: As part of the Recovery and Resilience Fund, the District Local Government Organization of Larnaka will proceed with the expansion and upgrade of the existing infrastructure at the Larnaka Wastewater Treatment Plant to increase its capacity and serve a larger population. The expansion is planned with a design horizon extending to 2040, by which time the full operation of phases A, B, and C of the Larnaka Sewerage System is expected. Within this framework, the project will also include the construction of primary sedimentation facilities with anaerobic digestion for energy production from biogas un action that will take measures to reduce the energy consumption of the Larnaka Wastewater Treatment Plant through biogas solutions. Additionally, the upgrade of the Treatment Plant will involve the installation of a sixth ultrafiltration membrane line and the replacement of the existing five lines with new membrane systems. This will restore proper tertiary treatment at the plant, ensuring a higher quality of reclaimed water suitable for reuse.

2. **H2S System (Construction, Equipment and Operation):** The project involves the construction of a comprehensive and automated system aimed at preventing the formation of hydrogen sulfide (H2S) in the Larnaka sewer network. Hydrogen sulphide causes corrosion to the network infrastructure and intense odour, creating a nuisance. Its production is due to the anaerobic conditions prevailing in the sewer network, combined with the high temperatures observed for most months of the year in Cyprus. These factors increase the amount of hydrogen sulphide produced, as well as its negative effects. Through the project, calcium nitrate will be produced in a unit currently under construction at the urban wastewater treatment plant. Calcium nitrate ($Ca(NO_3)_2$), as a chemical substance, will combat the phenomenon of hydrogen sulphide formation. Subsequently, this substance will be transported to strategically selected points in the sewer network, where it will be applied as a preventive measure.

3. **Construction of a New Water Reservoir in Klavdia**: The construction of a new concrete water reservoir with a total capacity of 10,000m^3 in Klavdia. This project is being carried out to supply water to consumers for 48 hours in the event that the provider (Water Development Department) is unable to supply water to the Organization, to meet additional demand in the event of an expansion of the Organization's boundaries, and to address the increased water demand from new

4. **Smart technologies**: The DLGO of Larnaka in order to detect, manage and mitigate the water losses within the water distribution network, along with the correct and sustainable water management, will install water quality and pressure sensors in its water distribution networks and is expected to replace at least 50% of its conventional consumer meters with smart meters. Additionally, the organization will develop a Digital Twin decision support tool and a data bank that will utilize information from the installed sensors, smart water meters, and existing systems to accurately estimate water flow, pressure, and quality for the timely detection of events. Furthermore, the organization plans to replace conventional consumer meters with automated smart meters and install additional pressure and quality sensors to monitor infrastructure and develop innovative customer services, such as early warnings in the case of leaks. A customized software solution will also be designed to integrate all operations and support data-driven decision-making.

5. **Flood Mitigation Projects in Larnaka**: In response to the needs for flood management in the city of Larnaka during periods of intense rainfall, the organization is proceeding with the implementation- construction of flood mitigation projects. Specifically, the projects include the construction of flood control works in various areas of Larnaka.

6. **Construction of sewage network in suburbs areas of Larnaka** (i.e. Dromolaxia Kiti, Meneou, Pervolia): Due to the need of complying with EU's Urban Wastewater Treatment Directive 91/271/EEC of serving areas with population equivalent of more than 2000 people, new sewage network need to be constructed to serve this particular population .With that being said construction of the city's sewage network, along with the study and supervision of these projects is implemented.

7. **Watermining project**: The organization participated in the Watermining EU-funded project, through the Horizon 2020 Innovation Action, which implemented innovative solutions for clean water access and sanitation. Some of the objectives of the project were the upscaling of technologies to produce valuable biobased products from the residues of wastewater treatment, the design of new methods for ensuring energy-efficient nutrient recovery from wastewater, the development zero-liquid-discharge loop systems for pollution -free industrial wastewater and the promotion of innovative circular economy business models within the wastewater cycle.

In general, the case study in which the DLGO of Larnaka participated focused on improving treated water by desalinating it and extracting valuable products from wastewater. Furthermore, different innovative solutions were implemented for phosphorus removal to ultra-low levels through adsorption and salts removal using filtration and evaporation technologies (potentially powered by renewable energy).

The treated water after its improvement can be then used for irrigating more sensitive crops or even expanding usage in the industrial sector. As in the aspect of circularity, valuable salts and phosphorus can be recovered and marketed.

Planned Projects:

1. **DESALMED Project**: Desalination within an integrated approach to tackle the water scarcity in the mediterranean islands (Funded by the Interreg EuroMED Co-funded by the European Union): The project aims to demonstrate the value of desalination as a tool of an integrated strategy to tackle the water scarcity in islands addressing some critical aspects: social acceptance, energy consumption and impacts on coastal ecosystems. The overall objective is reducing the impacts of desalination and enhance its acceptance in local communities. DESALMED aims to enhance the awareness of communities for the advantages that a desalination plant can made for the economy and the environment. The main outputs is a project strategy on the application of technologies, procedures and management methods to reduce the environmental footprint of desalination and the application of participatory procedures to promote its social acceptance. The beneficiaries will be the Local Authorities that manage desalination plants and the local communities. A transnational approach addresses both environmental issues and acceptance of local communities to different contexts as well as allowing us to work on better risk mitigation. The integrated approach will allow to address the issues by exploring and applying new ways for reducing the ecological footprint and the social impacts of desalination.

2. **FRESSNESH project**: Promoting Energy Efficiency and Conservative Water Use towards a Low Carbon Urban Freshwater Supply Chain (Funded by Interreg VI-A Greece-Cyprus 2021-2027 - Co-funded by the European Union): As part of consortium of the FRESHNESS Cooperation Program, the DLGO of Larnaka intends to focus on the improvement, upgrading, and modernization of certain water supply networks in the mountainous area of Larnaka, specifically in four municipal districts of the Larnaka Municipality. The networks in question were taken over by the DLGO of Larnaka on July 1, 2024, as part of the local government reform, and are facing serious issues with smooth water supply and a high rate of unbilled water. Specifically, a case study will be conducted for one of the sixteen networks taken over on July 1, 2024, to address and reduce the issue of water losses. The selected networks are in the areas of Kato Lefkara, Vavla, Laya, and Skarinou.

Limassol District Local Government Organization

Below is a list of projects planned by the Limassol DLGO. In parenthesis the expected implementation timeline:

Project plans under development

1. Sewer Networks of 250 km, pumping stations, and a new sewage treatment plant (2027-2032)
2. New pipework for water supply system in western communities (2027-2032)

Projects under study

3. Installation of 60.000 additional water meters (2027-2030)
4. New drainage works in areas with flood risk (2027-2032)
5. Extension of sewer system to cover areas not served (2028-2034)
6. Construction of sewer system to serve small communities with sewer problems (2029-2035)
7. New water supply network in small communities with significant losses in the existing network (2027-2029)
8. New water reservoirs to extent the ability to supply water in new development areas (2028-2032)
9. Increase the capacity of the wastewater treatment plant from 40.000 to 54.000m^3/day (2029-2032)
10. Installation of sensors for online monitoring of water quality and technical parameter

d) Annex F: Measures Impact Assessment Fact Sheets (attached to this document).

e) Stakeholder workshop to discuss: (1) vision and strategic goals for the NAS; (2) proposed measures and identify potential cross-sectoral synergies or incompatibilities; (3) potential adaptation governance reform; and (4) proposed monitoring and evaluation framework for the revised NAS. (September 2024). The output of the workshop also served to inform the final IAF.

The draft NAS will be submitted to a two-step public consultation process following the timeline and structure indicated in Figure 1:

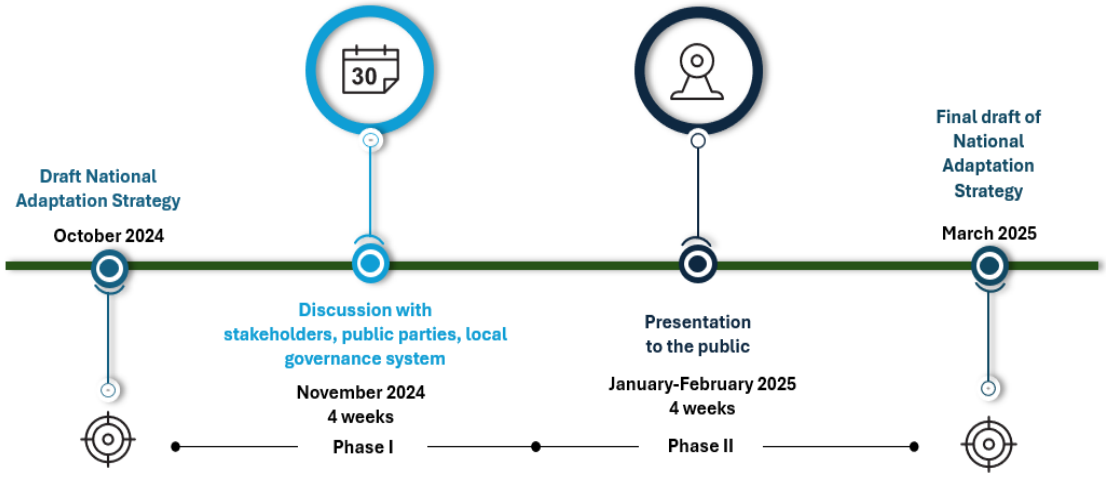

Figure 1. Public consultation timeline for the revised National Adaptation Strategy

Action 4: **Recommendations for a governance structure and monitoring and evaluation system** for the updated NAS. A first proposal to create a multisectoral advisory committee that can accompany the implementation, monitoring and evaluation of the revised NAS was discussed in the September 2024 workshop. Further refinement of the proposals for the governance structure will be undertaken, and further input will be gathered. In addition, a proposal for Terms of Reference will be made to develop an appropriate IT system within MARDE's IT infrastructure, that allows a smooth reporting from the local to the EU level. This work will be completed by March 2025 in parallel with the approval of the revised and updated NAS.

Action 4: Design and piloting of an adaptation training strategy and programme. This includes recommendations for a post-graduate learning programme, training sessions for stakeholders, as well as communication activities to inform citizens. This work will start in January 2025.

2.3. Target groups for implementation of the National Adaptation Strategy

This NAS targets the population of Cyprus and aims to guide and support a wide range of stakeholders in building a climate-resilient country. Its target audience includes:

- **Government Agencies:** Ministries, departments, and local authorities responsible for sectors such as agriculture, forestry, water management, health, infrastructure, and emergency management.
- **Businesses and Industries:** Sectors that are vulnerable to climate change, such as agriculture, tourism, and energy.
- **Civil Society Organizations:** Non-governmental organizations, community groups, and environmental organizations.
- **Academic Institutions:** Researchers, scientists, and educators working on climate change and adaptation.
- **The General Public:** Individuals and communities who are directly affected by climate change and who can contribute to adaptation efforts.

Many of these groups (for e.g. farmers, fishermen, tourism operators, local authorities etc.) will be impacted in their daily work operations. However, by engaging with these diverse groups, this strategy aims to foster collaboration, knowledge sharing, and the implementation of effective adaptation measures. For each measure a clear lead responsible public body has been identified and the working mode with the target groups of each measure is subject to individual processes and agreements.

Central to climate action is the principle of social and territorial equity. This entails recognizing and addressing the differential impacts of climate change on vulnerable populations, ensuring that adaptation and mitigation efforts are inclusive and just. Respecting human rights and intergenerational equity is crucial to building a sustainable future.

3. Climate change risk and vulnerability assessment

3.1. Climate change and vulnerability assessment based on the latest science

3.1.1. Past climate trends

Cyprus exhibits a subtropical, semi-arid climate, characterised by distinct seasonal and spatial variations. Summers are hot and dry, with abundant sunshine and precipitation below potential evapotranspiration. Varotsos et al. (2021) estimate the average number of summer days with temperatures over 30 °C between 1971 and 2000 being about 67. Winters are characterized by cooler and wetter climate. Spatial differences also exist, with lowland inland areas characterised by hotter climate compared to southern and eastern coastal regions and mountain areas.

Figure 2 shows how, over the past several decades, Cyprus has experienced a general increase in temperatures, with some regions being more affected than others, as data provided by the Cyprus Department of Meteorology shows. Nicosia (Athalassa climate station – central Cyprus), Larnaka (Southern Cyprus) and Polis Chrysochous (Northern Cyprus) have seen a steep rise in the number of hot days (daily maximum temperature above 35 °C) compared to the reference

period (1986-2005). Argos, located in central Cyprus, has also experienced a significant increase in hot days, though to a lesser extent. In contrast, Paphos (western Cyprus) and Prodromos (a mountainous area) have seen only a marginal increase in hot days.

There has been a notable increase in the number of tropical nights (where minimum temperatures remain above 20 °C) recorded across various regions in Cyprus. In Athalassa climate station the number of tropical nights has increased from 70,4 per year on average in the 1986-2005 reference period, to over 90 today. The increase in the number of tropical nights was most pronounced in low-lying climate stations. For instance, in Polis Chrysochous in Northern Cyprus the number of tropical nights recorded has increased from 64,6 on average between 1986 and 2005 to over 104 today, and in Paphos Airport from an average of 52,8 between 1986 and 2005) to over 90 today. The increases in temperature have also resulted in an increase of over 20 days in the vegetative period in the mountainous parts of Cyprus (Prodromos climate station).

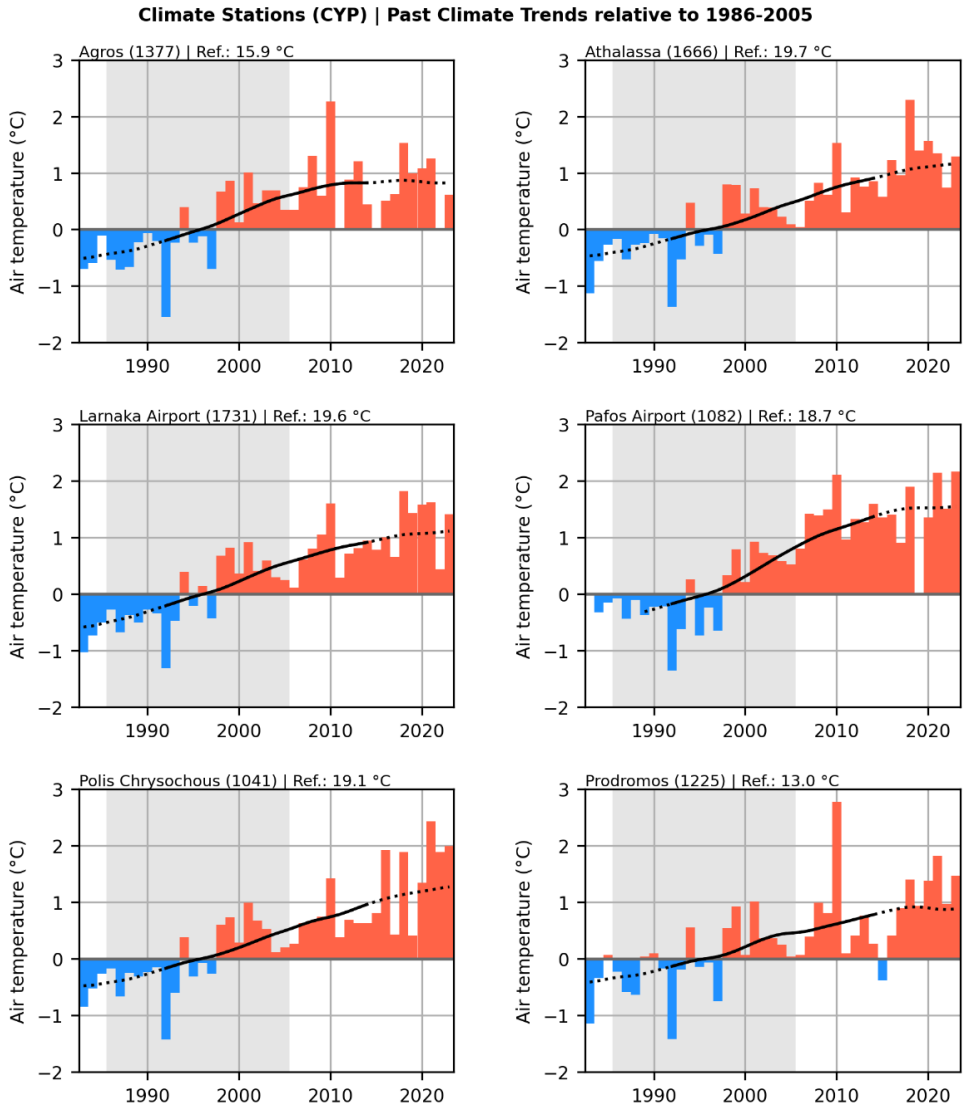

Figure 2. Temperature anomalies for six climate stations in Cyprus. Reference period 1986-2005. Source: Data provided by Department of Meteorology, authored by alpS consult

The average annual precipitation in Cyprus varies both yearly and regionally. For the period 1961-1990, the average annual precipitation was 503 mm (UNFCCC, 2023). In Cyprus winter months (December, January and February) are typically wetter, whereas summers (July, August and September) are the driest. More specifically, the average precipitation in winter between 1971 and 2000 was about 215 mm and lowest in summer with about 10-15 mm (Varotsos et al., 2021). While the total annual rainfall has not significantly changed in recent decades, its distribution throughout the year has altered considerably. This has resulted in extreme variations, with years with heavy rainfall alternating with years characterized by drought and dry spells (daily precipitation under 1 mm for minimum 5 consecutive days; Michaelides et al. (2009)). In 2019, water scarcity impacted 29 % over 50 % of Cyprus (EEA, 2024b). Statistical analysis indicated a declining trend in rainfall over the past 116 years, with annual precipitation decreasing by approximately 100 mm over the last 85 years (UNFCCC, 2023). Overall, Cyprus is experiencing an increase in dry spells during summers. Dry spells have increased for instance in the Nicosia region during the summer months over the past two decades, while they have decreased during the autumn months. The other two seasons exhibit a smaller variation of dry spell anomalies (see Figure 3).

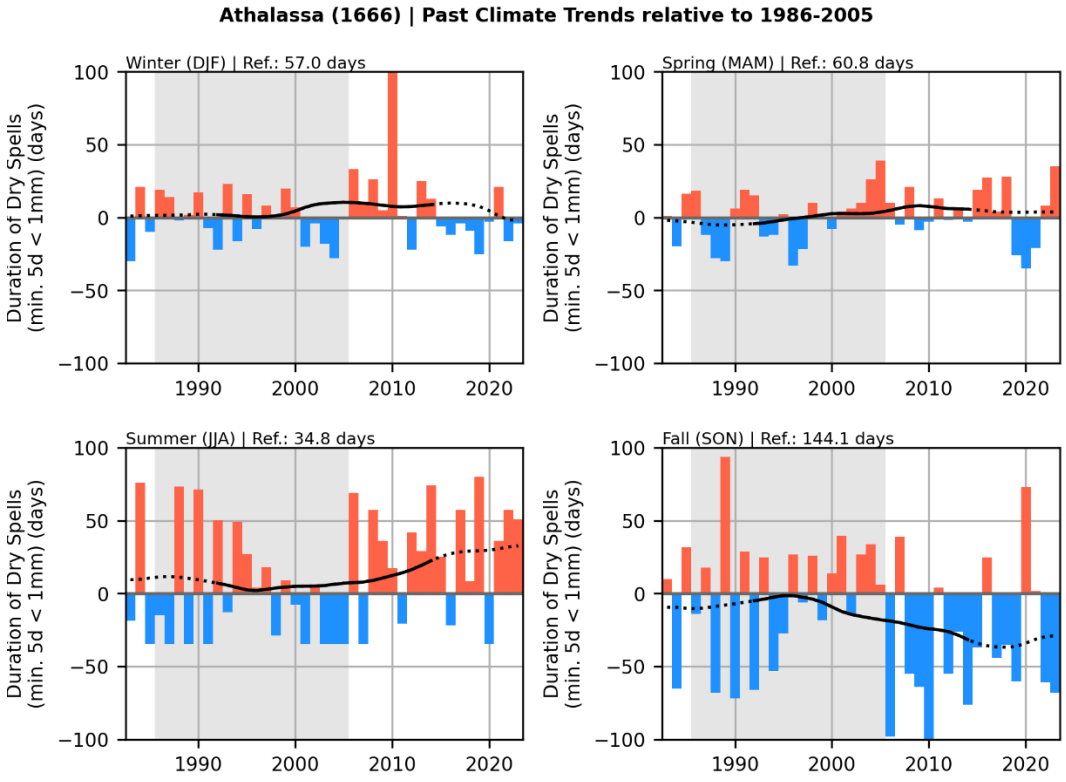

Figure 3. Duration of dry spells for Athalassa climate station (Nicosia). Reference period 1986-2005.
Source: Data provided by Department of Meteorology, authored by alpS consult

Surface winds in the eastern Mediterranean are generally westerly or south-westerly during winter and north-westerly or northerly in summer (UNFCCC, 2023). These winds are typically light to moderate in strength and rarely reach gale force. Gales are infrequent in Cyprus but can occur, particularly along exposed coasts during winter depressions. These depressions, which

move across the Mediterranean from west to east, bring periods of unsettled weather that can lead to strong winds and rough seas, especially in the western and southern parts of the island. The country's varied topography heavily impacts wind patterns, with complex local wind conditions occurring in and around the mountains. Despite these variations, Cyprus generally experiences relatively little wind damage compared to other regions, with most severe weather events being rare and localised (UNFCCC, 2023).

3.1.2. Climate projections and vulnerability

Numerous observational and modelling studies have highlighted the EMME region as a significant hotspot for environmental and climate change. EMME is warming nearly twice as fast as the global average especially during summer, while alterations in the hydrological cycle, primarily through reduced precipitation, have become increasingly evident (Lelieveld and Sciare, 2022). For this area, most future scenarios and climate projections indicate a trend of simultaneous drying and warming throughout the 21st century (Lelieveld et al., 2012). The combined effects of warming and drying in the region is expected to exacerbate impacts of global warming in Cyprus, especially towards the end of the century (Zittis et al., 2020).

As shown in Table 3, Cyprus is projected to experience significant increases in temperature and decreases in precipitation in both the near (2041-2060) and distant (2081-2100) future. The table summarises the results of different indicators for temperature and precipitation for two different emission scenarios – a moderate scenario (RCP4.5), where emissions are expected to peak around 2040 and a high-emissions scenario (RCP8.5) in which emissions continue to rise throughout the century – in comparison to the reference period (1986-2005). **¡Error! No se encuentra el origen de la referencia.** shows how increases in mean temperature reach 1,5 °C (RCP 4.5) or 2 °C (RCP 8.5) already by the middle of the century and will further increase to up to 4 °C by 2100.

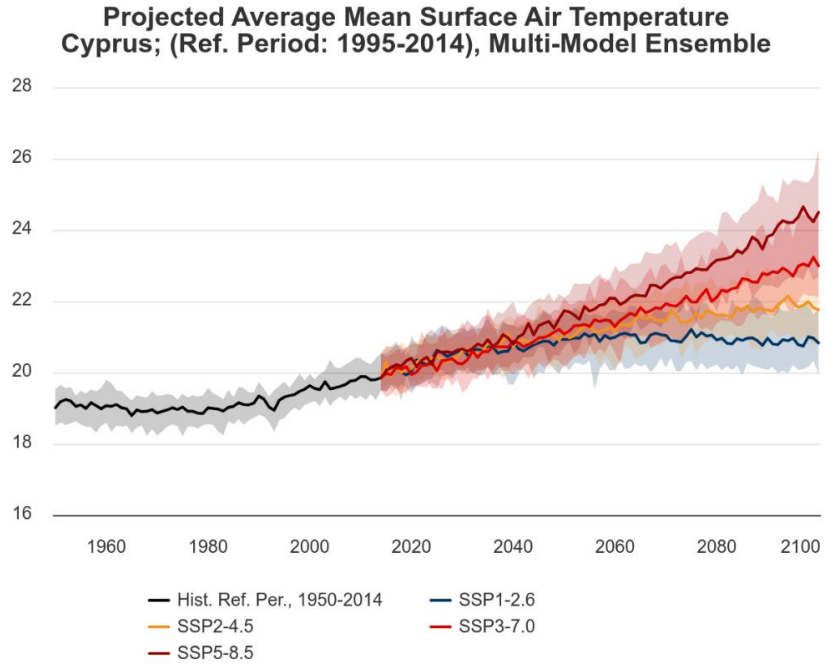

Figure 4. Mean Temperature (annual) for different Global model ensembles with different regional downscaling. Change compared to reference period 1981-2010. Place Limassol Lat./Lon.: 34.67, 33.04
Source: https://climateknowledgeportal.worldbank.org/country/cyprus/climate-data-projections

Data in Table 3 shows how the number of hot days (> 35 °C), extremely hot days (> 40°C) and tropical nights (Tmin during the night remains above 20 °C) are expected to rise, particularly under a high emission scenario. The drying trend, as described by Zittis et al. (2020), is also reflected in Table 3, as decreases in precipitation are most pronounced and will be continuously ongoing in future summer months.

Table 3. Overview of different climate indicators for Cyprus compared to the reference period 1986-2005. Change for near future (2041-2060) and distant future (2081-2100) is shown as change or relative change or stated otherwise

Cyprus									
Type	Reference period	Change to reference period 1986-2005							
	1986-2005	2041-2060				2081-2100			
Indicator [Change in unit]		RCP4.5	Robustness	RCP8.5	Robustness	RCP4.5	Robustness	RCP8.5	Robustness
Temperature-related									
Mean temperature [°C]	17,72 °C	+1,18 **+1,58** +1,75	☑	+1,66 **+2,07** +2,3	☑	+1,74 **+2,05** +2,37	☑	+3,68 **+4,06** +4,52	☑
Minimum of daily minimum temperature [°C]	0,7 °C	+0,48 **+1,43** +1,87	☑	+0,7 **+1,66** +2,59	☑	+1,09 **+1,81** +2,52	☑	+2,46 **+3,53** +4,61	☑
Maximum of daily maximum temperature [°C]	39,09 °C	+0,61 **+1,92** +2,85	☑	+1,11 **+2,49** +3,44	☑	+1,14 **+2,15** +3,24	☑	+3,83 **+5,14** +6,48	☑
Days with bias adjusted maximum temperature above 35 °C [Days]	23,48 days	+15,48 **+22,99** +25,91	☑	+20,88 **+29,04** +33,81	☑	+22,46 **+27,77** +32,66	☑	+52,42 **+61,42** +71,32	☑
Days with bias adjusted maximum temperature above 40 °C [Days]	0,99 days	+0,93 **+3,22** +5,04	☑☒	+2,29 **+5,1** +7,75	☑	+2,23 **+4,38** +6,91	☑	+14,24 **+19,37** +25,54	☑
Tropical nights [Days]*	109,17 days	+24,02 **+29,30** +30,87	⛔	+38,10 **+42,28** +45,40	⛔	+29,32 **+32,83** +38,98	⛔	+58,35 **+64,62** +70,59	⛔
No. of days per annum with high danger (FWI) ** [Days]	121,9 days	-18 **+16,1** +55,2	⛔	-18,5 **+20,8** +62,4	⛔	-12,9 **+22,4** +63,4	⛔	-7,3 **+39,7** +101,9	⛔
Precipitation-related									
Mean of daily accumulated precipitation - annually [%]	1,15 mm/day	-23,07 **-8,72** +4,41	☒	-28,23 **-13,88** +0,86	☑☒	-24,37 **-10,23** +4,62	☒	-44,65 **-30,76** -15,35	☑☒
Mean of daily accumulated precipitation - winter [%]	2,15 mm/day	-31,38 **-13,35** +12,21	☒	-33,12 **-14,7** +5,67	☒	-29,63 **-8,02** +14,47	☒	-50,43 **-30,7** -8,12	☑☒
Mean of daily accumulated precipitation - spring [%]	1,11 mm/day	-31,2 **-7,82** +16,11	☒	-45,26 **-21,82** +4,89	☒	-40,37 **-20,43** +7,4	☒	-56,78 **-36,26** -9,72	☑☒
Mean of daily accumulated precipitation - summer [%]	0,14 mm/day	-65,3 **-42,09** +9,59	☒	-76,01 **-47,93** -2,27	☒	-70,62 **-43,94** +8,83	☒	-84,53 **-63,47** -25,88	☒
Mean of daily accumulated precipitation - autumn [%]	0,97 mm/day	-39,2 **-11,21** +21,38	☒	-42,42 **-12,04** +21,69	☒	-40,97 **-16,65** +20,08	☒	-58,13 **-30,9** +0,4	☒
Maximum of 5-day accumulated precipitation [%]	66,76 mm/day	-18,18 **-3,6** +14,39	☒	-22,56 **-6,59** 13,46	?	-17,94 **-1,53** +14,73	☒ ?	-31,81 **-14,54** 5,72	☑ ?
Consecutive dry days [days]	90,89 days	-6,52 **+9,04** +19,84	☒	-1,49 **+12,48** +27,08	☑☒	-0,9 **+11,02** +23,87	☑☒	+7,37 **+25,54** +45,15	☑
Specific humidity [%]	0,008 fraction of unity	+3,14 **+5,79** +6,22	☑	+5,68 **+8,3** +11,22	☑	+5,18 **+6,77** +8,28	☑	+15,81 **+19,28** +23,24	☑
Wind-related									
Mean wind speed [%]	3,38 m/s	-2,13 **-0,63** +1,59	☒	-3,07 **-0,77** +1,41	☒	-3,69 **-1,62** +0,38	☑☒	-5,37 **-3,47** -1,62	☑

*Reference period (1981-2010), Near Future (2041-2070), Distant Future (2071-2100)
https://climateinformation.org data from Limassol (34.67 / 33.04) area (Climate Information Portal, 2024)

** Reference period (1981-2005) (Copernicus Climate Change Service (C3S), 2020a, 2020b)

Source: Own illustration based on data from Copernicus Interactive Climate atlas using CORDEX-EUR-11 model ensemble (Copernicus Climate Change Service 2024). For information regarding descriptions of climate signals, legends and colour coding indicating the indicator change, please refer to Annex B in the Climate Risk and Vulnerability Assessment (alpS et al., 2024).

The duration of dry spells increases by more than 12 days in the near future, and 25 days in the more distant future under a pessimistic RCP8.5 scenario (Zittis et al., 2020). Thus, significant extensions in the length of dry spells are anticipated. Specifically, in the southern and eastern

parts of the island, the longest dry spells of the year could be extended by four to six weeks (Zittis et al., 2020). This will likely have a profound impact on water supply and agricultural activities, especially during the extended dry period of the year. Additionally, when combined with significant temperature increases, it will greatly affect sensitive ecosystems such as forests and wetlands across the island.

Projections for heavy rainfall events show a decreasing trend overall, reaching up to three fewer heavy precipitation days per year by the end of the century. Despite this overall decrease, there remains a high temporal and spatial variability in the absolute maxima of daily precipitation, indicating localised areas may still experience intense rainfall events (Zittis et al., 2020). However, projections for precipitation amounts and patterns are uncertain, and models might underestimate extreme rainfall indicators, whereas other research results indicate no significant changes at all (Varotsos et al., 2021; Zittis et al., 2020).

Projected changes in the number of days below the annual minimum water discharge for Cyprus show a general increase over time, resulting in heightened water scarcity concerns for the island as climate change progresses. These changes vary spatially. Areas in the central and southeastern parts of the island experience increases in water discharge in the near future (2041-2070) under both scenarios. By the distant future (2071-2100), under a RCP4.5 scenario, decreases in water discharge become more widespread and severe in the western and northern parts, with some increases still observed in the central region. Under a RCP8.5 scenario, these patterns intensify further, with significant decreases across most of the island, particularly in the northwest, while the south-eastern areas experience substantial increases (Climate Information Portal, 2024).

3.2. Assessment of progress in climate change adaptation

Cyprus's 2017 NAS is quite comprehensive. It includes over 80 measures covering 12 sectors, as summarised in Table 4 below. The assessment of progress in the implementation of these measures was conducted based on the five Implementation reports issued by the DoE and complemented with the output from stakeholders' interviews conducted in Phase I of the planning process. The goal of the evaluation conducted is to determine whether the measures are:

- Effective: Has the measure been implemented? Did it achieve outcomes aligned with its intended objective?
- Comprehensive: Is the scope of the measure sufficient to lead to a significant result or is it too narrowly defined / implemented to achieve success?

While the results of the assessment of NAP measures differs across sectors, most of the measures are considered comprehensive, with many at various stages of implementation. In terms of the interconnectedness with climate change mitigation, 6 out of 12 sectors have measures which include mitigation co-benefits. The energy, transport and tourism sectors include mitigation co-benefits in all or nearly all measures. Table 4 below briefly summarises the results of the assessment and the number of measures that include mitigation co benefits per

651 sector. For a detailed assessment of the measures per sector see Annex B: Assessment of NAP
652 measures.

653 Table 4. Summary of measures, goals, implementation assessment and mitigation co-benefits
654 for each policy area in Cyprus's 2017 National Adaptation Strategy

Policy area	Measures and goals	Implementation assessment	Mitigation cobenefits
Agriculture	7 measures aiming to improve efficiency in water (re)use, promote research to study the effects of climate change on agriculture and livestock farming, develop extreme weather early warning systems, and educate on crop adaptation to climate change	The results are mixed with some measures being considered comprehensive and are being efficiently implemented, while others are neither comprehensive nor being implemented.	None
Biodiversity	6 measures aiming to protect, conserve and properly manage important natural wetlands, develop action plan(s) for protection of climate change threatened species and habitats, analyse vulnerability of ecosystems to climate change and address risk of invasive species	Majority of the measures are considered comprehensive and are being implemented.	None
Coastal areas	7 measures aiming to identify which coastal areas are susceptible to climate change and proceed with integrated coastal zone management and protection against coastal erosion	Majority of the studies related to the measures have not yet been implemented, hence the comprehensiveness of the measure cannot be estimated.	None
Energy	15 measures aiming to increase energy production from RES, increase energy efficiency, improve variety in the energy mix, and improve connectivity of Cyprus	Nearly all the measures are considered comprehensive and are under implementation.	12 of 15 measures
Fisheries and aquaculture	1 measure aiming to protect breeding habitats for selected fish species	Measure is considered to be comprehensive and some parts are effectively implemented.	None
Forestry	8 measures aiming to develop strategic plan for adaptation of Cyprus's forests to climate change, address an increased risk of forest fires and promote research, data collection and systematic monitoring of the effects of climate change on forests	Measures are considered to be comprehensive and are being implemented.	None
Infrastructure	7 measures aiming to manage floods, improve design and construction of buildings and transport infrastructure, create and maintain urban parks and other green practices to limit the phenomenon of urban heat island	While some measures are comprehensive and under implementation, the remaining measures need specific actions and stakeholder responsibilities to be determined to become effective.	2 out of 7 measures

Policy area	Measures and goals	Implementation assessment	Mitigation cobenefits
Public health	8 measures aiming to strengthen the health system and local authorities to address climate change-related emergencies, develop warning systems and guidance	Majority of the measures are considered comprehensive and are being implemented, with the remaining needing increased stakeholder involvement in order to be comprehensive/fully effective.	None
Soil	4 measures aiming to combat / halt desertification, control illegal and free grazing and develop sustainable land use	For several measures relevant policy must be developed in order for the measure to be comprehensive.	3 out of 7 measures
Tourism	1 measure aiming to promote investments in infrastructure/technologies to deal with increased temperatures	No specific activities under this measure have been implemented yet.	1 out of 1 measure
Transport	6 measures aiming to shift the vehicle traffic to sustainable means	The measures are considered comprehensive, and several are under implementation or have been implemented.	6 out of 6 measures
Water	11 measures aiming to reduce losses, increase efficiency and establish water reuse	Measures are comprehensive, but many are yet to be fully implemented or are implemented in fragmentary ways due to lack of funding.	3 out of 11 measures

3.3. Sectoral impact assessment

Through extensive literature research including scientific literature, policy papers, reports and other articles, and reviewing of relevant and available climate data, sector-specific climate impacts were collected and compiled.

The identified **climate impacts** for each sector were discussed in workshops, conducted in April 2024, with relevant stakeholders from various governmental bodies, NGOs, science and private companies. These qualitative, participatory assessments focussed on the rating of **sensitivity and exposure** of each climate impact within the respective sectors. Both parameters were assessed using a five-tier scale (very low to very high). For impacts of high priority, i.e. with high or very high exposure and sensitivity, an assessment of adaptive capacity and urgency to act was conducted, considering that a greater need for adaptation would be needed. The adaptive capacity incorporates two sub-categories, namely the governance framework in place and the financial capabilities. Both for adaptive capacity and urgency to act, a three-tier-scale was used (low, medium high).

In the following sections, key aspects with respect to sensitivity and the respective climate impacts for each sector are summarised, including a table with prioritised sector-specific climate impacts. The ratings of adaptive capacity are highlighted by colour, with orange corresponding to low, yellow to medium and green to high adaptive capacity. Correspondingly, ratings of urgency are depicted by orange for high, yellow for medium and green for low urgency to act.

3.3.1. Agriculture

Sensitivity. Agriculture in Cyprus is highly sensitive to climate change, given its dependence on temperature and water availability. Although its economic contribution has decreased to 1.65% of GDP, agriculture still occupies a large portion of the land (~50 %), predominantly located in the Famagusta region and the Nicosia district and is vital for food security. The largest share of agricultural crop production consists of the cultivation of vegetables (e. g. potatoes and other vegetables), fruits and tree crops (e. g. fresh fruit, citrus, olives and grapes) and field crops such as cereals and animal fodder. Additionally, livestock production provides primarily meat and dairy products, mainly pork and poultry as well as cow milk, followed up by sheep and goat milk (CYSTAT, 2023).

Climate Impacts. Due to its sensitivity to climatic changes, agriculture in Cyprus is highly vulnerable, as temperatures are further increasing, putting animals and plants under additional heat stress in the summer months. With rising seasonal temperatures, even with uncertain development of precipitation, groundwater recharge and availability will decrease, causing water deficits in soils and increasing the risk of droughts and wildfire potential. Groundwater is also a major water source for irrigation in many regions. Reduced recharge limits water availability, making it harder to sustain agricultural productivity and posing a critical risk of crop failures and yield reductions or the economy and food security. Decreasing water availability increases competition for water resources further impacting crop production (EEA, 2024b).

The climate impact analysis highlighted the increasing scarcity of water, irrigation demand and drought stress for crops. Farmers persist in cultivating traditional crops and employing conventional agricultural practices, such as growing water-intensive watermelons. Additionally, the decline in nutrient availability, soil fertility and stability are exacerbated by monoculture practices, with farmers repeatedly planting the same or similar crops annually, without implementing soil rehabilitation strategies. Furthermore, soils are increasingly affected by salinisation, particularly in the Famagusta region, where saltwater intrusion is prevalent, especially during drought periods.

In addition to drought, the rise in heatwaves significantly impacts Cypriot agriculture. Farmers are adapting by enhancing cooling provisions for indoor livestock, such as pigs and poultry. In contrast, sheep and goats, which are traditionally kept outdoors, are more vulnerable to the effects of climate change. Severe heatwaves, along with other extreme weather events such as hailstorms (e. g., in April 2024), are contributing to yield losses. Table 5 presents the results from the participatory climate impact assessments. The assessments were conducted in April 2024 for all sectors. The digitised workshop materials and descriptions of the individual climate impacts can be found in the Climate Risk and Vulnerability Assessment (CRVA), Annex C (alpS et al., 2024).

Table 5: Assessment of high priority climate impacts for the agriculture sector.

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
biophysical					

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
increase in heat stress for animals	very high	very high	low	low	high
increase in drought and heat stress for plants	very high	very high	low	low	high
increase in water scarcity	very high	high - very high	medium	low	high
increasing soil salinization	high - very high	high	medium	low	medium
increased desynchronization of pollinator-plant phenology	very high	medium – high	medium	low	low
decrease in nutrient availability due to water shortages	high	high	medium	low	medium
decrease of soil fertility, structure and stability	high	high	medium	high	low
socio-economic					
increasing need for irrigation	very high	very high	medium	low	high
yield loss due to extreme events	high	very high	medium	low	high

3.3.2. Biodiversity and Ecosystems

Sensitivity. Cyprus' unique location between the European, Asian and African continents, as well as its diverse topography and long history of human settlement, have enriched the island's species and ecosystem diversity over the centuries, resulting in a wide variety of natural, semi-natural and anthropogenic habitats (Convention on Biological Diversity (CBD), s. a; Department of Environment, s. a.). As such, Cyprus is a unique endemism hotspot in Europe under pressure due to changing climatic conditions. Both terrestrial and aquatic habitats are facing challenges, with freshwater species in southern Europe being especially sensitive to these changes (CYPADAPT, 2013; EEA, 2024a; Zachariadis, 2016).

Climate Impacts. Accelerated changes in phenology, shifts in vegetation distribution and loss of ecosystems have already been experienced (Zachariadis, 2016). The influx of alien species into marine habitats leads to population migration, and increased blue-green algae blooms occurs in freshwater bodies (EEA, 2024a). Cyprus' ecosystems have very high exposure and sensitivity in terms of species composition (in particular, in marine ecosystems) and shift or even losses of habitats. Ecosystem resilience is further threatened by disruptions of biological interactions and challenges of species to adapt to changing conditions, affecting species composition, population dynamics, imbalances of food webs due to changes in pollinator-plant phenology and predator-prey relationships and thus, ecosystem functionality and stability. Rising temperatures can adversely affect aquatic biodiversity and result in a degradation of water quality, especially of wetlands and lakes. Table 6 presents the results from the participatory climate impact assessments.

730 Table 6. Assessment of high priority climate impacts for biodiversity and ecosystems sector

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
biophysical					
chance in species composition (marine ecosystems)	very high	very high	medium	low	high
shift of habitats	very high	very high	medium	low	high
lowering of soil moisture content	very high	very high	medium	low	high
change in water availability	very high	very high	medium	low	high
increase in salinity	very high	high	medium	low	high
increase of water temperatures (standing waters)	high-very high	very high	medium	medium	high
increasing threat to wetland habitats (peatlands, bogs, fens)	high	very high	medium	low	high
increased disturbance and loss of aquatic habitats	high	very high	low	low	high
loss of habitats	medium-high	very high	medium	low	high
increase in habitat fragmentation	medium	very high	medium	low	high
degradation of water quality	high	high	medium	medium	high
extension of vegetation period (earlier start)	high	high	medium	medium	medium
changed reproductive behaviour	very high	medium	medium	medium	medium
increased desynchronisation of pollinator-plant phenology	very high	medium	low	medium	medium
changed biological interaction	very high	medium	low	medium	medium
increase in desynchronisation of predator-prey relation	very high	medium	low	medium	medium
change in species composition (terrestrial ecosystems)	high	medium-high	medium	medium	medium

3.3.3. Cultural Heritage

731 **Sensitivity**. Cyprus' cultural heritage and history has been shaped through the millennia, as
732 evidence suggests that the island has been inhabited since prehistoric times, around 13 000
733 years ago. With the unique location of the island in between three continents and the presence
734 of multiple peoples throughout the centuries, each having had their specific influence on the
735 cultural landscape, the country boasts a rich archaeology. This heritage is susceptible to adverse
736 effects of climate change as archaeological sites are affected by climate extremes, like droughts,
737 heat, fires and hazards such as rising temperatures, increasing aridity, sea levels, landslides,
738 erosion and desertification either directly or indirectly.

739 **Climate Impacts**. Increased wildfire activity, heightened UV/IR radiation as well as an increase
740 in floods are among the climate impacts considered as high priority which are exacerbated by
741 non-climatic drivers such as visitor activities. These impacts result in increasing maintenance
742 needs. The authenticity and preservation of Cyprus's cultural and historical landmarks are also

743 at risk due to intensified biological, chemical and physical weathering and decomposition
744 processes. Changes in sea-related properties such as water currents, oxygen levels and salinity
745 further impact cultural assets. Table 7 presents the results from the participatory climate impact
746 assessments.

747 Table 7. Assessment of high priority climate impacts for the cultural heritage sector

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
biophysical					
increase in forest and wildfires	high	very high	low	medium	high
increase in UV/IR radiation	high	high	low	medium	high
increase in floods (pluvial, fluvial, coastal)	very high	high	low	medium	high
change in sea related properties (e.g. water currents, oxygen levels, salinity levels)	high	high	low	medium	high
increase in biological, chemical and physical weathering /decomposition	high	medium - high	low	medium	high
socio-economic					
threat of loss of authenticity and historical substance	medium	very high	low	medium	medium
increase in damage to / loss of archaeological sites (under-/aboveground)	high	high	low	medium	high
increase in maintenance needs	high	high	low	medium	high
increase in damage to historical gardens and landscapes	high	high	low	medium	high
increase in vegetation damage (damage to forests, branch, breakage)	high	high	low	medium	high

3.3.4. Disaster Risk Management, Civil Protection and Critical Infrastructure

748 **Sensitivity**. Disaster Risk Management (DRM) in Cyprus is largely integrated into Civil Protection
749 mechanisms and DRM activities are concentrated at the national level. Critical infrastructure
750 includes water (supply and distribution), electricity, ICT (telephony and internet access), finance
751 (banking and government treasury) and transport (airports, ports and highways) (Cyprus Civil
752 Defence, 2020). According to the EU Civil Protection (2018), the climate-related disasters with
753 the highest risk factor in Cyprus are wildfires, coastal floods and extreme temperatures. Climate
754 change is expected to exacerbate these risks. Therefore, it is expected that DRM, civil protection
755 and critical infrastructure protection processes will be heightened in the future.

756 **Climate Impacts**. The climate impact assessment for the sector revealed a very high exposure
757 and sensitivity towards heat-related climate impacts. The sector is affected by climate change
758 induced increases of forest and wildfires, heavy wind, flood and dust events, resulting in
759 damages to critical infrastructure and heightened costs for maintenance. Recent flood events
760 (e.g. in Larnaka) illustrate these consequences and highlight the need for substantial financial

and human resources for effective management and recovery. In addition, such severe weather conditions are associated with increased risks to human safety, including impacts on health of inhabitants e.g. due to elevated heat loads. Table 8 presents the results from the participatory climate impact assessments.

Table 8. Assessment of high priority climate impacts for the disaster risk management, civil protection and critical infrastructure sector

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
biophysical					
increase in forest and wildfires	very high	very high	high	medium	high
increase in flood events (pluvial, fluvial, coastal)	high – very high	high	medium	medium	high
increase in extreme events and hailstorms	very high	high	high	medium	high
increase in dust events	high	medium-high	medium	medium	high
socio-economic					
increase in heat load	very high	very high	medium	low	high
increase in damages to critical infrastructure	very high	high	medium	medium	medium
changing demands for emergency operations (equipment, training, financial and human resources)	high	high	high	medium	medium
increase in personnel stress	high	high	medium	medium	medium
increase in expenditures and costs for maintenance	high	high	medium	medium	medium
increasing damages from pluvial flooding of low-lying infrastructure	high – very high	high	medium	medium	high

3.3.5. Economy, Industry and Finance

Sensitivity. Transitioning from its agricultural roots, Cyprus embraced industrialisation in the 1960s and is presently renowned for its production of medium and high-technology goods, as well as semi-customized small batch products (Kythreotou and Mesmeris, 2023). Cyprus is undergoing a significant overhaul of its manufacturing sector, with a focused effort to draw in new high-tech and knowledge-driven industries. Notably, the ICT sector has witnessed substantial growth, particularly in the manufacturing of parts, instruments and electronics, along with consumer goods like food and cosmetics (Kythreotou and Mesmeris, 2023). Climate change impacts may result in revenue losses, additional costs, operational disruption, loss of staff work hours, low corporate reputation and additional regulatory requirements.

Climate Impacts. Extreme heat and heat waves as well as floods put the Economy, Industry & Finance sector under severe pressure. Next to substantial damages the sector's infrastructure and buildings, productivity and performance might be reduced, impacting construction activities

and transport services. The costs associated with repairing damages from extreme events are burdening public finances and have already led to a decrease in available funds. Table 9 presents the results from the participatory climate impact assessments.

Table 9. Assessment of high priority climate impacts for economy, industry and finance sector

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
biophysical					
increase in flood events (pluvial, fluvial, coastal)	high	high	medium	low	high
increase in extreme events	high	high	medium	low	high
socio-economic					
increase in financial needs for adaptation and mitigation	very high	very high	medium	medium	high
decrease in work and performance capacity due to heat	very high	very high	medium	low	high
increase in cooling requirements (server rooms, storage, premises)	very high	very high	medium	medium	medium
increase in heat stress	very high	high	medium	low	high
increase in damage to buildings and infrastructure	high	high	medium	low	high
decrease in public finances	high	high	high	medium	medium

3.3.6. Energy

Sensitivity. Cyprus is highly reliant on fossil fuel imports for its electricity needs and spends over 8% of its GDP to cover the costs. The country has also seen the biggest increase in energy demand amongst the EU Member States, growing by 39 % since 1990 from 1.6 million tonnes of oil equivalent (Mtoe) to 2.2 Mtoe in 2020. The Renewable Energy Sources (RES) share in gross final consumption of energy was 16.8 %, exceeding the national mandatory target of 13 % RES in 2020, as set in the Directive 2009/28/EC. In addition to this, the country's national grid system has certain intrinsic and technical limitations affecting RES penetration and reliability of the energy system, such as a lack of interconnections to the trans-European electricity networks. In terms of RES, solar capacity is increasing rapidly. The country is one of the highest users per capita in the world of solar water heaters in households.

Climate Impacts. Both energy demand and supply must be considered in the context of climate change impacts. On the one hand, the Energy sector is confronted with the challenge of meeting increased energy requirements for cooling of general infrastructures (due to affordability and behavioural shifts) and for energy infrastructure (rising cooling demands for electricity grids resulting from household photovoltaic (PV) installations and subsidised energy production). There is a great need for action due to the increased energy demand from irrigation, desalination, water reuse and treatment. Extreme events (e.g. heatwaves, sandstorms) affect PV production, potentially resulting in grid failures. Heightened radiation levels can adversely affect PV systems. Table 10 presents the results from the participatory climate impact assessments.

802 Table 10. Assessment of high priority climate impacts for Energy.

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
biophysical					
increase in extreme events	very high	very high	medium	medium	medium
socio-economic					
improved conditions for power generation from PV and solar thermal energy	very high	high – very high	medium	medium	medium
increase in risk of failure of the electric system	high – very high	high – very high	medium	medium	medium
increase in energy demand for irrigation, desalination, water reuse and treatment	high	very high	medium	medium	high
increase in radiation for solar thermal energy (positive)	very high	high	medium	medium	medium
increase in radiation for PVs (negative)	very high	high	medium	medium	medium
change in electricity and peak electricity demand	high	high	medium	medium	medium
increase in cooling demand and requirements for electricity grids	high	very high	medium	medium	low
increase in cooling requirements	high	very high	medium	medium	medium

3.3.7. Fisheries and Aquaculture

803 **Sensitivity**. Due to the location of Cyprus in the Levantine Basin, fishery plays a key role and is
804 socio-economically and culturally important, whereby national fish production is largely based
805 on aquaculture constituting over 80 % of the share (Newman, 2014). Cyprus's aquaculture sector
806 is becoming increasingly significant as global demand for fishery and other aquatic products are
807 rising. Even though only a very limited number of full-time employees (i.e 300), an even greater
808 number is employed in indirectly but closely related jobs (Department of Fisheries and Marine
809 Research, 2020). As impacts of climate change on oceans can be observed globally, the
810 Mediterranean Sea, despite being semi-enclosed, is equally affected by climate hazards,
811 potentially leading to adverse effects on the Fisheries & Aquaculture sector. As aquaculture
812 farms are mostly positioned in water bodies in the mountains however, close to springs, they are
813 less sensitive to increasing water temperatures.

814 **Climate Impacts**. Identified and relevant climate impacts are closely related to Cyprus marine
815 biodiversity as higher sea temperatures, also associated with increased ocean acidification,
816 result in alterations in marine species composition and disruptions of food chains. Notably,
817 commercial fishing is increasingly affected by the influx of invasive species and the arrival of new
818 species, which kickstarted with the opening of the Suez Canal. Increasing temperatures also
819 occur in freshwater bodies (water courses and standing waters). During droughts, water scarcity
820 associated with a significant reduction of water inflow in aquacultures may threaten the
821 economic viability and production of the sector. Fish production from inland fisheries is not

822 impacted, as fishing in water courses and lakes is restricted to recreational fishing. Table 11
823 presents the results from the participatory climate impact assessments.

824 Table 11. Assessment of high priority climate impacts for Fisheries and Aquaculture.

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
biophysical					
spread of invasive species	very high	very high	medium	medium	high
change in species composition	very high	very high	medium	medium	high
increase in sea water temperatures	very high	very high	low	low	medium
increase in ocean acidification	very high	high	low	low	medium
increase in water temperatures (standing waters)	high	high	low	low	low
socio-economic					
altered fish population distributions	very high	very high	medium	medium	high

3.3.8. Forestry

825 **Sensitivity**. In Cyprus, forests cover 17,173 ha, which equals 19 % of the total land mass (incl.
826 Northern Cyprus) (Science for Environment Policy, 2021). Forest area is found predominantly in
827 the Pentadactylos and Troodos Mountain ranges and in the western parts of the country. Most
828 are managed by the state, with only small blocks owned privately. Pine forests hold the greatest
829 share of habitats in Cyprus, as well as broadleaves such as Quercus alnifolia and Quercus
830 infectoria ssp. veneris 'Oak'.

831 **Climate Impacts**. Temperature- and heat-related impacts in combination with changing
832 precipitation patterns are leading to severe pressure on forest ecosystems and increased fire
833 potential, the latter being further amplified by unsustainable land use practices. Thus, impacts
834 from climate change are already evident in Cypriot' forests, with biodiversity mainly being
835 affected from increasing wildfires, droughts and decreasing water availability (Zittis et al., 2020).
836 Other relevant climate impacts are windthrow (may increase in Cyprus), insect pests and
837 spreading invasive plants and animals (EMME-CCI, 2022; Kahraman et al., 2020). Additionally,
838 forest ecosystems and their functionalities are further challenged by shift of habitats and
839 vegetation zones, changes in tree species composition, extension of the vegetative period, and
840 pest outbreaks. There is already a notable increase in the costs associated with maintaining
841 reforestation efforts due to environmental pressures caused by climate change. Table 12
842 presents the results from the participatory climate impact assessments.

843 Table 12. Assessment of high priority climate impacts for the forestry sector

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
biophysical					
increase in drought stress	very high	very high	medium	low	high

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
decrease in water availability during vegetation period	very high	very high	medium	low	high
reduction of water retention capacity	high	high-very high	medium	low	high
increase in forest and wildfires	high	very high	high	low	high
increase in soil erosion, soil degradation	high	very high	medium	medium	medium
spread and proliferation of invasive plants and animals	medium	very high	high	low	medium
increase in storms	high	high	medium	medium	medium
decrease of climatically suitable areas for key forest species	medium	high	medium	medium	medium
shift of habitats / vegetation zones	very high	medium	high	medium	medium
chance in tree species composition	very high	medium	high	medium	medium
increase in pests and harmful organisms	high	medium	medium	medium	medium
damages to / losses of forest due to forest fires	high	very high	high	low	high
socio-economic					
increase of costs for maintenance of reforestation	very high	high	medium	low	high

3.3.9. Health

Sensitivity. The health system of Cyprus was reformed in 2019, bringing universal health coverage and unifying a previously fragmented system (OECD and European Observatory on Health Systems and Policies, 2023). In 2014, an assessment of climate risks on health and well-being in Cyprus recognised vulnerability related to deaths and health problems from heat waves and high temperatures. The elderly and children were identified as the most vulnerable population, but there were no sufficient data for estimating deaths and health problems associated with climate changes (Kythreotou and Mesmeris, 2023). Cypriots are considered relatively resilient to heat, as hot days and heat waves occur regularly, though individual sensitivity to health impacts depends on age, lifestyle, occupation and any pre-existing medical conditions. Certain groups, such as the elderly, are generally more sensitive. Other climate-related identified impacts to health and well-being, particularly affecting the elderly and children (especially if unaccompanied by adults), included deaths and injuries related to increased occurrence and intensity of floods and fires.

Climate Impacts. Heat, including the occurrence of summer/tropical days/nights, and heat waves and the associated increases in mortality and morbidity are among the climate impacts listed as high priority, together with a low adaptive capacity in terms of financial resources and a high urgency to act. In cities, the urban heat island effect is further exacerbating the heat stress felt by inhabitants. Air pollution and a heightened ultraviolet radiation put additional pressure on public health. Air pollution is currently mostly affected by dust storms originating in the Sahara

and other regions within the Middle East and North Africa, potentially leading to an increased risk of respiratory diseases. Table 13 presents the results from the participatory climate impact assessments.

Table 13: Assessment of high priority climate impacts for the health sector

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
biophysical					
increase in air pollutants	high	high	medium	medium	high
increase in UV radiation	high	high	medium	low	medium
increase in water temperatures	high - very high	high - very high	medium	medium	medium
increase in summer / tropical days and nights	very high	high	low	low	high
increase in urban heat island effect	very high	very high	low	low	high
socio-economic					
increase in heat stress	very high	very high	medium	low	high
disruption of well-being due to heat and/or weather extremes	very high	very high	medium	low	high
increase in mortality and morbidity during heat waves	very high	very high	medium	low	high

3.3.10. Hydrological Regime and Water Management

Sensitivity. The water availability of Cyprus is naturally limited due to its semi-arid climate, resulting in a particular high susceptibility to climate change of Cyprus' water resources. The region's natural resources are almost entirely dependent on rainfall, which is inherently unpredictable and often characterised by extended drought periods. Water scarcity is further exacerbated by decreasing amounts of precipitation (Water Development Department, 2024), a high rate of evaporation, and increases in water demand in the last decade. Agriculture is the most water-demanding sector and the intensification of tourism puts additional pressure on water resources. Technical measures such as desalinisation and reuse e.g. of wastewater have been implemented to tackle these water shortages.

Climate Impacts. Climate change and the resulting changes in precipitation patterns and droughts have impacted the national water balance, leading to declining groundwater levels, reduced inflows to dams and reservoirs and potentially to a salinisation of coastal groundwater bodies. Furthermore, increases in extreme events, particularly pluvial and fluvial floods, cause damage to infrastructure and assets, especially near coasts and in urban centres where high population and infrastructure densities heighten local sensitivity. Some urban areas have adapted their water infrastructure to cope with varying amounts of water. There is an increasing urgency to take further actions to prepare for the increase in flood events. Table 14 presents the results from the participatory climate impact assessments.

Table 14: Assessment of high priority climate impacts for the hydrological regime and water management sector

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
biophysical					
lowering of groundwater table and salinization of coastal groundwater bodies	high	high	medium	high	medium
change in seasonal distribution of precipitation	very high	medium - high	medium	medium	medium
increase in extreme events	high	high	high	medium	high
increase in fluvial and pluvial floods	medium - high	high	high	medium	low
change in water supply	high	medium - high	medium	low	medium
socio-economic					
increase in irrigation demand	high - very high	high - very high	medium	high	medium
increase in water demand (agriculture, industry, private households)	high	high	medium	medium	medium
increase in damage due to extreme events	high	high	high	medium	high

3.3.11. Infrastructure, Transport and Buildings

Sensitivity. The climate risks on the infrastructure, buildings and transport sector are well recognised in Cyprus. Many critical infrastructures of Cyprus have been developed near the coastal area. Infrastructures in the country are not considered extremely vulnerable to climate changes, which arise from decreased rainfall, increased temperature, droughts, fluctuations in intense precipitation events, sea level rise, increased atmospheric carbon dioxide and changes in fire regimes. The main observed vulnerability priority of the sector is related to damages caused by urban floods and sea floods (Kythreotou and Mesmeris, 2023). In this regard, coastal infrastructures, including roadways, airports and sewerage systems are susceptible to climate change induced damages caused by flooding and storms (Zachariadis, 2012).

Climate Impacts. The climate impact assessment for the the infrastructure, buildings and transport sector showed that there is an urgent need to address changing climatic conditions, particularly considering slow-onset processes such as rising temperatures and acute events such as flash floods. Outdoor and indoor heat impacts and the maintenance of infrastructure are the main impact categories identified. Rising temperatures not only affect the structural integrity of building materials, but higher humidity can also cause damage to metal components, such as steel reinforcements, through corrosion. Increased temperatures and extremes such as summer/tropical days and nights result in a heightened need for cooling in buildings and public transport. Ground subsidence and decreasing soil stability due to desiccation can jeopardise the structural stability of infrastructures. Cyprus is already experiencing increased costs and expenditures due to rising maintenance needs, particularly for roads and pavements, as heat

damage necessitates more frequent repairs. Furthermore, buildings and transport infrastructures are frequently damaged by both heat and acute flood events **¡Error! No se encuentra el origen de la referencia.** presents the results from the participatory climate impact assessments.

Table 15. Assessment of high priority climate impacts for infrastructure, transport and buildings sector

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
biophysical					
increase in urban heat island effect	high	very high	low	low	high
increase in summer /tropical days and nights	very high	high	medium	medium	medium
increase in humidity and dust events	very high	high	medium	medium	medium
socio-economic					
increase in expenditure and costs for maintenance	very high	very high	medium	medium	high
increase of cooling requirements in public transport and micro-mobility	high	very high	low	low	high
increase in the need for shading	high	very high	low	low	high
undersized retention basins	high	high	medium	medium	high
increase in need for realignment of sewage system and sewage treatment plans	high	high	medium	medium	high
decrease of the thermal comforts of buildings	very high	high	medium	medium	medium
changes in indoor temperature and humidity	high -very high	high	medium	medium	medium
increased need to adapt building design and services to summer heat	very high	medium	medium	medium	medium

3.3.12. Sea and Coastal Areas

Sensitivity. Cyprus and its surrounding water bodies are particularly susceptible to adverse effects of climate change induced impacts. Next to the warming of the sea surface temperature, marine ecosystems around Cyprus are also under pressure from non-climatic impacts and human stressors, such as unsustainable fishing practices, pollution, or invasive species emigrating mainly from the Red Sea due to anthropogenic activities in other countries (González Hernández et al., 2023). Furthermore, a significant number of tourist accommodations and private assets are located near the coast (Lemesios et al., 2016; Monioudi et al., 2023). Due to coastal man-made structures, beaches lack the necessary space to retreat, resulting in the loss of total beach area under a sea level rise scenario.

Climate Impacts. Exposure to climate impacts of the coastal areas is exceptionally high due to the concentration of critical infrastructure and transport facilities near coasts and the

importance of beach tourism to the national economy. Sets of impacts have become increasingly evident in recent years, underscoring the urgency to act. The ecosystems relevant to this sector are increasingly threatened by degradation as sea levels rise and coastal erosion progresses, exacerbated by the increase in the number and intensity of heavy precipitation events. Sea level rise, partially caused by the thermal expansion of sea water, threatens freshwater availability on land for ecosystems, humans and infrastructure, as coastal aquifers are exposed to saltwater intrusion, especially during storm surges and coastal floods. Increases in sea water temperature are also altering chemical parameters and species composition, with thermophilic species ranging further north and increasing salinity and acidity levels creating suitable conditions for invasive species. Table 16 presents the results from the participatory climate impact assessments.

Table 16. Assessment of high priority climate impacts for the sea and coastal areas sector

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
biophysical					
increased coastal erosion due to storms and heavy precipitation	very high	very high	low	medium	high
increase in erosion	very high	very high	low	medium	high
increase in loss of beaches, land	very high	very high	low	medium	high
increasing coastal habitat contraction (e. g. coastal nesting sites for birds or turtles, dunes)	high	high - very high	medium	medium	high

3.3.13. Soil

Sensitivity. Based on systematic soil studies, which started back in 1957, two main categories of soils can be distinguished in Cyprus: deep soils and shallow soils each associated with specific limitations. Deep soils are lacking productivity due to high salt concentrations. Shallow soils have a limited water retention capacity and are susceptible to severe erosion and soil degradation (Hadjiparaskevas C., 2001). In general, soils in Cyprus are susceptible to changes in organic matter content, fertility, structure and stability

Climate Impacts. There are three impact clusters negatively affecting soil quality in Cyprus: erosion, soil structure and fertility and soil moisture and water content. In terms of erosion, heavy rainfall in the winter period, followed by high temperatures and dry weather conditions during the summer contribute to soil erosion and soil degradation across Cyprus (Hadjiparaskevas C., 2001). In addition, sea-level rise results in a high likelihood of coastal erosion (Zachariadis, 2012). Temperature increases and heightened occurrence of heat-related extreme events as well as shifts in precipitation patterns due to climate change, lead to an exacerbation of these impacts. These impacts are also closely associated with changes in soil water content and lowering groundwater levels. For all climate impacts of high priority, the urgency to act was assessed as high, underlying the susceptibility of the sector. Table 17 presents the results from the participatory climate impact assessments.

953 Table 17. Assessment of high-priority climate impacts for the soil sector

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resource	
biophysical					
change in soil water balance	medium-high	very high	medium	medium	high
lowering of groundwater level	high	very high	medium	medium	high
degradation of humus	high	very high	medium	medium	high
change in soil organic matter content and stocks	high	very high	medium	medium	high
decrease and shift of the vegetation period	very high	high	low	low	medium
increase in soil erosion	very high	high	medium	medium	high
increase in forest and wildfires	very high	high	medium	medium	high
change in water availability	medium-high	very high	medium	medium	high
decrease in soil water retention capacity	medium	very high	medium	medium	high

3.3.14. Spatial Planning

954 **Sensitivity**. Spatial planning is considered a transversal sector, as its objectives, plans and
955 measures have far-reaching implications for mitigation and adaptation policies in many other
956 sectors. Climate change increases the vulnerability of both urban areas and rural communities
957 and their inhabitants, with economically and socially marginalised people being most affected
958 and highly vulnerable. Urban areas are disproportionately impacted due to soil sealing, urban
959 structures and intensely built-up areas (IPCC, 2022).

960 **Climate Impacts**. The impact assessment revealed two clusters of impacts with the greatest
961 effect on spatial planning objectives: increasing heat extremes and erosion. Rising temperatures
962 and extreme events such as heat waves particularly affect urban centres and built-up areas,
963 resulting in an increased exposure of inhabitants. On the other hand, rural areas face increased
964 erosion, exacerbated by wildfires, droughts, heavy rainfall and wind. The reduction of natural
965 water storage capacities leads to changes in land suitability and increases in conflicts over land-
966 use. Locally, geological hazards pose threats to infrastructure, especially in earthquake-prone
967 areas or regions with unstable geological ground structures. Table 18 presents the results from
968 the participatory climate impact assessments.

969 Table 18. Assessment of high-priority climate impacts for the spatial planning sector

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
biophysical					
increase in urban heat island effect	very high	very high	medium	low	high

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
increase in summer and tropical days/nights	very high	very high	medium	low	high
socio-economic					
increase in heat stress	very high	very high	medium	low	high

3.3.15. Tourism

Sensitivity. Although Cyprus is aiming to diversify its economy by strengthening non-tourism services, tourism is still one of the main economic sectors, with 3S Tourism (sea, sun, sand) being the most important (Monioudi and Velegrakis, 2022). Cyprus' tourism is highly susceptible to changes in climate, the state of nature and biodiversity and the occurrence of extreme events. For instance, availability and width of (sandy) beaches are decreasing due to sea level rise, erosion and flooding, compromising beach surface area and infrastructures and impacting destinations' attractiveness (Arabadzhyan et al., 2021; Monioudi and Velegrakis, 2022). In addition, inland destinations might be adversely affected by wild- and forest fires. Positive effects might also be observed as touristic destinations for indoor sightseeing and in mountainous areas could benefit from increasing temperatures, as tourism flows change spatially and temporally (Lemesios et al., 2016).

Climate Impacts. Climate impacts are currently evident at the biophysical and the socio-economic level, altering the intensity and frequency of extreme heat events, forest fires, wildfires and the rate of sandy beach erosion. Fires and extreme events might consequently destroy cultural heritage sites important for tourism and result in decreased safety of both residents and tourists. Heat-related climate change impacts are of particular importance for urban areas and result in a growing demand for beach tourism and water-based activities. The latter are adversely affected by sea level rise induced erosion. Even though visitor numbers are steadily rising, partly due to an extension of the summer season, heat stress and the frequency and intensity of extreme events is expected to diminish visitor numbers and alter tourism flows, as the demand for cooled spaces grows. Increased cooling and water demand in the tourism sector is associated with high energy demands, which may compromise supply and grid stability. The impact assessment revealed a high urgency to act for nearly all climate impacts of high priority, and a low adaptive capacity.

Table 19 presents the results from the participatory climate impact assessments.

Table 19. Assessment of high-priority climate impacts for the tourism sector

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
biophysical					
increase in loss of sandy beaches	very high	high	medium	low	medium
increase in forest and wildfires	very high	high	medium	low	high
increase in extreme events	high	high	low	low	high

Climate Impact	Exposure	Sensitivity	Adaptive Capacity		Urgency to act
			Governance Framework	Financial Resources	
loss of biodiversity and ecosystems (marine/terrestrial)	high	medium - high	medium	medium	high
increase in intensity and frequency of heatwaves	high	medium	low	low	high
socio-economic					
negative influence of extreme weather events on tourism activities	high	high	low	low	high
decrease in outdoor activities due to heatwaves	high	high	low	low	high
increase in demand for cooling in summer	high	medium - high	medium	medium	high

3.4. Development of a business-as-usual scenario & summary of key analyses

Based on the outcome of the climate impact assessment workshops, expert knowledge and scientific literature, climate impact chains were developed, reflecting the current climate impact situation and considering climate impacts of high priority, the exposed subsystems and non-climatic risk drivers. Figure 5 illustrates a clustered impact chain for the Tourism sector. These served as a basis for discussions in the participatory process for identifying key climate-related risks for each sector. All impact chains can be found in Annex C of the CRVA (alpS et al., 2024). Key risks are characterised by their longevity, their broad consequences, potentially impacting ecological, economic, and societal levels and the time required for adaptation options to achieve their intended outcome (EEA, 2024b; GIZ, 2023; IPCC, 2022).

The key risks reflect the exposure, sensitivity, adaptive capacity and urgency to act, that is, the current rating of climate impacts within each sector, condensing the knowledge collected in prior working steps into a current risk landscape. The risk assessment was derived for each key risk. Linking the ratings with climate data, assessments for two future timeframes and scenarios were compiled, an optimistic and a pessimistic scenario for both the near (2041-2060) and distant future (2081-2100), respectively. The optimistic scenario describes a future where climate mitigation efforts limit global warming (RCP4.5), whereas the pessimistic scenario describes a business-as-usual scenario without any mitigation efforts (RCP8.5). In addition, the temporal dynamics (e. g. acute or slow onset events) as well as potential spatial variabilities (e. g. some regions might be affected more than others; hence local, regional or national occurrence are differentiated) of climate risks are also considered.

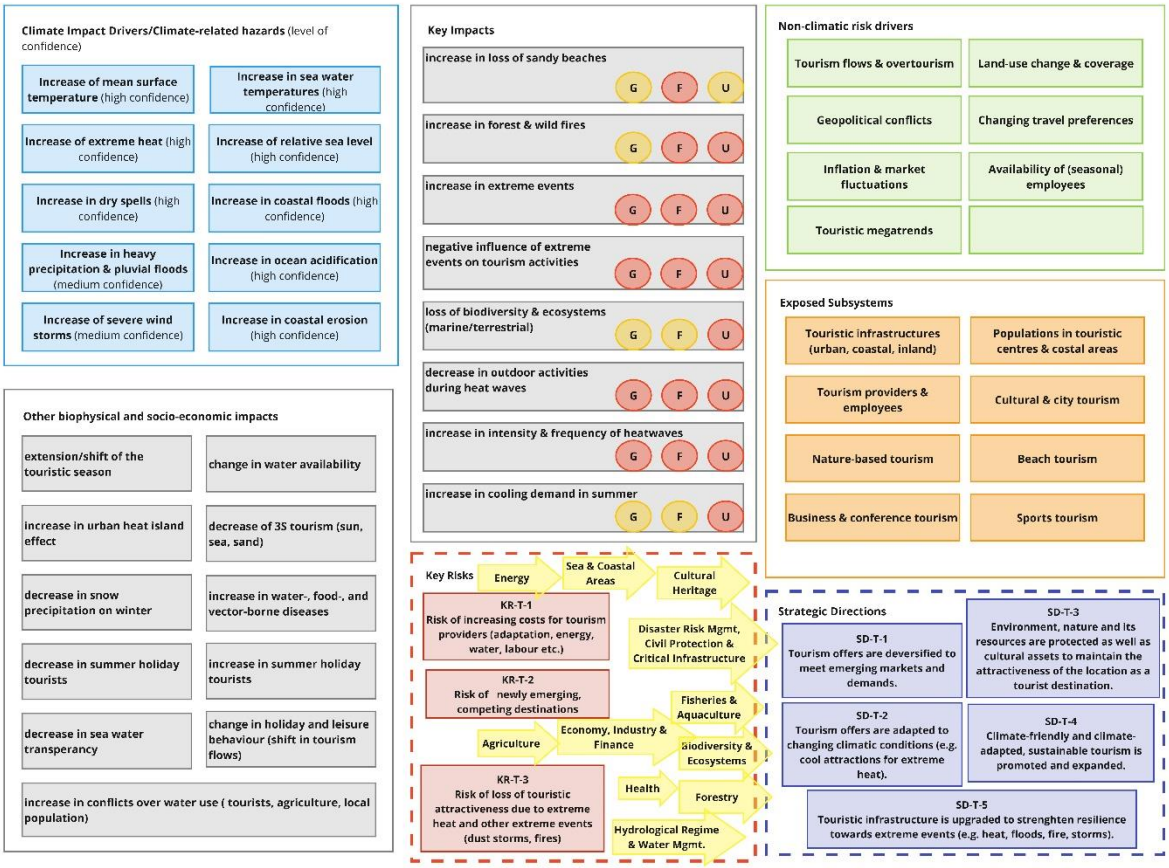

Figure 5. Climate impact chain for the tourism sector developed in participatory workshops with local experts
Illustration: alpS consult.

The risk assessment highlights the need both for extensive mitigation and adaptation efforts to prepare for the challenges in the distant future. Most key risks identified show an increasing trend towards the end of the century, when climate risks will reach greater magnitudes than currently. Some impacts however, for instance those connected with water availability or heat stress, reach very high levels in the near future.

Thus, based on the climate risk assessments, several sectors are particularly sensitive to climate change. Agriculture faces significant risks, especially regarding water management failures and increasing costs and loss of livelihoods, with both current and future risks ranging from medium to very high. Biodiversity and ecosystems are severely affected, with wildfires and the loss of biodiversity and ecosystems, loss of ecosystem services, loss of rare and/or endemic species and reduced water quality posing high to very high risks, some even in the near future under an optimistic scenario. Disaster risk management is highly sensitive to extreme events such as wildfires, floods and the increasing costs of provisions, emergencies and maintenance of infrastructure, with risks escalating to very high levels in the future. The forestry sector shows very high risks of wildfires and aridity and drought, resulting in loss of forests, forest soils and endemic species.

Health is another sector of concern, especially with regard to extreme events and risks to health and livelihoods of vulnerable groups, with risks progressing from medium to very high. The water management sector is also notably vulnerable due to flooding on the one hand and increasing water scarcity on the other, where risk ratings increase to very high in the near future under an optimistic scenario. Soil is affected by erosion and degradation, with risks reaching very high levels in the near future under an optimistic scenario.

Spatial planning is highly sensitive to climate change due to the risk of unrestricted urban sprawl and mismanagement of green spaces, which leads to the loss of agricultural land and impacts economic productivity, highlighting the potentially transboundary character of risks. Settlements and structures near coasts are vulnerable to erosion and storm surges, with risks expected to escalate from medium in the near future to very high in the distant future.

Tourism faces increasing risks from extreme weather events like heat waves, dust storms, and fires, which can reduce touristic attractiveness and raise operational costs for providers. Additionally, emerging competing destinations may further challenge the sector, as climate impacts affect local tourism industries, with future risks ranging from medium to very high. Finally, transport, infrastructure and buildings show a high to very high risk as human comfort and health are compromised due to increased heat in urban centres and buildings.

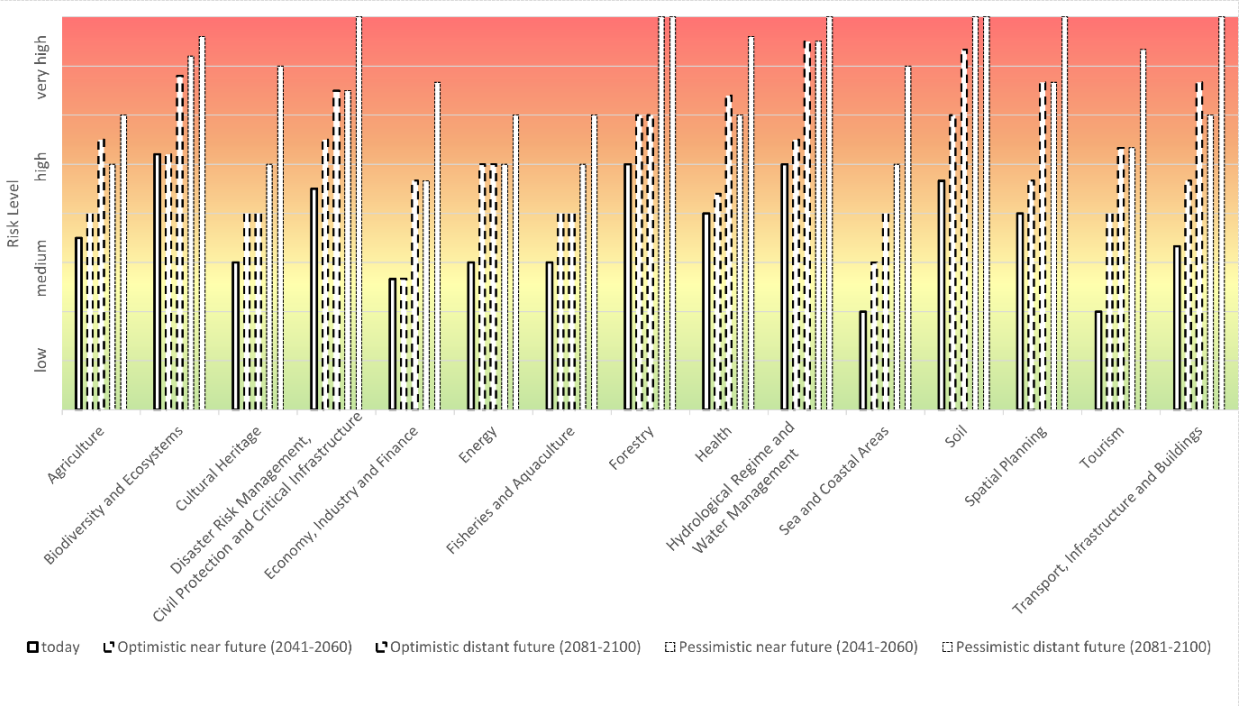

Figure 6. Risk assessment by sector and scenario based on average risk ratings for each key risk identified. The ratings included a four-tier scale (low, medium, high, very high).
Source: alpS consult with output from participatory workshop.

Figure 6 shows the increasing risk ratings for all the sectors analysed and both in the near and distant future under optimistic and pessimistic scenarios compared to risk levels today. The ratings are based on the key risks assessed for each sector, depicting an average value per sector. While, under an optimistic scenario, risks will increase in both near and distant future,

there will be significant challenges in all sectors under a pessimistic scenario, with most risks reaching very high levels towards the end of the century.

Table 20 summarizes the key risks identified for each sector. A detailed description of the risk assessment presented in Annex C: Sectoral key risks.

Table 20. Summary of key climate risks identified for each sector

Sector	Key climate risks
Agriculture	1. Risk of loss of agricultural land and the associated loss of cultural identity 2. Risk of loss of livelihoods and income from agriculture due to increases in costs 3. Risk of loss of agricultural practices and rural culture 4. Risk of failure of water management systems in agriculture
Biodiversity and ecosystems	1. Risk of loss of biodiversity and ecosystems due to wildfires 2. Risk for ecosystems to lose their capacity to provide ecosystem services 3. Risk from biological invasion 4. Risk of loss of biodiversity and rare and/or endemic species 5. Risk of loss of ecosystems due to a decrease in water quality and quantity
Cultural heritage	1. Risk of loss of historical, archaeological, cultural, and natural values and authenticity 2. Risk of loss of cultural values will impact tourism and related revenues
Disaster risk management, civil protection and critical infrastructure	1. Risk to human life and health from disasters and secondary diseases e. g. pulmonary diseases 2. Risk of widespread disruptions of transport and supply infrastructure due to wildfire and flood events (coastal, pluvial) 3. Risk of increasing costs for maintenance, provisions and emergencies 4. Risk to communities prone to increasing frequency and intensity natural disasters (vulnerable to different extreme events)
Economy, industry and finance	1. Risk to fiscal and individual financial instability due to climate-related events 2. Risk of increase in insurance costs and withdrawal of reinsurance companies 3. Risk of financial instability and economic downturn due to health issues, limitations on work performance from extreme events (fires, heat- and dust-related stress on people and heat load on materials and operating sites), limitations on established methods of production and loss/ displacement of infrastructure
Energy	1. Risk of failure of energy production, supply and disruption of infrastructure due to extreme events 2. Risk of fluctuations in energy production from renewables and fossil fuels (global market dynamics)
Fisheries & aquaculture	1. Risk of loss of income or collapse of fishery and aquaculture industry 2. Risk of loss of marine biodiversity (e. g. due to expansion of touristic period)
Forestry	1. Risk of loss of forested areas and forest soil from wildfires 2. Risk to natural forests and endemic and rare species due to aridity and droughts

Sector	Key climate risks
Health	1. Risk to human health from extreme events (heat, sand and dust storms, floods, fire) 2. Risk to health systems and insufficient supply of energy for the operation of the health system during extreme events (floods, heat waves, sand and dust storms) 3. Risk to health and livelihoods of vulnerable and disadvantaged groups incl. children 4. Risk to a change in air-, insect-, food- and water-borne diseases 5. Risk of a lack for access to public infrastructure, lack of sanitation (isolation)
Hydrological regime & water management	1. Risk to population and infrastructure in flood-prone areas 2. Risk to the provision of ecosystem services from water bodies due to changes in precipitation patterns and increase in low water flows 3. Risk of an increase in social conflicts due to increasing water scarcity and water demands 4. Risk of security for water provision (domestic and irrigation)
Infrastructure, transport and buildings	1. Risk of loss of livelihoods and income due to damages to infrastructure and buildings 2. Risk to human comfort and health due to increased heat in urban centres and buildings 3. Risk of decrease in public funds due to increasing maintenance costs for infrastructure
Sea & Coastal Areas	1. Risk of loss of touristic value and threat to livelihoods of coastal communities 2. Risk to human health from altered freshwater availability and storm damages
Soil	1. Risk of soil degradation and loss of soils due to erosion & extreme events 2. Risk of pluvial floods from decreased water retention capacity of soils 3. Risk to the provision of soil ecosystem services (e. g. capillary flow, water and nutrient availability for plants)
Spatial Planning	1. Risk to human well-being and health 2. Risk to economic productivity from unrestricted urban sprawl (loss of agricultural land) and mismanagement of urban green spaces 3. Risk to settlements and anthropogenic structures (esp. near coasts from erosion and storm surges)
Tourism	1. Risk of increasing costs for tourism providers (adaptation, energy, water, labour etc.) 2. Risk of newly emerging, competing destinations 3. Risk of loss of touristic attractiveness due to extreme heat and other extreme events (dust storms, fires)

1066

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4. Vision, objectives and measures for climate change adaptation

Based on the identified risk and vulnerabilities and the climate impact chains developed for each sector (see Figure 5) the next step was the identification of sector-specific strategic directions. These strategic directions were validated in a workshop in June 2024 and served to define the specific objectives and the strategic vision of the strategy, as well as guide the selection of adaptation measures to address the key risks (Figure 7).

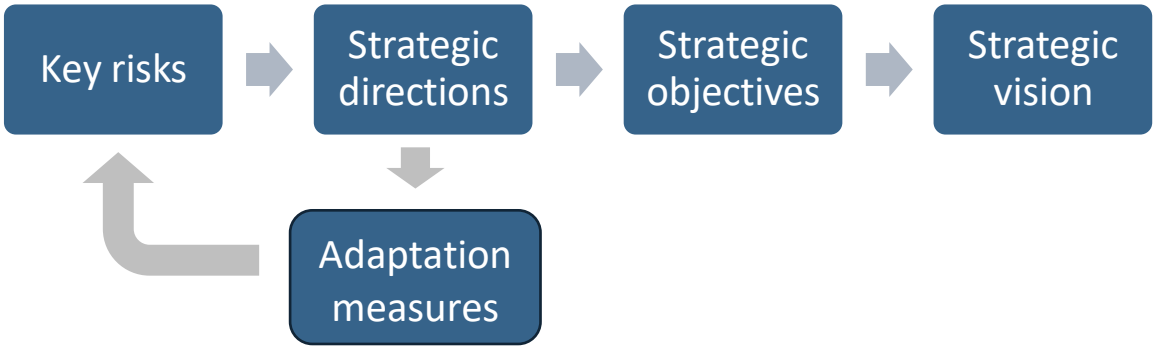

Figure 7. Conceptual framework for the development of the vision, strategic objectives and strategic directions for Cyprus' National Adaptation Strategy

Section 4.1 of this chapter explains the strategic vision and objectives for the strategy, as well as the strategic directions that inform each of the objectives. While strategic directions have been attributed to each strategic objective for the sake of organization in this document, many are transversal and serve to address the risks identified in different sectors. Section 4.2 presents a summary of the adaptation measures identified for each sector following the participatory process described in Section 2.2 above. A comprehensive list of measures, goals, and description can be found in Annex D. Summary table of measures and a detailed impact assessment for each measure in Annex E: District Local Government Organizations projects and plans that can contribute to the National Adaptation Strategy

Larnaka District Local Government Organization

Ongoing Projects

8. **Improved wastewater treatment and electricity generation using biogas**: As part of the Recovery and Resilience Fund, the District Local Government Organization of Larnaka will proceed with the expansion and upgrade of the existing infrastructure at the Larnaka Wastewater Treatment Plant to increase its capacity and serve a larger population. The expansion is planned with a design horizon extending to 2040, by which time the full operation of phases A, B, and C of the Larnaka Sewerage System is expected. Within this framework, the project will also include the construction of primary sedimentation facilities

with anaerobic digestion for energy production from biogas un action that will take measures to reduce the energy consumption of the Larnaka Wastewater Treatment Plant through biogas solutions. Additionally, the upgrade of the Treatment Plant will involve the installation of a sixth ultrafiltration membrane line and the replacement of the existing five lines with new membrane systems. This will restore proper tertiary treatment at the plant, ensuring a higher quality of reclaimed water suitable for reuse.

9. **H2S System (Construction, Equipment and Operation):** The project involves the construction of a comprehensive and automated system aimed at preventing the formation of hydrogen sulfide (H2S) in the Larnaka sewer network. Hydrogen sulphide causes corrosion to the network infrastructure and intense odour, creating a nuisance. Its production is due to the anaerobic conditions prevailing in the sewer network, combined with the high temperatures observed for most months of the year in Cyprus. These factors increase the amount of hydrogen sulphide produced, as well as its negative effects. Through the project, calcium nitrate will be produced in a unit currently under construction at the urban wastewater treatment plant. Calcium nitrate ($Ca(NO_3)_2$), as a chemical substance, will combat the phenomenon of hydrogen sulphide formation. Subsequently, this substance will be transported to strategically selected points in the sewer network, where it will be applied as a preventive measure.

10. **Construction of a New Water Reservoir in Klavdia**: The construction of a new concrete water reservoir with a total capacity of 10,000m^3 in Klavdia. This project is being carried out to supply water to consumers for 48 hours in the event that the provider (Water Development Department) is unable to supply water to the Organization, to meet additional demand in the event of an expansion of the Organization's boundaries, and to address the increased water demand from new

11. **Smart technologies**: The DLGO of Larnaka in order to detect, manage and mitigate the water losses within the water distribution network, along with the correct and sustainable water management, will install water quality and pressure sensors in its water distribution networks and is expected to replace at least 50% of its conventional consumer meters with smart meters. Additionally, the organization will develop a Digital Twin decision support tool and a data bank that will utilize information from the installed sensors, smart water meters, and existing systems to accurately estimate water flow, pressure, and quality for the timely detection of events. Furthermore, the organization plans to replace conventional consumer meters with automated smart meters and install additional pressure and quality sensors to monitor infrastructure and develop innovative customer services, such as early warnings in the case of leaks. A customized software solution will also be designed to integrate all operations and support data-driven decision-making.

12. **Flood Mitigation Projects in Larnaka**: In response to the needs for flood management in the city of Larnaka during periods of intense rainfall, the organization is proceeding with the implementation- construction of flood mitigation projects. Specifically, the projects include the construction of flood control works in various areas of Larnaka.

13. **Construction of sewage network in suburbs areas of Larnaka** (i.e. Dromolaxia Kiti, Meneou, Pervolia): Due to the need of complying with EU's Urban Wastewater Treatment

Directive 91/271/EEC of serving areas with population equivalent of more than 2000 people, new sewage network need to be constructed to serve this particular population .With that being said construction of the city's sewage network, along with the study and supervision of these projects is implemented.

14. **Watermining project**: The organization participated in the Watermining EU-funded project, through the Horizon 2020 Innovation Action, which implemented innovative solutions for clean water access and sanitation. Some of the objectives of the project were the upscaling of technologies to produce valuable biobased products from the residues of wastewater treatment, the design of new methods for ensuring energy-efficient nutrient recovery from wastewater, the development zero-liquid-discharge loop systems for pollution -free industrial wastewater and the promotion of innovative circular economy business models within the wastewater cycle.

In general, the case study in which the DLGO of Larnaka participated focused on improving treated water by desalinating it and extracting valuable products from wastewater. Furthermore, different innovative solutions were implemented for phosphorus removal to ultra-low levels through adsorption and salts removal using filtration and evaporation technologies (potentially powered by renewable energy).

The treated water after its improvement can be then used for irrigating more sensitive crops or even expanding usage in the industrial sector. As in the aspect of circularity, valuable salts and phosphorus can be recovered and marketed.

Planned Projects:

3. **DESALMED Project**: Desalination within an integrated approach to tackle the water scarcity in the mediterranean islands (Funded by the Interreg EuroMED Co-funded by the European Union): The project aims to demonstrate the value of desalination as a tool of an integrated strategy to tackle the water scarcity in islands addressing some critical aspects: social acceptance, energy consumption and impacts on coastal ecosystems. The overall objective is reducing the impacts of desalination and enhance its acceptance in local communities. DESALMED aims to enhance the awareness of communities for the advantages that a desalination plant can made for the economy and the environment. The main outputs is a project strategy on the application of technologies, procedures and management methods to reduce the environmental footprint of desalination and the application of participatory procedures to promote its social acceptance. The beneficiaries will be the Local Authorities that manage desalination plants and the local communities. A transnational approach addresses both environmental issues and acceptance of local communities to different contexts as well as allowing us to work on better risk mitigation. The integrated approach will allow to address the issues by exploring and applying new ways for reducing the ecological footprint and the social impacts of desalination.

4. **FRESSNESH project**: Promoting Energy Efficiency and Conservative Water Use towards a Low Carbon Urban Freshwater Supply Chain (Funded by Interreg VI-A Greece-Cyprus 2021-2027 - Co-funded by the European Union): As part of consortium of the FRESHNESS

Cooperation Program, the DLGO of Larnaka intends to focus on the improvement, upgrading, and modernization of certain water supply networks in the mountainous area of Larnaka, specifically in four municipal districts of the Larnaka Municipality. The networks in question were taken over by the DLGO of Larnaka on July 1, 2024, as part of the local government reform, and are facing serious issues with smooth water supply and a high rate of unbilled water. Specifically, a case study will be conducted for one of the sixteen networks taken over on July 1, 2024, to address and reduce the issue of water losses. The selected networks are in the areas of Kato Lefkara, Vavla, Laya, and Skarinou.

Limassol District Local Government Organization

Below is a list of projects planned by the Limassol DLGO. In parenthesis the expected implementation timeline:

Project plans under development

11. Sewer Networks of 250 km, pumping stations, and a new sewage treatment plant (2027-2032)
12. New pipework for water supply system in western communities (2027-2032)

Projects under study

13. Installation of 60.000 additional water meters (2027-2030)
14. New drainage works in areas with flood risk (2027-2032)
15. Extension of sewer system to cover areas not served (2028-2034)
16. Construction of sewer system to serve small communities with sewer problems (2029-2035)
17. New water supply network in small communities with significant losses in the existing network (2027-2029)
18. New water reservoirs to extent the ability to supply water in new development areas (2028-2032)
19. Increase the capacity of the wastewater treatment plant from 40.000 to 54.000m^3/day (2029-2032)
20. Installation of sensors for online monitoring of water quality and technical parameter

Annex F: Measures Impact Assessment Fact Sheets.

4.1. Vision and strategic objectives

4.1.1. Our Strategic vision

Cyprus will be a resilient, sustainable, and thriving island nation that has successfully adapted to the challenges posed by climate change. Its natural ecosystems, economy, and communities will be fortified against the impacts of rising temperatures, extreme weather events, and water scarcity. A strong governance system is developed to support and drive effective adaptation action. Cyprus will fulfil and develop the commitments undertaken in the European and international context.

4.1.2. Strategic objectives and strategic directions to implement that vision

Strategic Objective 1: Natural ecosystem resilience

Cyprus's unique biodiversity, including its flora, fauna, and marine ecosystems are protected and restored. Sustainable land use practices, such as reforestation, ecosystem restoration and soil conservation, to enhance the resilience of ecosystems and their services, are implemented. Coastal defences to mitigate the impacts of sea-level rise, erosion, and storm surges are strengthened. Overall nature-based solutions are a core of the adaptation work.

Related sectoral strategic directions

Biodiversity and ecosystems

1. Firefighting and allocation of appropriate resources to protect ecosystems is enhanced.
2. Urban planning considers biodiversity issues and new climate risks.
3. Minimum ecological flow and sufficient water is ensured for biodiversity and habitat health.
4. In alignment with the Nature Restoration Law (NRL 2024/1991/EU)[5], ecosystems are restored to increase their resilience and protect ecosystem services.
5. Biodiversity and climate mitigation and adaptation are understood as inextricably linked. Disturbed ecosystems are rewilded and interconnections restored.
6. Protected areas are preserved and possibly enlarged to safeguard extensive ecosystems and endemic species (e.g. wetlands, natural forests).

Forestry

1. To safeguard natural forests and their ecosystem services, (touristic) use is focused on sustainability.
2. Cyprus is effectively protected from forest- and wildfires.
3. The traditional use of agricultural land and farmland is brought back (linked to wildfires, biodiversity).

[5] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401991

4. Supportive mechanisms and resources for restoration and protection are sufficient and effective.

Sea and coastal areas

1. Coastal ecosystems (terrestrial and marine) are restored, protected and conserved.
2. Coastal infrastructure is preserved, protected and adapted.
3. The sustainable use of coastal areas (e. g. tourism) is ensured.

Soil

1. Healthy and resilient soils and their increased CO2 storage capacity are strengthened.
2. Sustainable management and protection of soils to increase water absorption capacity and protect against runoff water is promoted.
3. Soil water balance is improved and evaporation reduced.
4. Soil sealing is reduced.
5. Healthy soil conditions are maintained by the reinforcement of community-led traditional and sustainable rural practices.

Specific Objective 2: Resilient and thriving societies

Cyprus promotes the acquisition and strengthening of capacities for adaptation. Urban and rural communities, with a special attention to vulnerable population, are provided with the information and resources to take adaptation action and increase their resilience to natural disasters. The health system is enhanced to decrease exposure to climate-related hazards. Cultural landscapes, heritage, practices and goods are protected, and traditional land use practices are mobilized as assets for adaptation. Natural processes and patterns are enhanced to reduce vulnerability to climate-related risks through the implementation of nature-based solutions.

Related sectoral strategic directions

Agriculture

1. Use of renewable energy is enforced in agriculture (e. g. desalinization of water with photovoltaic energy).
2. Agricultural land and cultural landscapes, forming the cultural identity of Cyprus and serving in favour of local tourism, is valued and protected.
3. People in Cyprus have access to sufficient regional, high-quality food and agricultural products.
4. Agricultural practices are adapted to changing climatic conditions and governance frameworks.

Cultural Heritage

1. Cultural goods are protected and preserved though regular maintenance and climate-adapted servicing to increase resilience.
2. Intangible cultural heritage and practices are secured.
3. Interdisciplinary collaboration supports the effective protection of cultural goods.

4. The protection of cultural heritage is aligned with propositions/policies by international organisations like UNESCO, ICCROM, ICOM, ICOMOS etc.

Disaster risk management, civil protection and critical infrastructure

1. Cross-sectoral management approaches and solutions are used to respond to changing hazard zones.
2. Sufficient financial and human resources are made available for civil protection.
3. Existing civil protection mechanisms are continuously evaluated and adapted (e. g. assessment and classification of climate disaster risks).
4. Resilience of communities and settlements to natural disasters is increased.

Health

1. The resilience of the population (especially disadvantaged groups) is strongly supported and protection through state and emergency mechanisms are ensured.
2. The healthcare system is adapted to increasing climate risks and sufficient capacities are available (e. g. training, infrastructure, energy, human resources).
3. Mechanisms are developed to decrease the exposure to climate change related health risks.

Hydrological regime and water management

1. Water infrastructure is adequately maintained and adapted to changing climatic conditions (e.g. heat, aridity) to reduce breakage of pipes and leakages.
2. Hydrological monitoring systems are enhanced, and data is collected to inform water management decisions.
3. A sustainable supply of water, its availability and quality are guaranteed, and objectives of the EU Water Framework Directive are met.
4. Flood protection has been expanded and provisions have been made for pluvial, fluvial and coastal flood events. EU Floods Directive objectives are met.
5. More natural water retention measures and sustainable urban drainage systems are adopted.
6. The necessity of water saving is promoted. Water demand is reduced.

Specific Objective 3: Economic resilience

Economic activities and land use practices are adapted to changing climate conditions. Infrastructure – energy, water, communication, coastal, touristic, transport and buildings – is maintained and climate-proofed. The economic and finance sector is mobilized to support Cyprus' economic activities to develop long-term readiness for adaptation and mitigation. The availability of sufficient public funds to meet increased climate adaptation needs is ensured.

Related sectoral strategic directions

Economy, Industry and Finance

1. Preventive measures are in place to protect companies and households, and their infrastructure (including Information and Communication Technologies, ICT) from acute and slow onset climate risks and strengthen their financial and economic resilience.

2. Companies hold climate-relevant knowledge and know-how with regard to reinsurance, risks, supply chains, employee health etc. and implement appropriate strategies.
3. Fiscal capacity (availability of public funds to meet increased costs) is evaluated and stress-tested to ensure long-term sustainability and readiness for adaptation and mitigation.

Energy

1. Security of sustainable energy and electricity supply from renewables is ensured.
2. Energy and electricity infrastructure is adapted to changing climatic conditions (e. g. increased risk of grid failure and blackouts).
3. The capacity is sufficient to meet potentially changing demands (e. g. increased heat and cooling requirements).
4. New renewable energy technologies that are robust under changing climatic conditions are promoted (e. g. biogas production or combined heat and power are promoted).

Fisheries and aquaculture

1. Protected zones are enforced to protect marine biodiversity (e. g. to use it as a leverage for sustainable tourism purposes).
2. The added value from local fishing and aquaculture is secured following socially, ecologically and economically sustainable principles.

Infrastructure, transport and buildings

1. Transport and supply infrastructures are adapted to climatic conditions such as increased heat (e. g. using adequate materials and technology) and appropriate regulations are set.
2. Sufficient funds are available for reassessment of risks and continuous adaptation of legal frameworks and infrastructure under state responsibility.
3. Transport infrastructure for micro-mobility is adapted to heat waves.

Tourism

1. Tourism offers are diversified to meet emerging markets and demands.
2. Tourism offers are adapted to changing climatic conditions (e. g. cool attractions for extreme heat).
3. Environment, nature and its resources are protected as well as cultural assets to maintain the attractiveness of the location as a tourist destination.
4. Climate-friendly and climate-adapted, sustainable tourism is promoted and expanded.
5. Touristic infrastructure is upgraded to strengthen resilience towards increased extreme events (e. g. heat, floods, fire, storms).

Specific Objective 3: Reinforced adaptation governance

The governance of adaptation action, including the existing legal frameworks, is periodically assessed and adapted. The generation and continuous update of knowledge on impacts, risks and adaptation is promoted as well as its transfer to society. The involvement of all interested actors – local governments, private sector, social organizations and the public – in the development of responses to climate change risks is promoted. Adequate administrative coordination is ensured. An effective monitoring and evaluation framework of adaptation

policies and measures is developed and implemented to ensure that adaptation is effective and meeting current and future demands.

Related sectoral strategic directions

Spatial planning

1. Soil sealing in urban, peri-urban and rural areas is minimized (e. g. through circular land management practices).
2. Holistic governance approaches are reinforced to reduce land consumption and minimise urban sprawl.
3. Land and soil reserves are mapped, and crucial areas secured (e. g. for air corridors, ecologically relevant areas).
4. Adequate governance mechanisms considering carrying capacity, natural resources, landscapes and management practices are developed.
5. Technical specifications, building regulations and green space management in urban planning for mitigation, urban flooding, drought and urban heat island effect are updated.

4.2. Overview of sectoral adaptation measures

The following pages include a summary of the adaptation measures identified in each sector to address the identified risks and strategic directions. Each subsection describes the sectoral adaptation goals and includes a summary table of the measures. An extensive impact assessment factsheet of each measure can be found in Annex E: District Local Government Organizations projects and plans that can contribute to the National Adaptation Strategy.

Larnaka District Local Government Organization

Ongoing Projects

15. **Improved wastewater treatment and electricity generation using biogas**: As part of the Recovery and Resilience Fund, the District Local Government Organization of Larnaka will proceed with the expansion and upgrade of the existing infrastructure at the Larnaka Wastewater Treatment Plant to increase its capacity and serve a larger population. The expansion is planned with a design horizon extending to 2040, by which time the full operation of phases A, B, and C of the Larnaka Sewerage System is expected. Within this framework, the project will also include the construction of primary sedimentation facilities with anaerobic digestion for energy production from biogas un action that will take measures to reduce the energy consumption of the Larnaka Wastewater Treatment Plant through biogas solutions. Additionally, the upgrade of the Treatment Plant will involve the installation of a sixth ultrafiltration membrane line and the replacement of the existing five lines with new

membrane systems. This will restore proper tertiary treatment at the plant, ensuring a higher quality of reclaimed water suitable for reuse.

16. **H2S System (Construction, Equipment and Operation):** The project involves the construction of a comprehensive and automated system aimed at preventing the formation of hydrogen sulfide (H2S) in the Larnaka sewer network. Hydrogen sulphide causes corrosion to the network infrastructure and intense odour, creating a nuisance. Its production is due to the anaerobic conditions prevailing in the sewer network, combined with the high temperatures observed for most months of the year in Cyprus. These factors increase the amount of hydrogen sulphide produced, as well as its negative effects. Through the project, calcium nitrate will be produced in a unit currently under construction at the urban wastewater treatment plant. Calcium nitrate ($Ca(NO_3)_2$), as a chemical substance, will combat the phenomenon of hydrogen sulphide formation. Subsequently, this substance will be transported to strategically selected points in the sewer network, where it will be applied as a preventive measure.

17. **Construction of a New Water Reservoir in Klavdia**: The construction of a new concrete water reservoir with a total capacity of 10,000m^3 in Klavdia. This project is being carried out to supply water to consumers for 48 hours in the event that the provider (Water Development Department) is unable to supply water to the Organization, to meet additional demand in the event of an expansion of the Organization's boundaries, and to address the increased water demand from new

18. **Smart technologies**: The DLGO of Larnaka in order to detect, manage and mitigate the water losses within the water distribution network, along with the correct and sustainable water management, will install water quality and pressure sensors in its water distribution networks and is expected to replace at least 50% of its conventional consumer meters with smart meters. Additionally, the organization will develop a Digital Twin decision support tool and a data bank that will utilize information from the installed sensors, smart water meters, and existing systems to accurately estimate water flow, pressure, and quality for the timely detection of events. Furthermore, the organization plans to replace conventional consumer meters with automated smart meters and install additional pressure and quality sensors to monitor infrastructure and develop innovative customer services, such as early warnings in the case of leaks. A customized software solution will also be designed to integrate all operations and support data-driven decision-making.

19. **Flood Mitigation Projects in Larnaka**: In response to the needs for flood management in the city of Larnaka during periods of intense rainfall, the organization is proceeding with the implementation- construction of flood mitigation projects. Specifically, the projects include the construction of flood control works in various areas of Larnaka.

20. **Construction of sewage network in suburbs areas of Larnaka** (i.e. Dromolaxia Kiti, Meneou, Pervolia): Due to the need of complying with EU's Urban Wastewater Treatment Directive 91/271/EEC of serving areas with population equivalent of more than 2000 people, new sewage network need to be constructed to serve this particular population .With that being said construction of the city's sewage network, along with the study and supervision of these projects is implemented.

21. **Watermining project**: The organization participated in the Watermining EU-funded project, through the Horizon 2020 Innovation Action, which implemented innovative solutions for clean water access and sanitation. Some of the objectives of the project were the upscaling of technologies to produce valuable biobased products from the residues of wastewater treatment, the design of new methods for ensuring energy-efficient nutrient recovery from wastewater, the development zero-liquid-discharge loop systems for pollution -free industrial wastewater and the promotion of innovative circular economy business models within the wastewater cycle.

In general, the case study in which the DLGO of Larnaka participated focused on improving treated water by desalinating it and extracting valuable products from wastewater. Furthermore, different innovative solutions were implemented for phosphorus removal to ultra-low levels through adsorption and salts removal using filtration and evaporation technologies (potentially powered by renewable energy).

The treated water after its improvement can be then used for irrigating more sensitive crops or even expanding usage in the industrial sector. As in the aspect of circularity, valuable salts and phosphorus can be recovered and marketed.

Planned Projects:

5. **DESALMED Project**: Desalination within an integrated approach to tackle the water scarcity in the mediterranean islands (Funded by the Interreg EuroMED Co-funded by the European Union): The project aims to demonstrate the value of desalination as a tool of an integrated strategy to tackle the water scarcity in islands addressing some critical aspects: social acceptance, energy consumption and impacts on coastal ecosystems. The overall objective is reducing the impacts of desalination and enhance its acceptance in local communities. DESALMED aims to enhance the awareness of communities for the advantages that a desalination plant can made for the economy and the environment. The main outputs is a project strategy on the application of technologies, procedures and management methods to reduce the environmental footprint of desalination and the application of participatory procedures to promote its social acceptance. The beneficiaries will be the Local Authorities that manage desalination plants and the local communities. A transnational approach addresses both environmental issues and acceptance of local communities to different contexts as well as allowing us to work on better risk mitigation. The integrated approach will allow to address the issues by exploring and applying new ways for reducing the ecological footprint and the social impacts of desalination.

6. **FRESSNESH project**: Promoting Energy Efficiency and Conservative Water Use towards a Low Carbon Urban Freshwater Supply Chain (Funded by Interreg VI-A Greece-Cyprus 2021-2027 - Co-funded by the European Union): As part of consortium of the FRESHNESS Cooperation Program, the DLGO of Larnaka intends to focus on the improvement, upgrading, and modernization of certain water supply networks in the mountainous area of Larnaka, specifically in four municipal districts of the Larnaka Municipality. The networks in question were taken over by the DLGO of Larnaka on July 1, 2024, as part of the local government reform, and are facing serious issues with smooth water supply and a high rate of unbilled

water. Specifically, a case study will be conducted for one of the sixteen networks taken over on July 1, 2024, to address and reduce the issue of water losses. The selected networks are in the areas of Kato Lefkara, Vavla, Laya, and Skarinou.

Limassol District Local Government Organization

Below is a list of projects planned by the Limassol DLGO. In parenthesis the expected implementation timeline:

Project plans under development

21. Sewer Networks of 250 km, pumping stations, and a new sewage treatment plant (2027-2032)
22. New pipework for water supply system in western communities (2027-2032)

Projects under study

23. Installation of 60.000 additional water meters (2027-2030)
24. New drainage works in areas with flood risk (2027-2032)
25. Extension of sewer system to cover areas not served (2028-2034)
26. Construction of sewer system to serve small communities with sewer problems (2029-2035)
27. New water supply network in small communities with significant losses in the existing network (2027-2029)
28. New water reservoirs to extent the ability to supply water in new development areas (2028-2032)
29. Increase the capacity of the wastewater treatment plant from 40.000 to 54.000m^3/day (2029-2032)
30. Installation of sensors for online monitoring of water quality and technical parameter

Annex F: Measures Impact Assessment Fact Sheets, and a summary table of all the measures, their goals, a brief description and their interrelationships can be found in Annex D: Summary table of measures.

4.2.1. Agriculture

The agriculture sector in Cyprus is highly vulnerable to climate change, facing key challenges such as water scarcity, soil degradation, and the need to adapt crops and livestock to evolving conditions. These pressures necessitate measures to make the sector more resilient and sustainable, ensuring that farmers can continue to produce despite increasing climate challenges.

One of the primary goals is to promote sustainable water use. This involves adjusting demands to existing and projected water supplies, while exploring new technologies like desalination powered by renewable energy, which offers a sustainable water source as these technologies become more economically viable. Additionally, efforts are focused on expanding the use of recycled water for irrigation and implementing advanced irrigation systems to enhance efficiency and reduce reliance on groundwater. To guide these efforts, pilot projects and a detailed SWOT assessment and CVRA will be prepared under the next Cyprus CAP strategic plans (2027), ensuring the sector can fully exploit EU funding programmes.

Soil health is another critical area, with a community-based Soil Health Program designed to promote sustainable land management through education, incentives, and partnerships. This initiative provides farmers with detailed soil reports, financial support, and peer-to-peer learning opportunities, empowering them to adopt resilient farming methods such as crop rotation and precision agriculture.

To tackle abiotic stresses like drought and heat, measures encourage research on genetic material that is more resilient, supported by national genetic improvement programmes. Conservation of indigenous genetic material helps crops and livestock better withstand future climatic conditions. Additional efforts include research on climate impacts, establishing early warning systems for extreme weather events, and enhancing the agricultural advisory network to provide tailored advice and training to farmers. Collectively, these measures aim to bolster the sector's adaptability, ensuring its long-term sustainability in a rapidly changing environment.

Table 21. Adaptation measures for the agricultural sector

Code	Name of measure
AGRI 1n	Ensure that the next Cyprus CAP strategic plans make most out of the EU funding programs to adapt the sector to climate change
AGRI 2n	Develop pilot projects on the use of desalinated water for irrigation with photovoltaic energy
AGRI 3n	Encourage the community to adopt sound land management practices and change the use of soil, cultivation methods and varieties
AGRI 4	Develop infrastructure that will facilitate the use of recycled water in agriculture and incentivize its use by farmers
AGRI 5	Identify and promote the use of indigenous and other genetic material (plant and animal) adapted to the soil-climatic conditions that will be brought about by climate change

Code	Name of measure
AGRI 6	Improve efficiency in the use of water for irrigation by implementing rational irrigation planning, adopting more advanced irrigation systems and adequately maintaining existing systems
AGRI 7	Promote research to study the effects of climate change on agriculture and livestock.
AGRI 8	Development / improvement of early warning systems of extreme weather phenomena for agriculture
AGRI 9	Provide site-specific advice and training on crop adaptation to climate change and create a forum for information exchange between the administration and agricultural professions

4.2.2. Biodiversity and ecosystems

The biodiversity and ecosystems sector in Cyprus faces substantial challenges due to climate change, including species loss, habitat degradation, and threats to protected areas like Natura 2000. The proposed adaptation measures focus on enhancing biodiversity conservation and ensuring the long-term resilience of ecosystems through improved data management, policy reforms, and adaptive strategies. Central to these efforts is the creation of a comprehensive biodiversity database that will document species, habitats, and genetic diversity, with a focus on endemic, rare, and vulnerable species. This database will provide a strong foundation for monitoring biodiversity trends and the impacts of climate change, enabling timely conservation interventions.

Alongside this, a land stewardship framework will be established to encourage private landowners to engage in conservation efforts, particularly in areas where private ownership limits effective biodiversity management. This framework will include financial incentives and legal support to promote biodiversity-friendly practices. To further protect ecosystems, specific actions are aimed at preserving wetlands and aquatic ecosystems in vulnerable areas like the Larnaca Salt Marsh complex, safeguarding these water-dependent habitats from the increasing risks of drought and urban development.

Restoration efforts will also target river ecosystems, focusing on removing obstructive structures and installing migratory fish passages to enhance hydro geomorphological continuity. Research initiatives will promote vulnerability assessments and monitor biotic and abiotic changes, informing adaptive management strategies in protected areas. National action plans for threatened species and habitats will be developed and existing plans updated to include climate-related risks. Action plans will also be developed to ddress the risk of invasive and alien species Additionally, climate change adaptation criteria will be integrated into the management of protected areas like Natura 2000. By addressing these key areas, Cyprus aims to safeguard its biodiversity and ecosystems from the escalating pressures of climate change.

Table 22. Adaptation measures for the biodiversity and ecosystems sector

Code	Name of measure
BIODIV 1	Create a database on the biodiversity of Cyprus with an emphasis on endemic, rare and vulnerable species and habitats

Code	Name of measure
BIODIV 2n	Identify and develop contractual, regulatory and financial tools to enhance land use practices compatible with biodiversity conservation in the context of climate change adaptation
BIODIV 3	Promote studies on the expected effects of climate change on Cyprus' flora, fauna and geological heritage, as well as on the structure and functioning of the terrestrial and marine ecosystems of which they form part.
BIODIV 4n	Improve water quality, preserve aquatic ecosystems and integrate water ecosystem resilience into public policies and sectoral plans
BIODIV 5	Protection, conservation and proper management of the important natural wetlands of Cyprus
BIODIV 6n	Preserve, restore and strengthen hydro geomorphological and ecological continuities of river ecosystems
BIODIV 7	Action plans to protect species and their habitats threatened by climate change
BIODIV 8	Analysis of the vulnerability of ecosystems (structure and functions) and their services to climate change, with an emphasis on protected areas and the Natura 2000 Network
BIODIV 9	Addressing the risk of invasive and alien species
BIODIV 10n	Promote the introduction of climate change adaptation criteria in the planning and management of protected areas

4.2.3. Cultural heritage

The cultural heritage sector in Cyprus faces mounting threats from climate change, including flooding, erosion, and rising temperatures that endanger archaeological sites and historic structures. Key adaptation measures focus on identifying vulnerable heritage elements, prioritising preventive conservation, and leveraging traditional knowledge.

A critical measure involves identifying the cultural heritage elements most at risk from climate impacts, with a focus on localised threats like coastal erosion and heat stress. This will inform tailored adaptation strategies to protect valuable sites, structures, and artefacts, especially near vulnerable coastlines. Preventive conservation is prioritised, with an emphasis on frequent small maintenance efforts over extensive restorations. Measures include defining long-term plans, potentially relocating assets, and exploring innovative funding solutions, such as partnerships with the insurance sector and tax incentives.

To integrate climate considerations, the sector will reassess heritage management practices, ensuring climate impacts are factored into documentation, conservation, and management plans. Training programmes will equip professionals with the skills needed to address climate risks.

The sector also aims to preserve vernacular knowledge, cataloguing traditional adaptation practices and technologies that can inspire climate solutions. Additionally, the “green heritage” approach will incorporate nature-based solutions in historic cities to balance heritage preservation with climate adaptation.

Finally, promoting national and international collaborations will support resource sharing and knowledge exchange, ensuring Cyprus’ cultural heritage is resilient against future climate impacts.

Table 23. Adaptation measures for the cultural heritage sector

Code	Name of measure
CULT 1n	Identify the elements of country's cultural heritage that are most vulnerable to climate change and define possible adaptation strategies
CULT 2n	Prioritize maintenance work on cultural heritage over restoration work
CULT 3n	Support reassessment and adjustments in all stages of heritage practice including inventorying, documentation and monitoring, impact assessments, conservation and management planning
CULT 4n	Train professionals involved in the study and conservation of cultural assets to incorporate the climate change dimension into their professional activity
CULT 5n	Collect and transfer vernacular knowledge useful for climate change adaptation
CULT 6n	Develop climate change adaptation plans in heritage cities through the "green heritage" approach, which uses nature-based solutions that consider the specific requirements for the conservation of cultural heritage
CULT 7n	Build synergies with other national policies and sectors to enhance the effective protection of cultural heritage and goods
CULT 8n	Encourage international cooperation in knowledge transfer to protect cultural and architectural heritage in the face of climate change

4.2.4. Disaster risk management, civil protection, and critical infrastructure:

The disaster risk management and civil protection sector in Cyprus face increasing risks due to the growing frequency and intensity of climate-related disasters. The adaptation measures focus on enhancing preparedness, improving risk assessment tools, and strengthening emergency response capabilities. An innovative initiative involves establishing pilot regions that connect multiple communities or areas facing similar climate hazards, promoting knowledge exchange and collaboration through funding programmes. This approach enables a tailored, site-specific adaptation strategy that addresses the specific needs of each region.

Improving hazard mapping is another key focus. By regularly updating maps for wildfire, storm, and heat risks, the authorities can better identify vulnerable areas and use the information as a decision-making tool for stakeholders. This enhanced knowledge base supports informed planning and adaptation efforts. Research also plays a critical role, with a focus on conducting case studies to assess wildfire risks to ecologically significant areas, infrastructure, and cultural heritage. Such studies help clarify the cause-and-effect relationships behind climate-related disasters, providing valuable insights for future disaster management planning.

Adapting emergency response systems to the increasing frequency and intensity of climate impacts is another priority. This involves incorporating climate vulnerability knowledge into national and local response plans and ensuring adequate human and material resources are available during emergencies.

The review of post-disaster recovery plans is also critical to integrate climate change adaptation measures and prevent actions that could increase future vulnerability. Efforts to secure financial resources for adapting critical infrastructure are essential, given the reliance on networks that provide vital services such as electricity, water, health, and transport. Measures include updating risk assessments, identifying funding sources, and developing programmes to finance resilience strategies. Collectively, these initiatives aim to strengthen Cyprus' disaster management capabilities, making the country more resilient to the impacts of climate change.

Table 24. Adaptation measures for the disaster risk management, civil protection, and critical infrastructure sector

Code	Name of measure
DRM 1n	Establishment of pilot regions for disaster risk management
DRM 2n	Development and regular update of (wildfire/storm/heat) hazard maps
DRM 3n	Promote case study-based response mechanisms as a basis for disaster management to cope with wildfire risk
DRM 4n	Adapt emergency response systems to increased frequency and intensity of climate extremes
DRM 5n	Review post-disaster recovery action plans to incorporate climate change adaptation considerations
DRM 6n	Secure financial resources for adapting essential networks and critical infrastructure providing basic services from climate-related disasters, emphasizing on alternative solutions (e.g. nature-based solutions)
DRM 7n	Review Cyprus' national DRM and civil protection system with updated climate change projections and scenarios
DRM 8n	Apply the Pluvial Hazard, Risk Assessment and Adaptation Tool to assess pluvial flood risk hotspots and prioritize areas for adaptation solutions
DRM 9n	Support and reinforce disaster risk preparedness: Observation, early warning, communication and education with climate change adaptation criteria
DRM 10n	Encourage the consideration of risk analyses associated with climate change in the study, analysis and definition of self-protection measures and promote self-protection for the different disaster risks related to climate change

4.2.5. Economy, industry, and finance

The Economy, Industry, and Finance sectors in Cyprus are significantly exposed to the impacts of climate change. To ensure long-term growth and stability, adaptation measures are focused on enhancing resilience across industries and financial systems by integrating climate adaptation into strategic planning and policies. A key priority is conducting sectoral foresight studies to identify the vulnerabilities of Cyprus' industries and services. The findings will inform the development of sector-specific adaptation strategies, which will be incorporated into the 2019-2030 Industrial Policy, revising it to include climate resilience measures.

Another central measure is the creation of a framework to assess projects and investments, ensuring that they consider climate risks and redirecting resources from unsustainable ventures. For small and medium-sized enterprises (SMEs), tools like the DERRIS climate risk self-assessment will be promoted, helping them to understand and mitigate their exposure to climate hazards.

The financial sector is also a critical player in building resilience. Efforts will focus on promoting collaboration between public institutions, private entities, and the insurance industry to facilitate knowledge-sharing and policy development. This includes developing frameworks to create and share climate and insurance-related data, raising climate risk awareness, and fostering policies that integrate sustainable finance practices aligned with EU legislation on sustainability disclosures.

In addition, sustainable finance initiatives will be a core component, integrating climate adaptation into investment strategies through the development of a taxonomy that guides investments towards environmental objectives. These measures collectively aim to strengthen the resilience of Cyprus' economy, industry, and finance sectors against future climate risks, ensuring economic growth remains sustainable and stable amidst changing climatic conditions.

Table 25. Adaptation measures for the biodiversity and ecosystems sector

Code	Name of measure
ECON 1n	Conduct specific sectoral foresight studies to identify vulnerabilities of Cyprus' industry to climate change, develop sectoral adaptation strategies and revise Cyprus' 2019-2030 Industrial Policy accordingly
ECON 2n	Develop a framework for projects and investments assessment that include climate vulnerability evaluation criteria to help inform investment decisions and redirect investments when necessary
ECON 3n	Promote the use of the DERRIS climate risk self-assessment tool for Small and Medium Enterprises (SME) to increase the climate risk awareness of local SMEs
ECON 4n	Promote frameworks for collaboration and coordination on adaptation among the different agents involved in the financial system, with special attention to insurance activity, and strengthen adaptation capacities in the sector.
ECON 5n	Capacity building on adaptation in the financial system and insurance business
ECON 6n	Incorporate climate change adaptation into sustainable finance initiatives

4.2.6. Energy

The energy sector in Cyprus faces several challenges related to climate change, including the need for greater resilience in energy production, distribution, and consumption. Adaptation measures focus on increasing knowledge of climate impacts, integrating findings into energy planning, and ensuring energy security amidst evolving climatic conditions. A key priority is understanding the impacts of climate change and extreme weather events on the entire energy supply chain, from production to distribution. A detailed study will explore vulnerabilities within energy infrastructures and inform specific adaptation programmes. This includes identifying infrastructures most at risk and developing strategies to reduce potential disruptions. For instance, special attention will be given to maintaining and upgrading electricity transmission lines to prevent overheating and minimise system losses through the adoption of smart networks.

Efforts are also underway to assess the effect of changing temperatures on daily and seasonal energy demand. Strategies will be developed to limit spikes in energy use during critical heat periods, drawing from international experiences such as those from the International Energy Agency. Additionally, targeted efforts will aim to prevent seasonal energy poverty among vulnerable populations who face increased cooling needs.

The sector is also focused on building resilience in existing infrastructure. This includes incorporating climate change projections into Cyprus' Long-Term Strategy for Building Renovation and funding necessary upgrades, such as insulation, renewable energy systems, and improved cooling mechanisms. Lastly, enhancing energy security through international

interconnections remains a priority. The EastMed Gas Pipeline and the Great Sea (EuroAsia) Electricity Interconnector projects aim to diversify Cyprus' energy mix, eliminate energy isolation, and strengthen ties with the Trans-European energy networks.

Table 26. Adaptation measures for the energy sector

Code	Name of measure
ENER 1n	Improve knowledge on the (potential) impacts of climate change (including extreme events) on (i) the production potential of renewable energies and translate the results into energy planning; (ii) the functionality and resilience of energy generation, transmission, storage and distribution systems; and (iii) energy demand and develop a strategy to avoid or limit spikes in demand, especially those associated with heat.
ENER 2n	Consider future climate change scenarios and projections in the revisions of Cyprus' Long-Term Strategy for Building Renovation and fund the necessary upgrades, for instance through the "Energy efficiency – Upgrade Homes" program
ENER 3	Good maintenance and possible upgrade of electricity transmission lines to account for climate adaptation. Promoting smart networks with the aim of minimizing losses in the transport system.
ENER 4	Increase Cyprus energy security by increasing interconnection with international energy transmission networks

4.2.7. Fisheries and aquaculture

The fisheries and aquaculture sector in Cyprus is facing growing pressures due to climate change, which threatens the sustainability of fish production and the marine environment. Adaptation measures focus on protecting breeding habitats, enforcing sustainable fishing practices, and strengthening policy frameworks to secure a resilient and sustainable sector. One of the key measures is the protection of breeding habitats. This involves establishing closed areas and seasons, implementing no-fishing zones, and ensuring that current marine protected areas are representative of all ecotypes and effectively protected from climate change risks. Moreover, promoting the use of selection tools to reduce by-catch and adopting eco-friendly fishing methods are essential for reducing the environmental impact of fishing.

Raising awareness within the sector and among stakeholders, such as the tourism industry, about the benefits of marine protection is also vital to secure long-term sustainability. Improving the enforcement of fishing legislation is critical, particularly in controlling professional and recreational fishing activities. By conducting thorough analyses of existing regulations and monitoring capacities, Cyprus aims to close legal and enforcement gaps, helping to secure sustainable fish stocks. The integration of climate change adaptation into national fisheries policies is essential. Cyprus plans to align its strategies with the revised CFP to better address climate-related challenges in fisheries management, aquaculture, and recovery plans. Moreover, there is a strong emphasis on value chain development. Investing in processing and marketing infrastructure and promoting local brands and certifications will help increase the value of local fish products while ensuring ecological and economic sustainability. Efforts to promote the fishing and consumption of invasive species are ongoing, with incentives provided to encourage control measures, which also contribute to marine biodiversity protection.

Table 27. Adaptation measures for the fisheries and aquaculture sector

Code	Name of measure
FISH 1	Protection of breeding habitats
FISH 2n	Improve enforcement of fishing legislation and monitor fishing activity
FISH 3n	Strengthen adaptation to climate change in the Common Fisheries Policy (CFP), national management and recovery plans and the aquaculture sector
FISH 4n	Value Chain Development
FISH 5n	Promote fishing and consumption of invasive alien species

4.2.8. Forestry

The forestry sector in Cyprus is increasingly vulnerable to climate change, with a significant focus on addressing the growing risk of forest fires and ensuring the sustainability of forest ecosystems. Adaptation measures target funding mechanisms, forest management, and community engagement to protect vital ecosystems and mitigate risks.

Forest fire risk management is a core area of focus. This includes increasing the number of firefighting staff and enhancing capabilities for early detection and suppression of fires. Efforts are also being made to create fire-breaking strips, promote controlled grazing to reduce fuel loads (dense grasses, shrubs, and small trees) or certain highly flammable invasive plants, and improve post-fire restoration practices. Additionally, public outreach campaigns aim to reduce fire-causing activities through better training and information dissemination. Adapting regional planning to integrate fire risk and promoting the use of nature-based solutions will help build resilience. Identifying fire-sensitive areas through advanced modelling and targeting interventions in these areas are essential steps towards reducing fire risks and protecting important forest ecosystems and their biodiversity. Promoting the recultivation of abandoned agricultural lands is another important measure to mitigate fire risks, as these areas are particularly vulnerable due to the lack of management.

Developing and implementing a Strategic Plan for adaptation of Cyprus' forests to climate change, which includes systematic research and monitoring of biotic and abiotic factors, will guide adaptation efforts and ensure the long-term sustainability of forest ecosystems. Furthermore, the installation of a pest population monitoring system and the development of forest management plans that consider climate change are essential for maintaining forest health and productivity.

Table 28. Adaptation measures for the forestry sector

Code	Name of measure
FOR 1n	Tourism supports forestry through tourism tax and stakeholder networks to develop sustainable tourist offers
FOR 2n	Increase firefighting staff in the Department of Forests

Code	Name of measure
FOR 3	Coping with increased forest fire risk
FOR 4n	Integrate fire risk into regional planning and harness the potential of nature-based solutions in a context of climate change adaptation
FOR 5n	Model fire-climate relationships to identify areas sensitive to forest fire risk
FOR 6n	Promote the recultivation of abandoned agricultural land
FOR 7	Develop and implement a Strategic Plan for adaptation of Cyprus' forests to climate change
FOR 8	Research, data collection and systematic monitoring of the effects of biotic and abiotic factors related to climate change in forests/ selection and use of suitable forest species with high resistance to adverse climatic conditions (e.g., drought)
FOR 9	Installation of a pest population monitoring system with the goal of early detection of a potential epidemic/ Pest population monitoring
FOR 10n	Develop forest management plans and strategies for Cyprus that take into account climate change adaptation to ensure the continued provision of ecosystem goods and services and the improvement of forest resources

4.2.9. Health

Climate change impacts human health through extreme temperatures, air quality deterioration, water and food safety, and the spread of vector-borne diseases. To address these challenges, the sector is focusing on identifying health risks and integrating climate adaptation measures into national health plans. One priority is improving the governance of heat waves through early warning systems and compliance with safety regulations. An online platform will be developed to monitor heat-health action plans (HHAP) and communicate safety guidelines based on discomfort levels like the Humidex index. This will help protect workers and the public from the adverse effects of heatwaves.

Efforts are also underway to establish community centres in each municipality to provide protective environments (air conditioning, shade, fluids) for at-risk populations during extreme heat events. At the same time, medical and municipal staff will be trained and equipped to handle climate emergencies, and a contingency plan will be developed to serve the increased patient load during such events.

A critical focus area is preventing the spread of vector-borne and non-vector-borne infectious diseases, such as Dengue and West Nile fever, which are expected to become more prevalent. Measures include strengthening epidemiological and entomological surveillance, improving vector management, and enhancing coordination between medical professionals and other sectors like ecology and entomology.

To support these initiatives, an effective multilevel governance system will be established to define the roles and responsibilities of health services and improve coordination. This involves creating an emergency plan, formalising intersectoral collaboration, and ensuring a real-time flow of information between stakeholders.

Table 29. Adaptation measures for the health sector

Code	Name of measure
HEAL 1n	Identify the risks of climate change on human health and develop the most effective adaptation measures by integrating climate change into national health plans.
HEAL 2n	Improve the governance of heat waves to reduce their impacts on human health
HEAL 3	Operation of community centres in each municipality/community (e.g., town halls, schools, Open Elderly Protection Centres, etc.) to provide protection (air conditioning, shade, fluids) to the population at risk
HEAL 4	Empower and prepare medical/nursing and municipal staff to deal with climate change emergencies and serve an increased number of patients/incidents related to climate change
HEAL 5n	Develop a national strategy to prevent the health risks from vector-borne and non-vector-borne infectious and parasitic diseases favoured by climate change
HEAL 6	Establish an effective multilevel governance system that identifies a lead agency, defines clear roles and responsibilities of the various health and social care services, and facilitates intersectoral and intergovernmental coordination to manage climate change impacts on public health

4.2.10. Hydrological regime and water management

Climate-change related challenges in the water management sector in Cyprus include increasing water scarcity, infrastructure vulnerability, and increased risks of extreme events like droughts and floods. Adaptation measures focus on integrating climate resilience into water policy, improving water infrastructure, and promoting sustainable water use. A key measure involves conducting periodic reviews of water policies and plans, ensuring that climate change adaptation is fully incorporated into River Basin Management Plans (RBMPs), Drought Management Plans (DMPs), and Flood Management Plans (FMPs). This includes a priority focus on managing extreme events and selecting adaptive measures based on climate assessments.

Improving and modernising water supply and distribution networks is crucial, especially in rural areas, where water losses can be as high as 50%. Replacing outdated infrastructure and implementing leak detection technologies are cost-effective measures that significantly enhance water savings. Similarly, early leak detection tools and smart meters will support consumers in monitoring usage and reducing waste. Cyprus aims to reuse treated urban wastewater for agricultural and green area irrigation. Building the necessary infrastructure and conducting feasibility studies are part of this effort to reduce reliance on freshwater resources. An effort will also be made to limit intensive water demands activities in water-scarce areas.

Protecting groundwater from overuse and pollution is also a priority, given its critical role in maintaining aquatic ecosystems and providing a backup water supply during droughts. Improving the application of the polluter pays principle can help improve water quality. Furthermore, the sector is working towards reducing flood risks through the restoration of river ecosystems. This involves creating room for rivers by restoring floodplains and rewilding urban areas to act as green corridors. Strategies include reducing artificial land use, restoring hydrological continuity, and employing nature-based solutions to mitigate flood impacts. In the long term, the focus is on enhancing water efficiency in all sectors—buildings, industry, and agriculture—through the adoption of improved technologies and practices.

Table 30. Adaptation measures for the hydrological regime and water management sector

Code	Name of measure
WAT 1	Periodic reviews of progress and priorities of water policies and plans, and adaptation of objectives, instruments and resources, considering climate change.
WAT 2	Improve, upgrade, modernize and repair the water supply and distribution networks and related infrastructure to reduce water losses
WAT 3	National Investment Plan for Water Works considers the revised National Adaptation Strategy and addresses the identified strategic and specific objectives
WAT 4	Create an early leak detention tool and a digital platform (app) to inform consumers about their consumption, submit applications and pay bills.
WAT 5	Expand the use of water meters
WAT 6	Implementation and regular reviews of the Drought Management Plan (DMP) incorporating information on climate change impacts on water resources and integrate contingent drought risk management into water planning and management
WAT 7n	Improve application of the polluter pays principle to improve water quality
WAT 8	Reuse of treated urban wastewater after strict control of its suitability; and provide incentive schemes for sectoral uptake of water reuse (farming, livestock, other uses)
WAT 9n	Protect groundwater resources from pollution and overuse and promote the reduction of groundwater abstractions where sustainability limits are exceeded
WAT 10n	Reduce flood risks through river ecosystem restoration and rewilding in rural and urban areas
WAT 11	Enhance the efficient use of water in buildings, industry and agriculture
WAT 12	Control and limit intensive water demands activities (e.g., golf courses, tourist facilities, water-intensive crops) in water-scarce areas
WAT 13n	Develop future water availability and demand scenarios (for 2050, 2070) under climate change projections and develop strategic plans to adapt demands to projections

4.2.11. Infrastructure, transport, and buildings

The infrastructure, transport, and buildings sector in Cyprus faces mounting challenges due to climate change, particularly extreme temperatures, flooding, and the need to enhance urban resilience. Key adaptation measures focus on climate-proofing infrastructure, incorporating adaptation criteria into planning and procurement, and leveraging nature-based solutions.

One of the primary goals is to adapt building codes to include climate resilience measures. This involves using innovative materials like permeable road surfaces and embracing green infrastructure such as green roofs and facades. By focusing on bioclimatic architecture and improving water management, buildings can become more resilient to heatwaves and floods while contributing to urban comfort and reducing energy consumption.

Efforts are also directed at creating and maintaining green urban spaces to manage the urban heat island effect. This includes conducting surveys of planned green spaces, integrating best practices into development plans, and using stormwater management projects to create “climatic havens” with permeable pavements, shaded cycling paths, and blue infrastructure features. Flood risks are another significant concern, and the development of flood relief projects is a priority. These projects will explore sustainable stormwater management methods, such as retention ponds, absorbent wells, and hydrological restoration of rivers, to reduce urban flood

risks and provide cooling benefits in urban areas. Additionally, extensive tree planting is planned along roads, public spaces, and cycling paths to provide shading, reduce CO2, and improve urban aesthetics.

Public procurement practices will be revised to incorporate climate adaptation criteria, ensuring that new infrastructure investments align with resilience goals. To improve resilience in the transport sector, climate adaptation criteria will be integrated into strategic planning. This includes capacity-building efforts to train public administration staff on adaptation measures and the creation of a forum for information exchange between managers of infrastructure and transport systems. Enhancing public transport to withstand heat stress is a key priority, with measures like self-sufficient climate shelters, radiant cooling, and nature-based solutions being explored to improve passenger comfort. Grant schemes can be developed to support local governments' efforts to adapt their infrastructures to climate change.

Table 31. Adaptation measures for the infrastructure, transport, and buildings sector

Code	Name of measure
INFR 1n	Adapt the different building codes towards climate change adaptation
INFR 2	Create and maintain urban parks and other green spaces to reduce the urban heat island effect
INFR 3	Develop flood relief projects in cities to complement existing and new flood relief solutions
INFR 4n	Change public procurement practices to incorporate climate change adaptation criteria in the development of call for tenders and the establishment of allocation criteria
INFR 5	Extensive tree planting
INFR 6n	Incorporate climate change adaptation criteria into the strategic planning of the transport sector, including the support and strengthening of climate change adaptation capacities in public administrations and other key sectors and actors
INFR 7n	Improve public transport adapting it to new climatic conditions, especially heat stress
INFR 8n	Review maintenance protocols for the transport infrastructure considering the risks arising from climate change
INFR 9	Grant Scheme for adaptation to climate change of communities' infrastructures
INFR 10n	Provide training and capacity building to staff from competent authorities – planning department, municipalities, new regional organizations – on the benefits of green spaces and nature-based solutions for climate adaptation

4.2.12. Sea and coastal areas

The sea and coastal areas sector in Cyprus face climate change-related challenges due to rising sea levels, coastal erosion, and risks to tourism and development assets. Adaptation measures aim to enhance coastal resilience through targeted studies, nature-based solutions, and improved wetland management. A key measure involves conducting a study to identify vulnerable coastal areas. This study will estimate land losses from soil erosion and sea-level rise and create digital maps and databases to monitor coastal changes and re-evaluate current adaptation measures, guiding the definition of coastal setback zones.

Another focus is the use of nature-based solutions (NbS) to stabilise coastlines. This includes restoring natural habitats to protect against erosion, reducing the impact of hydro-technical facilities, and promoting NbS in strategic coastal protection plans. A dedicated fund could be set up to support these projects, and capacity-building efforts will target local authorities.

Additionally, a coastal contract will be established for integrated wetland management, addressing fragmented responsibilities. This initiative aims to protect coastal wetlands that serve as natural carbon sinks and buffers against extreme events. It will involve setting up a governance mechanism for multi-actor cooperation and developing measures to safeguard critical wetlands.

Table 32. Adaptation measures for the sea and coast sector

Code	Name of measure
SEA 1	Elaboration of a study to identify coastal areas vulnerable to climate change
SEA 2n	Develop adaptation initiatives and promote nature-based solutions for stabilising and enhancing the coastline resilience against climate risks
SEA 3n	Implementing a coastal contract for integrated wetland management in the context of climate change

4.2.13. Soil

The soil sector in Cyprus is increasingly vulnerable to erosion and desertification due to climate change and unsustainable practices. Key adaptation measures aim to promote soil conservation and sustainable land management. A central measure focuses on continuing and expanding interventions through the CAP Strategic Plan 2023-2027 to promote agri-environmental practices that protect soils. Improved management of extensive livestock farming is vital, with strategic plans to control grazing based on the carrying capacity of sensitive areas. Revising the Goat Law and introducing stricter grazing controls will prevent overgrazing and soil degradation. Another key initiative is the incorporation of compost into agricultural soils, which increases soil organic matter (SOM), enhancing water retention, erosion resistance, and biodiversity. Efforts will be made to divert biomass waste from landfills to produce compost, improving soil health while reducing methane emissions.

To combat erosion, the sector will promote planting drought-resistant hedgerows on field margins, which stabilise soil, retain rainwater, and support biodiversity. Additionally, limiting land occupation and soil sealing through stricter land-use planning and green infrastructure initiatives like green roofs and walls will help preserve soil quality. Further measures include reusing excavated soil from construction for soil improvement and setting stricter restoration requirements for abandoned mines to prevent erosion. These strategies aim to build soil resilience and support sustainable land use amidst climate challenges.

Table 33. Adaptation measures for the soil sector

Code	Name of measure
SOIL 1	Continuation and increase of interventions through the implementation of the CAP Strategic Plan 2023-2027
SOIL 2	Improve management of extensive livestock farming and control of illegal grazing
SOIL 3	Promote the practice of incorporating compost to reduce desertification and degradation of agricultural soils
SOIL 4	Promote the practice of installing plant barriers to reduce soil erosion
SOIL 5n	Limit land occupation and soil sealing by applying various tools (e.g. spatial planning etc.)
SOIL 6n	Include soil erosion prevention measures in remediation requirements after mines are abandoned
SOIL 7n	Reuse of excavated soil from construction industry waste depending on their specifications for soil improvement

4.2.14. Spatial planning

The spatial and urban planning sector in Cyprus is crucial for integrating climate change adaptation into territorial development, aiming to make cities and regions more resilient to climate impacts.

A primary measure involves climate-proofing spatial and urban plans by incorporating guidelines that address natural hazards like flooding, sea-level rise, and heat islands. This will ensure that risk maps and climate scenarios inform urban planning, integrating green and blue infrastructure to manage urban heat and improve air quality.

Promoting collaborative planning among local authorities is essential. Creating a forum for information exchange will enable knowledge sharing on adaptation strategies and best practices, enhancing policy coherence across municipalities. Additionally, mapping land and soil reserves will support strategic planning by identifying ecologically critical areas and protecting them through legal frameworks and conservation easements.

In pursuit of zero net artificialisation, medium- and long-term land strategies will aim to limit the conversion of natural and agricultural areas, employing tools like higher land taxes, development fees, and urban renewal incentives to discourage unnecessary urban expansion. Finally, applying tools like the Climate Resilience City (CRC) tool will support the development of nature-based adaptation options, allowing planners and stakeholders to evaluate hydrological impacts and explore resilient designs for managing precipitation, drought, and heat risks in urban spaces.

Table 34. Adaptation measures for the spatial planning sector

Code	Name of measure
SPAT 1	Integrate climate change adaptation into territorial and urban planning, by climate proofing according to specific guidelines
SPAT 2	Create a forum for information exchange between local authorities
SPAT 3	Map land and soil reserves, and secure crucial areas (e.g. for air corridors, ecologically relevant areas)
SPAT 4	Develop, in collaboration with local and regional authorities, medium- and long-term balanced land strategies that limit the consumption of natural, agricultural and forestry areas to achieve the objective of zero net artificialisation

Code	Name of measure
SPAT 5	Apply the Climate Resilience City (CRC) tool to elaborate adaptation options in urban planning

4.2.15. Tourism

The tourism sector in Cyprus is significantly affected by climate change, with risks to its infrastructure, natural and cultural resources, and its reliance on traditional tourism models. Adaptation measures focus on promoting resilience, diversifying tourism models, and enhancing institutional collaboration to integrate climate adaptation into the sector's strategic plans. An important measure involves conducting a comprehensive study to assess regional impacts of climate change on tourism. This study will provide detailed insights through regional climate factsheets and impact chains showing cascading effects on tourism activities. Additionally, creating a funding program for climate adaptation will support tourism stakeholders in finding and accessing appropriate resources.

Diversification is a central goal, aiming to reformulate tourism models away from the traditional "sea, sun, sand" approach. Efforts will focus on promoting alternative tourism models such as gastronomic, cultural, sports, rural, and health tourism to reduce dependence on vulnerable coastal areas. De-seasonalising tourism and redistributing flows to inland destinations will help mitigate climate risks, especially related to excessive heat periods. Another key focus is to enhance the resilience of tourism resources and infrastructure. This includes promoting bioclimatic designs, adapting planning in natural and protected areas, and incorporating climate risks into the conservation of cultural heritage. The tourism sector will also play a proactive role by promoting low-carbon cultural tourism and developing climate-resilient infrastructure and transport solutions.

Table 35. Adaptation measures for the tourism sector

Code	Name of measure
TOUR 1n	Conduct study of the regionalized impacts of climate change in the tourism sector and integrate adaptation into plans, programmes and strategies in the field of tourism
TOUR 2n	Diversify tourism models toward those more resilient to the impacts of climate change
TOUR 3n	Promote the resilience of tourist resources - including natural and cultural resources - and infrastructures to climate change impacts

4.3. Cross sectoral adaptation measures

In addition to the sectoral measures, the NAS includes some governance measures that aim to strengthen the implementation and coordination of climate adaptation across all levels of government. Key measures focus on building knowledge, capacity, and inter-agency cooperation to ensure comprehensive and effective climate resilience.

A primary goal is to expand and update knowledge on climate impacts across sectors. Regular national climate risk and vulnerability assessments (CRVA), updated every six years, will incorporate IPCC contributions. This involves developing guidelines, sectoral risk evaluation

tools, and action plans to address knowledge gaps. To build capacity, training programmes will educate local governments, communities, and professionals on climate impacts and adaptation. Tailored interactive presentations and discussion sessions will be created to convey solutions like water conservation and resilient infrastructure, aligning with diverse audience needs, from municipal staff to residents. Social outreach campaigns will enhance public awareness. By employing graphics, videos, and influencer partnerships, the campaigns will aim to communicate the risks and encourage public engagement, particularly among vulnerable populations and younger generations.

In promoting climate adaptation at local levels, regional governments and municipalities will be encouraged to develop their own climate adaptation plans in alignment with the NAS. An IT monitoring and reporting platform will support real-time tracking of NAS implementation across sectors. A dedicated funding stream for NAS measures will be established, using models like Spain's PIMA Adapt to allocate funds from emission rights sales. An Intergovernmental Working Group on Adaptation to Climate Change (IWGCCAS), composed of focal points from key ministries and agencies, will lead inter-administrative cooperation. The group will meet regularly to oversee NAS updates, align sectoral strategies, and promote public participation in the adaptation planning process.

Table 36. Cross-sectoral governance adaptation measures

Code	Name of measure
GOV 1n	Expand and update knowledge on the impacts and risk of climate change on the different sectors (update CRV)
GOV 2n	Training and capacity building on adaptation to climate change
GOV 3n	Communication and social outreach on climate change adaptation
GOV 4n	Promote the development of regional and local climate adaptation plans in coordination with the National Adaptation Strategy
GOV 5n	Develop an IT monitoring and reporting system for climate change adaptation
GOV 6n	Develop national funding streams for climate change adaptation
GOV 7n	Create an Intergovernmental Working Group on Adaptation to Climate Change and designate focal points for adaptation in competent ministries, District Local Government Organizations and municipal representatives

4.4. Results and outcomes of implementation

The outcomes of each measure are described in the individual impact assessment fact sheets (see Annex E: District Local Government Organizations projects and plans that can contribute to the National Adaptation Strategy

Larnaka District Local Government Organization

Ongoing Projects

22. **Improved wastewater treatment and electricity generation using biogas**: As part of the Recovery and Resilience Fund, the District Local Government Organization of Larnaka will proceed with the expansion and upgrade of the existing infrastructure at the Larnaka Wastewater Treatment Plant to increase its capacity and serve a larger population. The expansion is planned with a design horizon extending to 2040, by which time the full operation of phases A, B, and C of the Larnaka Sewerage System is expected. Within this framework, the project will also include the construction of primary sedimentation facilities with anaerobic digestion for energy production from biogas un action that will take measures to reduce the energy consumption of the Larnaka Wastewater Treatment Plant through biogas solutions. Additionally, the upgrade of the Treatment Plant will involve the installation of a sixth ultrafiltration membrane line and the replacement of the existing five lines with new membrane systems. This will restore proper tertiary treatment at the plant, ensuring a higher quality of reclaimed water suitable for reuse.

23. **H2S System (Construction, Equipment and Operation):** The project involves the construction of a comprehensive and automated system aimed at preventing the formation of hydrogen sulfide (H2S) in the Larnaka sewer network. Hydrogen sulphide causes corrosion to the network infrastructure and intense odour, creating a nuisance. Its production is due to the anaerobic conditions prevailing in the sewer network, combined with the high temperatures observed for most months of the year in Cyprus. These factors increase the amount of hydrogen sulphide produced, as well as its negative effects. Through the project, calcium nitrate will be produced in a unit currently under construction at the urban wastewater treatment plant. Calcium nitrate ($Ca(NO_3)_2$), as a chemical substance, will combat the phenomenon of hydrogen sulphide formation. Subsequently, this substance will be transported to strategically selected points in the sewer network, where it will be applied as a preventive measure.

24. **Construction of a New Water Reservoir in Klavdia**: The construction of a new concrete water reservoir with a total capacity of 10,000m^3 in Klavdia. This project is being carried out to supply water to consumers for 48 hours in the event that the provider (Water Development Department) is unable to supply water to the Organization, to meet additional demand in the

event of an expansion of the Organization's boundaries, and to address the increased water demand from new

25. **Smart technologies**: The DLGO of Larnaka in order to detect, manage and mitigate the water losses within the water distribution network, along with the correct and sustainable water management, will install water quality and pressure sensors in its water distribution networks and is expected to replace at least 50% of its conventional consumer meters with smart meters. Additionally, the organization will develop a Digital Twin decision support tool and a data bank that will utilize information from the installed sensors, smart water meters, and existing systems to accurately estimate water flow, pressure, and quality for the timely detection of events. Furthermore, the organization plans to replace conventional consumer meters with automated smart meters and install additional pressure and quality sensors to monitor infrastructure and develop innovative customer services, such as early warnings in the case of leaks. A customized software solution will also be designed to integrate all operations and support data-driven decision-making.

26. **Flood Mitigation Projects in Larnaka**: In response to the needs for flood management in the city of Larnaka during periods of intense rainfall, the organization is proceeding with the implementation- construction of flood mitigation projects. Specifically, the projects include the construction of flood control works in various areas of Larnaka.

27. **Construction of sewage network in suburbs areas of Larnaka** (i.e. Dromolaxia Kiti, Meneou, Pervolia): Due to the need of complying with EU's Urban Wastewater Treatment Directive 91/271/EEC of serving areas with population equivalent of more than 2000 people, new sewage network need to be constructed to serve this particular population .With that being said construction of the city's sewage network, along with the study and supervision of these projects is implemented.

28. **Watermining project**: The organization participated in the Watermining EU-funded project, through the Horizon 2020 Innovation Action, which implemented innovative solutions for clean water access and sanitation. Some of the objectives of the project were the upscaling of technologies to produce valuable biobased products from the residues of wastewater treatment, the design of new methods for ensuring energy-efficient nutrient recovery from wastewater, the development zero-liquid-discharge loop systems for pollution -free industrial wastewater and the promotion of innovative circular economy business models within the wastewater cycle.

In general, the case study in which the DLGO of Larnaka participated focused on improving treated water by desalinating it and extracting valuable products from wastewater. Furthermore, different innovative solutions were implemented for phosphorus removal to ultra-low levels through adsorption and salts removal using filtration and evaporation technologies (potentially powered by renewable energy).

The treated water after its improvement can be then used for irrigating more sensitive crops or even expanding usage in the industrial sector. As in the aspect of circularity, valuable salts and phosphorus can be recovered and marketed.

Planned Projects:

7. **DESALMED Project**: Desalination within an integrated approach to tackle the water scarcity in the mediterranean islands (Funded by the Interreg EuroMED Co-funded by the European Union): The project aims to demonstrate the value of desalination as a tool of an integrated strategy to tackle the water scarcity in islands addressing some critical aspects: social acceptance, energy consumption and impacts on coastal ecosystems. The overall objective is reducing the impacts of desalination and enhance its acceptance in local communities. DESALMED aims to enhance the awareness of communities for the advantages that a desalination plant can made for the economy and the environment. The main outputs is a project strategy on the application of technologies, procedures and management methods to reduce the environmental footprint of desalination and the application of participatory procedures to promote its social acceptance. The beneficiaries will be the Local Authorities that manage desalination plants and the local communities. A transnational approach addresses both environmental issues and acceptance of local communities to different contexts as well as allowing us to work on better risk mitigation. The integrated approach will allow to address the issues by exploring and applying new ways for reducing the ecological footprint and the social impacts of desalination.

8. **FRESSNESH project**: Promoting Energy Efficiency and Conservative Water Use towards a Low Carbon Urban Freshwater Supply Chain (Funded by Interreg VI-A Greece-Cyprus 2021-2027 - Co-funded by the European Union): As part of consortium of the FRESHNESS Cooperation Program, the DLGO of Larnaka intends to focus on the improvement, upgrading, and modernization of certain water supply networks in the mountainous area of Larnaka, specifically in four municipal districts of the Larnaka Municipality. The networks in question were taken over by the DLGO of Larnaka on July 1, 2024, as part of the local government reform, and are facing serious issues with smooth water supply and a high rate of unbilled water. Specifically, a case study will be conducted for one of the sixteen networks taken over on July 1, 2024, to address and reduce the issue of water losses. The selected networks are in the areas of Kato Lefkara, Vavla, Laya, and Skarinou.

Limassol District Local Government Organization

Below is a list of projects planned by the Limassol DLGO. In parenthesis the expected implementation timeline:

Project plans under development

31. Sewer Networks of 250 km, pumping stations, and a new sewage treatment plant (2027-2032)
32. New pipework for water supply system in western communities (2027-2032)

Projects under study

33. Installation of 60.000 additional water meters (2027-2030)

34. New drainage works in areas with flood risk (2027-2032)
35. Extension of sewer system to cover areas not served (2028-2034)
36. Construction of sewer system to serve small communities with sewer problems (2029-2035)
37. New water supply network in small communities with significant losses in the existing network (2027-2029)
38. New water reservoirs to extent the ability to supply water in new development areas (2028-2032)
39. Increase the capacity of the wastewater treatment plant from 40.000 to 54.000m^3/day (2029-2032)
40. Installation of sensors for online monitoring of water quality and technical parameter

Annex F: Measures Impact Assessment Fact Sheets). These outcomes can be the development of a concrete study, the revision, update or development of new strategies or policies, but can also result in physical changes to the landscape and/or infrastructure of Cyprus. As each measure links to a strategic direction and each strategic direction to a strategic objective, the measures should lead to reaching the strategic vision as set out in section 4.1.

However, it should be noted that the impacts of climate change can only be projected but not predicted. This means that adapting to climate change is adapting to a "moving target", requiring to develop and implement measures that are robust under a broad range of possible climate futures, are multi-benefit and no-regret, can be easily adjusted or replaced when necessary, or abandoned when no longer useful.

To do so, but also to see how effective measures are to help achieve the stated goals, output indicators have been developed for each measure (see factsheets in Annex E: District Local Government Organizations projects and plans that can contribute to the National Adaptation Strategy

Larnaka District Local Government Organization

Ongoing Projects

29. **Improved wastewater treatment and electricity generation using biogas**: As part of the Recovery and Resilience Fund, the District Local Government Organization of Larnaka will proceed with the expansion and upgrade of the existing infrastructure at the Larnaka Wastewater Treatment Plant to increase its capacity and serve a larger population. The expansion is planned with a design horizon extending to 2040, by which time the full operation of phases A, B, and C of the Larnaka Sewerage System is expected. Within this framework, the project will also include the construction of primary sedimentation facilities with anaerobic digestion for energy production from biogas un action that will take measures to reduce the energy consumption of the Larnaka Wastewater Treatment Plant through biogas solutions. Additionally, the upgrade of the Treatment Plant will involve the installation of a sixth ultrafiltration membrane line and the replacement of the existing five lines with new membrane systems. This will restore proper tertiary treatment at the plant, ensuring a higher quality of reclaimed water suitable for reuse.

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wastewater treatment plant. Calcium nitrate ($Ca(NO_3)_2$), as a chemical substance, will combat the phenomenon of hydrogen sulphide formation. Subsequently, this substance will be transported to strategically selected points in the sewer network, where it will be applied as a preventive measure.

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32. **Smart technologies**: The DLGO of Larnaka in order to detect, manage and mitigate the water losses within the water distribution network, along with the correct and sustainable water management, will install water quality and pressure sensors in its water distribution networks and is expected to replace at least 50% of its conventional consumer meters with smart meters. Additionally, the organization will develop a Digital Twin decision support tool and a data bank that will utilize information from the installed sensors, smart water meters, and existing systems to accurately estimate water flow, pressure, and quality for the timely detection of events. Furthermore, the organization plans to replace conventional consumer meters with automated smart meters and install additional pressure and quality sensors to monitor infrastructure and develop innovative customer services, such as early warnings in the case of leaks. A customized software solution will also be designed to integrate all operations and support data-driven decision-making.

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35. **Watermining project**: The organization participated in the Watermining EU-funded project, through the Horizon 2020 Innovation Action, which implemented innovative solutions for clean water access and sanitation. Some of the objectives of the project were the upscaling of technologies to produce valuable biobased products from the residues of wastewater treatment, the design of new methods for ensuring energy-efficient nutrient recovery from wastewater, the development zero-liquid-discharge loop systems for pollution -free industrial wastewater and the promotion of innovative circular economy business models within the wastewater cycle.

In general, the case study in which the DLGO of Larnaka participated focused on improving treated water by desalinating it and extracting valuable products from wastewater. Furthermore, different innovative solutions were implemented for phosphorus removal to ultra-low levels through adsorption and salts removal using filtration and evaporation technologies (potentially powered by renewable energy).

The treated water after its improvement can be then used for irrigating more sensitive crops or even expanding usage in the industrial sector. As in the aspect of circularity, valuable salts and phosphorus can be recovered and marketed.

Planned Projects:

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Limassol District Local Government Organization

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Projects under study

43. Installation of 60.000 additional water meters (2027-2030)
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49. Increase the capacity of the wastewater treatment plant from 40.000 to 54.000m^3/day (2029-2032)
50. Installation of sensors for online monitoring of water quality and technical parameter

Annex F: Measures Impact Assessment Fact Sheets). These allow tracking the progress of implementation. For more details see also section 5.3. In combination with monitoring climate impacts this allows also to continuously update the vulnerability and risk assessment, seeing if Cyprus becomes more climate resilient.

5. National adaptation action plan

5.1. Implementation management

5.1.1. Implementation plan and timeline

The implementation of the National Climate Change Adaptation Strategy follows a stepwise iterative approach that allows for the update of the plan and incorporation of new information and knowledge on climate risks as it becomes available (see measure GOV1n) as well information from the monitoring and evaluation program (see section 5.3). The timeline, responsibilities and the priorities of implementation for each individual measure are provided in the impact assessment factsheets that are available in Annex E: District Local Government Organizations projects and plans that can contribute to the National Adaptation Strategy

Larnaka District Local Government Organization

Ongoing Projects

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industrial wastewater and the promotion of innovative circular economy business models within the wastewater cycle.

In general, the case study in which the DLGO of Larnaka participated focused on improving treated water by desalinating it and extracting valuable products from wastewater. Furthermore, different innovative solutions were implemented for phosphorus removal to ultra-low levels through adsorption and salts removal using filtration and evaporation technologies (potentially powered by renewable energy).

The treated water after its improvement can be then used for irrigating more sensitive crops or even expanding usage in the industrial sector. As in the aspect of circularity, valuable salts and phosphorus can be recovered and marketed.

Planned Projects:

11. **DESALMED Project**: Desalination within an integrated approach to tackle the water scarcity in the mediterranean islands (Funded by the Interreg EuroMED Co-funded by the European Union): The project aims to demonstrate the value of desalination as a tool of an integrated strategy to tackle the water scarcity in islands addressing some critical aspects: social acceptance, energy consumption and impacts on coastal ecosystems. The overall objective is reducing the impacts of desalination and enhance its acceptance in local communities. DESALMED aims to enhance the awareness of communities for the advantages that a desalination plant can made for the economy and the environment. The main outputs is a project strategy on the application of technologies, procedures and management methods to reduce the environmental footprint of desalination and the application of participatory procedures to promote its social acceptance. The beneficiaries will be the Local Authorities that manage desalination plants and the local communities. A transnational approach addresses both environmental issues and acceptance of local communities to different contexts as well as allowing us to work on better risk mitigation. The integrated approach will allow to address the issues by exploring and applying new ways for reducing the ecological footprint and the social impacts of desalination.

12. **FRESSNESH project**: Promoting Energy Efficiency and Conservative Water Use towards a Low Carbon Urban Freshwater Supply Chain (Funded by Interreg VI-A Greece-Cyprus 2021-2027 - Co-funded by the European Union): As part of consortium of the FRESHNESS Cooperation Program, the DLGO of Larnaka intends to focus on the improvement, upgrading, and modernization of certain water supply networks in the mountainous area of Larnaka, specifically in four municipal districts of the Larnaka Municipality. The networks in question were taken over by the DLGO of Larnaka on July 1, 2024, as part of the local government reform, and are facing serious issues with smooth water supply and a high rate of unbilled water. Specifically, a case study will be conducted for one of the sixteen networks taken over on July 1, 2024, to address and reduce the issue of water losses. The selected networks are in the areas of Kato Lefkara, Vavla, Laya, and Skarinou.

Limassol District Local Government Organization

Below is a list of projects planned by the Limassol DLGO. In parenthesis the expected implementation timeline:

Project plans under development

51. Sewer Networks of 250 km, pumping stations, and a new sewage treatment plant (2027-2032)
52. New pipework for water supply system in western communities (2027-2032)

Projects under study

53. Installation of 60.000 additional water meters (2027-2030)
54. New drainage works in areas with flood risk (2027-2032)
55. Extension of sewer system to cover areas not served (2028-2034)
56. Construction of sewer system to serve small communities with sewer problems (2029-2035)
57. New water supply network in small communities with significant losses in the existing network (2027-2029)
58. New water reservoirs to extent the ability to supply water in new development areas (2028-2032)
59. Increase the capacity of the wastewater treatment plant from 40.000 to 54.000m^3/day (2029-2032)
60. Installation of sensors for online monitoring of water quality and technical parameter

Annex F: Measures Impact Assessment Fact Sheets. The comprehensive National Adaptation Plan and accompanying timeline is illustrated in

Figure 8.

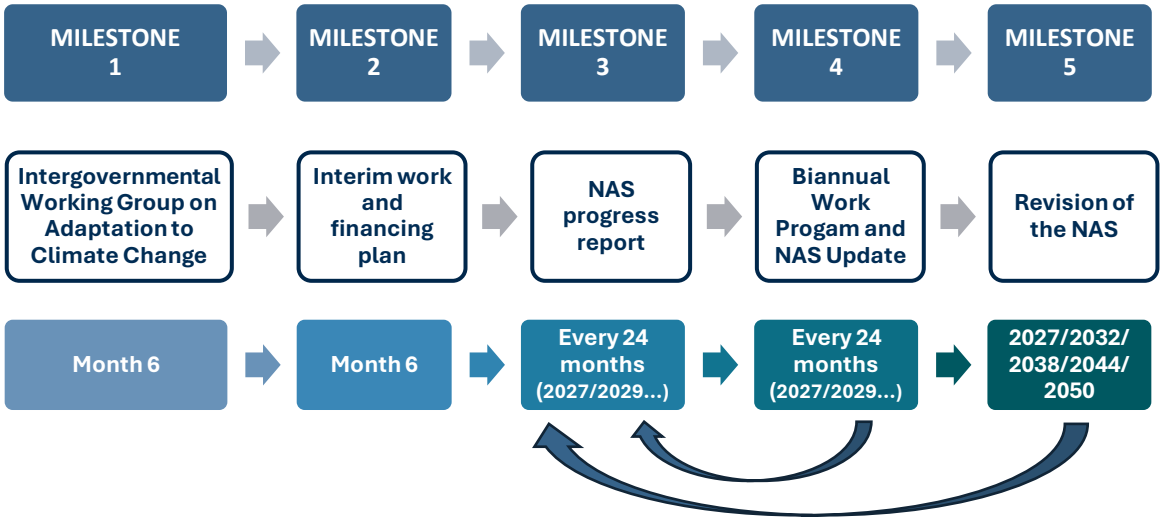

Figure 8. National Adaptation Strategy implementation plan and timeline

Below is a description of the milestones and timeline. The months refer to a expected official approval date of March 2025.

Milestone 1: Intergovernmental Working Group on Adaptation to Climate Change. September 2025 (month 6)

Nomination of **climate adaptation focal points** in each relevant authority and the creation of an **Intergovernmental Working Group on Adaptation to Climate Change** (IWGACC). This should be set up six months after the strategy comes into force7n).

Milestone 2: Interim work and financing plan. September 2025 (month 6)

An interim work and financing work plan will be developed by month 6 after approval of the NAS for implementation of the measures identified as high priority in the impact assessment (implementation in months 1-24). Most often these are related to policies, programs or initiatives that are underway or more easily implementable. Additionally, competent authorities will set the groundwork for the development and implementation of other measures that have been identified for the next period (2-5 years or more than 5 years). Both short and longer-term financing mechanisms will be identified. The Intergovernmental Working Group be consulted on the Interim work and financing plan.

Milestone 3: NAS biannual Progress Report. March 2027 (Month 24)

A first **progress report** on implementation of the strategy – based on the results of the monitoring, evaluation and learning framework described in Section 5.3, should be ready in March 2027 and thereafter every 2 years following the reporting requirements under the EU Climate Law.

Milestone 4: Biannual Work Program and NAS update

The results of the biannual Progress Report will inform the first **Biannual work program** in March 2027 and thereafter every 2 years. If necessary, the outcome of the progress report can inform minor changes or update of the NAS.

Milestone 5: Revision of the NAS

A first **revision of the strategy** should be ready at the end of the Interim Work and Financing Plan (Milestone 2), that is, two years after the strategy comes into force, and every six years after that (2032/2038/2044/2050) in line with the revision timelines of the River Basin Management Plans and Flood Risk Management Plans, to incorporate possible new climatic and socio-economic developments and lessons learned from the first years of implementation (Milestone 5).

5.1.2. Institutions responsible for implementation

The development and implementation of NAS and NAP are coordinated by the DoE of MARDE in collaboration with the Intergovernmental Working Group on Adaptation. While the overall responsibility for the implementation of the NAS falls within the DoE, the accompanying action plan further designates specific competent ministries and authorities as responsible for the implementation of each of the listed actions. Given the cross-sectoral nature of many of the measures proposed, the NAP (as reflected in the individual IA factsheets in Annex E: District Local Government Organizations projects and plans that can contribute to the National Adaptation Strategy

Larnaka District Local Government Organization

Ongoing Projects

43. **Improved wastewater treatment and electricity generation using biogas**: As part of the Recovery and Resilience Fund, the District Local Government Organization of Larnaka will proceed with the expansion and upgrade of the existing infrastructure at the Larnaka Wastewater Treatment Plant to increase its capacity and serve a larger population. The expansion is planned with a design horizon extending to 2040, by which time the full operation of phases A, B, and C of the Larnaka Sewerage System is expected. Within this framework, the project will also include the construction of primary sedimentation facilities with anaerobic digestion for energy production from biogas un action that will take measures

to reduce the energy consumption of the Larnaka Wastewater Treatment Plant through biogas solutions. Additionally, the upgrade of the Treatment Plant will involve the installation of a sixth ultrafiltration membrane line and the replacement of the existing five lines with new membrane systems. This will restore proper tertiary treatment at the plant, ensuring a higher quality of reclaimed water suitable for reuse.

44. **H2S System (Construction, Equipment and Operation):** The project involves the construction of a comprehensive and automated system aimed at preventing the formation of hydrogen sulfide (H2S) in the Larnaka sewer network. Hydrogen sulphide causes corrosion to the network infrastructure and intense odour, creating a nuisance. Its production is due to the anaerobic conditions prevailing in the sewer network, combined with the high temperatures observed for most months of the year in Cyprus. These factors increase the amount of hydrogen sulphide produced, as well as its negative effects. Through the project, calcium nitrate will be produced in a unit currently under construction at the urban wastewater treatment plant. Calcium nitrate ($Ca(NO_3)_2$), as a chemical substance, will combat the phenomenon of hydrogen sulphide formation. Subsequently, this substance will be transported to strategically selected points in the sewer network, where it will be applied as a preventive measure.

45. **Construction of a New Water Reservoir in Klavdia**: The construction of a new concrete water reservoir with a total capacity of 10,000m^3 in Klavdia. This project is being carried out to supply water to consumers for 48 hours in the event that the provider (Water Development Department) is unable to supply water to the Organization, to meet additional demand in the event of an expansion of the Organization's boundaries, and to address the increased water demand from new

46. **Smart technologies**: The DLGO of Larnaka in order to detect, manage and mitigate the water losses within the water distribution network, along with the correct and sustainable water management, will install water quality and pressure sensors in its water distribution networks and is expected to replace at least 50% of its conventional consumer meters with smart meters. Additionally, the organization will develop a Digital Twin decision support tool and a data bank that will utilize information from the installed sensors, smart water meters, and existing systems to accurately estimate water flow, pressure, and quality for the timely detection of events. Furthermore, the organization plans to replace conventional consumer meters with automated smart meters and install additional pressure and quality sensors to monitor infrastructure and develop innovative customer services, such as early warnings in the case of leaks. A customized software solution will also be designed to integrate all operations and support data-driven decision-making.

47. **Flood Mitigation Projects in Larnaka**: In response to the needs for flood management in the city of Larnaka during periods of intense rainfall, the organization is proceeding with the implementation- construction of flood mitigation projects. Specifically, the projects include the construction of flood control works in various areas of Larnaka.

48. **Construction of sewage network in suburbs areas of Larnaka** (i.e. Dromolaxia Kiti, Meneou, Pervolia): Due to the need of complying with EU's Urban Wastewater Treatment Directive 91/271/EEC of serving areas with population equivalent of more than 2000 people,

new sewage network need to be constructed to serve this particular population .With that being said construction of the city's sewage network, along with the study and supervision of these projects is implemented.

49. **Watermining project**: The organization participated in the Watermining EU-funded project, through the Horizon 2020 Innovation Action, which implemented innovative solutions for clean water access and sanitation. Some of the objectives of the project were the upscaling of technologies to produce valuable biobased products from the residues of wastewater treatment, the design of new methods for ensuring energy-efficient nutrient recovery from wastewater, the development zero-liquid-discharge loop systems for pollution -free industrial wastewater and the promotion of innovative circular economy business models within the wastewater cycle.

In general, the case study in which the DLGO of Larnaka participated focused on improving treated water by desalinating it and extracting valuable products from wastewater. Furthermore, different innovative solutions were implemented for phosphorus removal to ultra-low levels through adsorption and salts removal using filtration and evaporation technologies (potentially powered by renewable energy).

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Limassol District Local Government Organization

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Projects under study

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69. Increase the capacity of the wastewater treatment plant from 40.000 to 54.000m^3/day (2029-2032)
70. Installation of sensors for online monitoring of water quality and technical parameter

Annex F: Measures Impact Assessment Fact Sheets) identifies other actors that must necessarily play a part in the implementation of the different measures.

The relevant implementing bodies mentioned in the NAP, and which will remain relevant for the further work on adaptation based on stakeholder mapping (see Annex A) are summarized below.

Ministries and departments

- Ministry of Agriculture, Rural Development and the Environment
  - Agricultural Research Institute
  - Department of Agriculture
  - Department of Environment
  - Department of Fisheries and Marine research
  - Department of Forestry
  - Department of Geological Survey
  - Department of Meteorology
  - Mine Service
  - Veterinary Services
  - Water Development Department
- Department of Antiquities, Deputy Ministry of Culture
- Ministry of Energy, Commerce and Industry
  - Energy Service
  - Service of Industry and Technology
- Ministry of Finance
  - Cyprus Customs and Excise Department
  - Directorate General Growth
  - Statistical Services
- Ministry of the Interior
  - Civil Defence
  - Department of Town Planning and Housing
  - Directorate of Technical Services
  - Game and Fauna Service
- Ministry of Health
  - Crisis Management Team
  - Medical and Public Health Services
  - State Health Services Organisation
- Ministry of Justice and Public Order
  - Fire Service
  - Coast Guard, Cyprus Port and Marine Police
- Department of Labour Inspection, Ministry of Labour and Social Insurance
- Deputy Ministry of Research, Innovation and Digital Policy
- Deputy Ministry of Tourism
- Ministry of Transport, Communications and Works
  - Cyprus Ports Authority
  - Department of Civil Aviation

- Department of Electrical and Mechanical Services
- Public Works Department
- Road Transport Department

Regional and local governments

- District Local Government Organizations of Nicosia
- District Local Government Organizations of Larnaca
- District Local Government Organizations of Limassol
- District Local Government Organizations of Famagusta
- District Local Government Organizations of Paphos
- Municipalities
- Communities

Independent public agencies and institutions

- Central Bank of Cyprus
- Cyprus Energy Regulatory Authority
- Cyprus Transmission System Operator
- Electricity Authority of Cyprus
- Health Insurance Organisation

Civil society organizations

- Cyprus Chamber of Commerce and Industry
- Cyprus Employers and Industrialists Federation
- Cyprus Energy Agency
- Cyprus Institute of Neurology and Genetics

5.2. Financing adaptation

The economic, social and environmental transformation required to adjust national development patterns and make Cyprus more resilient to climate change necessitates the mobilization of significant financial resources. As the EU Adaptation Strategy (EC, 2021) recognizes “the gravity of the adaptation challenge makes it a whole-government and whole-society endeavour. It is vital for the private and public sectors to work together more closely, in particular on financing adaptation”.

The variety of adaptation actions defined in this Strategy to address the identified challenges, and the wide variety of public and private actors concerned, require the mobilization of a wide range of diverse financial mechanisms. Some measures identify specific funding mechanisms, such as, for instance, a tourism tax. Some measures may not require additional funding sources, as they only imply governance or institutional reforms or update of processes, plans, or policies. However, they require human resources that may demand financial commitments if they can’t be addressed with existing resources. Some can be achieved by (further) mainstreaming climate change adaptation into existing initiatives and actions. In other cases, the need for significant

new resources is acknowledged. For some measures, EU funds or international funds have been identified, but for others no specific funding mechanisms are identified yet.

The following sections briefly describe some potential funding sources and mechanisms that can be leveraged to finance adaptation action.

5.2.1. European sources of funding for adaptation measures

The EU finances adaptation to climate change in Europe through a wide range of instruments. The Multiannual Financial Framework 2021-2027 ensures that at least 25% of the European budget is climate-related expenditure. Therefore, climate adaptation actions in Cyprus must be integrated into all the major EU spending programmes, and a tracking system put in place to guarantee these objectives are met. In mid-2025, the European Commission is expected to set out proposals for the next long-term EU budget, known as the Multiannual Financial Framework (MFF), covering the seven years 2028-2034. Cyprus can access these funds by aligning national, regional and local policies with EU climate adaptation goals.

EU research funding can also be accessed to support the various knowledge generation actions - research and studies, risk assessments etc. – that are proposed in the measures.

[to be updated with more detail if more information from the EC is available before the January public consultation]

5.2.2. National sources of funding for adaptation

The adaptation efforts in the different sectors imply four types of actions with different financial and budgetary implications:

a) Review and reform of current lines of actions, operations, strategies, policies and plans so they incorporate climate change factor.
b) Improve knowledge and understanding of climate change impacts in the different sectors.
c) Capacity building
d) Investments in transformational measures – public works, nature-based solutions, restoration works, etc.

In all cases, a relevant part of adaptation effort in terms of public spending, must be carried out through the budgets of the different public administrations (national, ministerial departments, District Local Government Organizations (DLGOs), municipalities) own budgets. In many cases, the introduction of new adaptive criteria will necessarily lead to a substantial increase in spending, or a reorganization of its distribution. For the implementation of the NAP, the implementing bodies must therefore assess the economic impact of the actions (i.e., cost/benefits of action implementation) and, if appropriate, to integrate them into their respective budgets.

Some specific initiatives have been identified in this strategy to address the new funding requirements. For instance, the following measures include some specific proposals:

- AGRI 3n: *Encourage the community to adopt sound land management practices and change the use of soil, cultivation methods and varieties,* proposes implementing cost-share programs to support farmers in adopting new practices, offering tax breaks or rebates for implementing soil-building practices or providing access to low-interest loans for purchasing equipment or implementing.
- FOR 1n: *Tourism supports forestry through tourism tax and stakeholder networks to develop sustainable tourist offers* contemplates the use of a new finance stream to fund adaptation action.
- SEA 2n: *Develop adaptation initiatives and promote nature-based solutions for stabilising and enhancing the coastline resilience against climate risks* proposes setting up a fund that finances projects that employ nature-based solutions and ecosystem-based adaptation to help vulnerable communities adapt to the impacts of climate change.
- GOV 6n *Develop national funding streams for climate change adaptation* includes a proposal for developing an annual dedicated budget for adaptation action.

5.2.3. Mobilizing private funding for adaptation action

Mobilizing private finance for climate adaptation is crucial to bridge the significant funding gap. Public authorities, financial institutions, and the private sector must work together to unlock private capital and channel it towards climate-resilient investments. This can be achieved through a variety of mechanisms, including:

- **Public-private partnerships:** Collaborating on projects that require significant investment and expertise from both the public and private sectors.
- **Green bonds and climate finance instruments:** Developing innovative financial instruments to attract private investment in climate-resilient infrastructure and projects. Incorporating climate risks into investment decision-making strengthens the signal to the private sector about the need to build and demonstrate climate preparedness. New financial products such as green bonds, resilience bonds, and climate-focused impact investments can mobilize capital specifically for adaptation projects.
- **Risk transfer mechanisms:** Using insurance and other risk management tools to reduce the financial risks associated with climate change impacts. Precondition is proper and open access for insurance companies and the private sector to reliable climate data and tools to assess risk and make informed decisions on adaptation investments.
- **Blended Finance Models**: Blending public and private funds can de-risk adaptation projects and encourage private participation. For example, public funds can be used as first-loss capital, encouraging private investors to commit by reducing their exposure to risk.
- **Policy and regulatory frameworks:** Creating supportive policy and regulatory environments that encourage private sector investment in climate adaptation. Offer

incentives like tax breaks, grants, or subsidies to reduce the perceived financial risks of adaptation investments.

- **Capacity building and technical assistance:** Providing technical assistance and capacity building to businesses to help them identify and implement climate-resilient strategies.

By leveraging the power of private finance, we can accelerate the implementation of climate adaptation measures and build a more resilient future. Each sector will investigate which options are more suitable.

5.3. Monitoring, evaluation and learning

Monitoring, evaluation, and learning (MEL) should enable a better understanding of whether climate change adaptation actions work, how, and for whom. This is also a building block to assess whether the actions will continue to work in the future or need to be adjusted to new circumstances. The EU Adaptation Strategy recognizes that "Monitoring, reporting and evaluation are essential to setting a robust baseline against which to measure progress on adaptation" (EC, 2021). The aim of the MEL framework presented in this strategy is to:

- Ensure tracking and monitoring of progress of adaptation measures.
- Collect information about the observed impacts of climate variability and change on socio-ecological systems – e.g. number of people displaced or affected due to floods – to help track the climate context within which adaptation strategies are being implemented.
- Develop a reporting system encompassing from the local to the national level
- Identify and define data needs for further work and or for further development of the monitoring system.

Adaptation challenges often require actions taken across different sectors and institutional levels. Several measures of the NAS are implemented at a local level but also contribute to the national strategic goals. Therefore, the national MEL framework also needs to consider information about adaptation initiatives that take place at sub-national levels. As a result, the MEL approach is based on two reporting streams: one on the national level, and one from the local level to the national level.

This approach is shown in

Figure 9 and should be supported by a new IT reporting system developed by MARDE as described in measure GOV 5n: *Develop an IT monitoring and reporting system for climate change adaptation*. It will allow competent authorities at the national, regional and local levels to report on implementation progress following the indicators that have been identified for each measure and can be found in the Impact Assessment factsheets in Annex E.

The IT system will be compatible with REPORTNET 3.0 of the European Environmental Agency (EEA), to also facilitate reporting to the EU level.

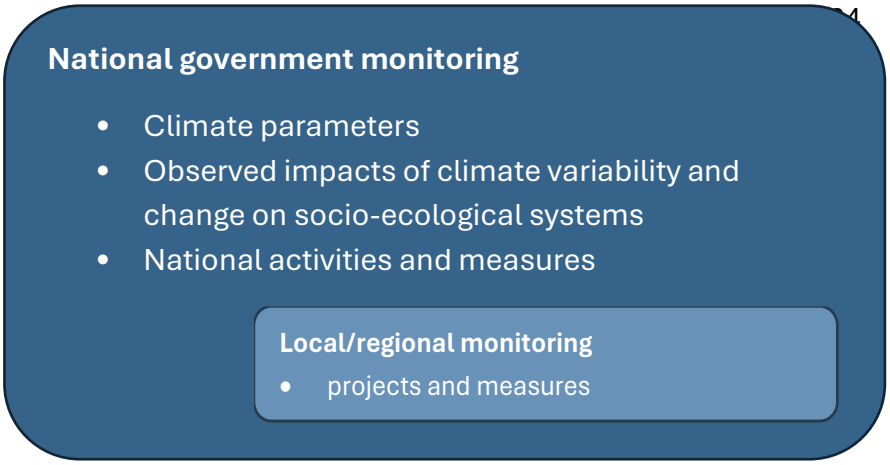

Figure 9: Levels of monitoring and evaluation for measures included in the National Adaptation Strategy and Plan

The DoE will be the monitoring and reporting focal point. It collects the information centrally and will develop the Biannual Progress Reports based on the reported data, which will be shared with the Council of Ministers, the Intergovernmental Working Group on Adaptation to Climate Change, and made publicly available on MARDE's website.

The information should be reported by the responsible authorities/entities according to the reporting pyramid illustrated in Figure 10. Reporting by the scientific community and NGOs is on a voluntary basis.

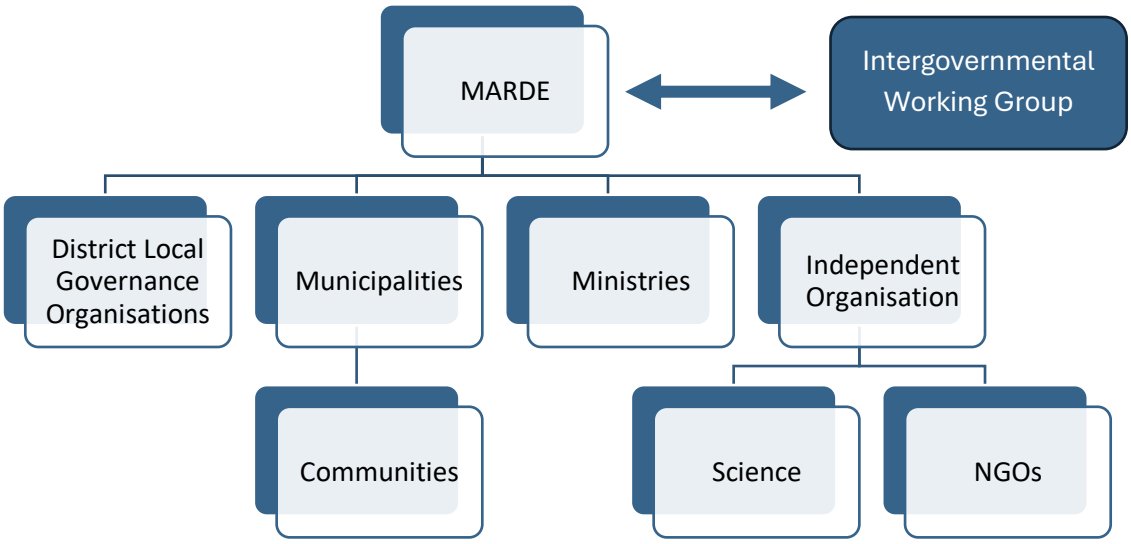

Figure 10: Reporting pyramid for Cyprus

5.3.1. Monitoring and reporting indicators

The list of indicators contains

- Climate parameters
- Climate impacts
- Adaptation measures with physical impacts
- Adaptation measures without physical impacts

The detailed indicators for each individual measure are listed in Annex E: District Local Government Organizations projects and plans that can contribute to the National Adaptation Strategy

Larnaka District Local Government Organization

Ongoing Projects

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77. New water supply network in small communities with significant losses in the existing network (2027-2029)
78. New water reservoirs to extent the ability to supply water in new development areas (2028-2032)
79. Increase the capacity of the wastewater treatment plant from 40.000 to 54.000m^3/day (2029-2032)
80. Installation of sensors for online monitoring of water quality and technical parameter

Annex F: Measures Impact Assessment Fact Sheets. In the selection of indicators, the link to other already existing reporting requirements (e.g. Floods Directive) has been considered.

5.3.2. Reporting frequencies

The information will be reported on an annual basis for all climate parameters and climate impacts.

For all adaptation measures the status (started/ongoing/finalised) will be reported on an annual basis. In addition, for measures with a physical impact quantified figures (e.g. per km2, number of, sum of investments) need to be reported every two years, only.

5.3.3. Making use of the reported information

The information reported will be put together into a biannual Progress Report, which will be discussed at government level and made publicly available. Producing such progress reports on climate change adaptation efforts offers a multitude of benefits for both the public and regional governments.

Public Benefits:

- Transparency and Accountability: Progress reports foster transparency by making adaptation efforts visible to the public. This helps build trust and ensures that governments are held accountable for their commitments to climate.
- Informed Decision-Making: By sharing information about adaptation strategies, progress reports empower individuals and communities to make informed decisions about their own climate resilience. They can understand the risks they face and take steps to protect themselves and their property.
- Increased Engagement: Progress reports can spark public interest and engagement in climate action. They can inspire individuals to take personal actions to reduce their carbon footprint and advocate for stronger climate policies.

Regional Government Benefits:

- Improved Policy and Planning: Progress reports provide valuable feedback on the effectiveness of existing adaptation strategies. This information can be used to refine and improve policies and plans, ensuring they are aligned with the latest science and best practices.
- Resource Allocation: By tracking progress, governments can identify areas where resources are most needed and allocate funds effectively. This helps optimize the impact of adaptation investments.
- Collaboration and Partnerships: Progress reports can facilitate collaboration between different government agencies, NGOs, and the private sector. They can highlight successful initiatives and encourage knowledge sharing, leading to more efficient and effective adaptation efforts.

The results will also be used for staff training and capacity-building actions (see measure GOV 2n).

5.3.4. Revision of the MEL framework

After each Progress Report is published (2 years) the MEL framework will be revised based on changes in the adaptation measures (e.g. new, implemented), new EU reporting requirements and new needs to develop the Cypriote adaptation process further.

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Annex A: List of stakeholders[6]

Stakeholder name	Mandate	Engagement	Adaptation process		
			Design	Implement	Monitor
National Government					
Ministry of Agriculture, Rural Development and Environment (MARDE)	Ministry of Agriculture, Rural Development and Environment (MARDE) is the central body coordinating the adaptation policy-making process. MARDE led the preparation and adoption of the NAS and NAP and should remain equally engaged in the process of their revision. It is also the Administrative Authority of the CAP Strategic Plan 2023-2027[7].	Collaborate	✓	✓	✓
Department of Agriculture (MARDE)	Department of Agriculture designs and implements policies aiming to develop and strengthen the competitiveness of the agricultural sector and revive the countryside, while protecting the environment.	Collaborate	✓	✓	✓
Water Development Department (MARDE)	Water Development Department is responsible for implementing water policy to ensure sustainable use and management of water resources, including collection and interpretation of relevant data, design, construction, operation and maintenance of water infrastructure (e.g., dams, reservoirs, irrigation, supply, treatment), protection of water resources from pollution, and awareness raising on water conservation.	Collaborate	✓	✓	✓
Department of Forestry (MARDE)	Department of Forestry develops policies for conservation, protection, and sustainable forest management. It implements relevant actions and monitors status of forests in relation to protecting forests against forest fires, adaptation of forests to climate change and enhancing the contribution of forests in addressing climate change and improvement of main forests and forested areas, and improvement and expansion of forests.	Collaborate	✓	✓	✓

[6] The analysis presented in this table was conducted in early 2024 and included in (Trinomics et al., 2024) It will be updated submitting this document for public consultation with the information gathered during the identification of measures, and the institutions in section 5.1.2 of this strategy.

[7] https://www.fundingprogrammesportal.gov.cy/en/sub-program/strategic-plan-of-the-common-agricultural-policy-2023-2027/#:~:text=The%20Strategic%20Plan%20aims%20to,to%20support%20farmers%20and%20breeders.

Stakeholder name	Mandate	Engagement	Adaptation process		
			Design	Implement	Monitor
Department of Environment (MARDE)	Department of Environment develops and implements environmental (including nature and biodiversity) and climate policy in Cyprus. It coordinates implementation efforts and ensures compliance with the current EU and national legislative framework.	Collaborate	✓	✓	✓
Department of Public Works (Ministry of Transport, Communications and Work)	Department of Public Works designs or approves designs for the construction and maintenance of road works, including motorways and other primary and secondary roads, and construction works for coastline defence and fishing shelters. Department also designs and constructs flood-prevention projects.	Collaborate	✓	✓	✓
Energy Service (Ministry of Energy, Commerce and Industry)	Energy Service formulates and implements energy sector policy, with the main strategic objectives of rapid transition to green energy and strengthening security of energy supply. To this end, it provides significant incentives for green investments to households, businesses and public bodies. Energy service's strategic goals are the creation of a sustainable and competitive energy market, the exploitation of the national energy savings potential and the promotion of domestic renewable energy sources.	Collaborate	✓	✓	✓
Department of Fisheries and Marine Research (MARDE)	Department of Fisheries and Marine Research implements programs that are aiming at sustainable management and development of fisheries and aquaculture, prevention, control and combat of marine pollution, and maintenance and protection of marine biodiversity and ecosystems.	Engage	✓	✓	✓
Geological Survey Department (MARDE)	Geological Survey Department is responsible for conducting investigations and studies, and providing advice on geological, hydrogeological, geotechnical, geology, geophysical, seismological and geo-environmental issues.	Engage	✓		✓
Directorate on Economic Policy and European Affairs (Ministry of Finance)	Directorate on Economic Policy and European Affairs is responsible for macroeconomic/fiscal policy (incl. systematic monitoring of the developments of the Cypriot economy and analysis of its prospects, recommendations for safeguarding macroeconomic stability) and for the general monitoring of issues related to the European Green Deal and in particular the financing of the implementation of the climate goals set with the Fit-for-55 Legislative Package. The Directorate chairs a working Group on the Green Economy in the administration of the Ministry of Finance.	Engage	✓		

Stakeholder name	Mandate	Engagement	Adaptation process		
			Design	Implement	Monitor
Department of Town Planning and Housing (Ministry of Interior)	Department of Town Planning and Housing regulates the town planning and spatial development of Cyprus, with sustainability as the main axis and human and public interest as the reference point. It prepares development plans and studies working to upgrade and preserve the natural and built environment within the framework of sustainable development and carries out construction and maintenance projects in the government. Settlements with the aim of upgrading the quality of life of the residents	Engage	✓	✓	✓
Agricultural Research Institute (MARDE)	The Agricultural Research Institute (ARI) conducts feasibility and theoretical research aimed at the rational increase of agricultural and livestock production and upgrading of product quality. Research topics include, inter alia: plant protection, soil – water use and environment, rural development and agrobiotechnology.	Consult	✓		✓
Department of Meteorology (MARDE)	Department of Meteorology provides services and information related to weather and climate in all areas of economic and social activity in Cyprus, to serve the public, to ensure public welfare and protection of life and property. This includes: i) general climatology and hydrometeorology, ii) agricultural meteorology, ii) studies and research.	Consult	✓		✓
Veterinary Service (MARDE)	Veterinary Service is responsible both for the control of food of animal origin and for the control of animal diseases. It aims at a) the reduction and eradication of animal diseases that exist in Cyprus, b) the prevention of the entry of other diseases in the country, and c) the protection of public health through the control of all food of animal origin and zoonoses.	Consult	✓		✓
Directorate of Strategy and Reforms (Ministry of Finance)	Directorate of Strategy and Reforms coordinates and monitors the Ministry reforms, supports access to alternative financing, and develops innovative financial tools.	Consult	✓		✓
Medical and Public Health Services (Ministry of Health)	Medical and Public Health Services is responsible for developing and adopting preventive measures in a wide spectrum of the environmental health (e.g., air quality). It implements various programs in cooperation with the local authorities	consult		✓	✓
Deputy Ministry of Tourism	Deputy Ministry of Tourism develops national strategy for tourism, promotes Cyprus as a tourist destination, supports investment in tourism, and implements actions on tourist awareness and education.	Consult	✓	✓	

Stakeholder name	Mandate	Engagement	Adaptation process		
			Design	Implement	Monitor
Industry and Technology Service – Department of Entrepreneurship and Industrial Policy (Ministry of Energy, Commerce and Industry)	Industry and Technology Service implements the New Industrial Policy aiming to restart the Cypriot economy through the promotion and strengthening of industrial production and investments as part of the strategic framework for a sustainable economic development model which is based on the regeneration of existing industrial sectors but also on the development of new sectors and technologies through the promotion of research, technological development and innovation.	Consult	✓		
Department of Labour Inspection (Ministry of Labour and Social Insurance)	Department of Labour Inspection is responsible for the continuous and constant improvement of safety and health levels at the workplaces, the protection of employees, the public and the environment from risks arising from ionising radiation, chemical substances, machinery, equipment and offshore oil and gas extraction activities, as well as air quality monitoring (i.e., Air Quality and Emissions Inventory).	Consult	✓	✓	✓
Civil Defence (Ministry of Interior)	Civil Defence implements measures to deal with natural or man-made disasters, the magnitude of which may cause risks to the lives and well-being of citizens or extensive damage to the environment and natural resources (e.g., actions to prevent, prepare, respond, plan, train or limit the effects of disasters).	Consult		✓	
Department of Antiquities (Deputy Ministry of Culture)	Department of Antiquities is responsible for the management of the archaeological heritage of Cyprus, including the maintenance, restoration, protection and promotion of archaeological sites and cultural heritage monuments.	Consult	✓	✓	✓
Fire Service of Cyprus	Fire Service of Cyprus is responsible for the safety and rescue of life and property of citizens and the state, as well as the natural environment of the country from the dangers of fires, natural disasters and other disasters. It establishes and controls the implementation of fire protection legislation.	Consult		✓	✓
Local Government					

Stakeholder name	Mandate	Engagement	Adaptation process		
			Design	Implement	Monitor
Union of Cyprus Municipalities	Union of Cyprus Municipalities is the main association of Local Authorities in Cyprus (urban and touristic areas). Its core functions are to contribute to the development of local government autonomy, as well as to act as spokesman of local government interests vis-a-vis the central government and other national institutions. As the coordinating body of the Municipalities, the Union participates in public debates and hearings that are organized by various authorities on issues linked to Municipality responsibilities. (construction, maintenance and lighting of streets, the collection, disposal and treatment of waste and environmental protection and improvement).	Engage	✓	✓	✓
Union of Cyprus Communities	Union of Cyprus Communities is the main association of Local Authorities in Cyprus (rural areas). Its core functions are to contribute to the development of local government autonomy, as well as to act as spokesman of local government vis-a-vis the central government and other national institutions. As the coordinating body of the Communities, the Union participates in public debates and hearings that are organized by various authorities on issues linked to communities' Responsibilities.	Engage	✓	✓	✓
Independent organizations[8]					
Water Board Nicosia	Responsible for ensuring uninterrupted supply of water and provision of effective and reliable services to ensure and continuously improve the quality of life	Consult	✓	✓	
Water Board of Limassol	Responsible for ensuring sufficient quantity and quality of water in order to meet the domestic, commercial and industrial needs of its consumers	Consult	✓	✓	
Water Board of Larnaca	Responsible for providing the community with good quality water in sufficient quantities and at reasonable prices, with the construction, maintenance and the conservation in good condition of the necessary water resources	Consult	✓	✓	

[8] The Water Boards have been integrated into five new regional organisations (referred to as DLGOs) that are responsible for water supply and sanitation, wastewater treatment, solid waste management and building permitting. Please note that at the time of developing this list of stakeholders (April 2024), the Water Boards and the Commissioners operated independently, hence their engagement in the adaptation process is noted based on their individual functions, that were relevant until September 2024.

Stakeholder name	Mandate	Engagement	Adaptation process		
			Design	Implement	Monitor
Commissioner for the Environment	Commissioner for the Environment aims to influence legislation and policies, submit views and suggestions for the protection of the natural and man-made cultural environment, cooperate with civil society and develop synergies with social actors to promote sustainable practices, defend environmental justice, citizens' right of access to up-to-date information and effective participation in decision-making concerning the environment and quality of life.	Consult	✓		✓
Commissioner for the Development of Mountain Communities	Commissioner for the Development of Mountain Communities aims to advance three main pillars of policy for mountain communities - road network, health and education.	Consult	✓		✓
Business					
Cyprus Employers & Industrialists Federation (OEB)	OEB is a Pancyprian independent organisation with members extending to all sectors of economic activity (i.e., industry, services, construction, commerce, environment, energy, tourism, education, health and agriculture) working to promote the development of entrepreneurship and prosperity of the country and maintain the balance of forces between business world and labour and other organizations who act as pressure groups. OEB is represented in Rural Development Plan Monitoring Committee, Water Management Advisory Committee, Advisory Committee on Green Public and Private Procurement.	Consult	✓		
Cyprus Chamber of Commerce and Industry	The basic objective of the CCCI is to safeguard and steadily develop the Cyprus Economy in order to continuously improve the standard of living and prosperity of all the people of Cyprus. It acts as a facilitator of entrepreneurship, productivity, technology, innovation, environmental issues and contributes towards enhancing competitiveness of the domestic manufacturing industry.	Consult	✓		
NGOs					
Cyprus Energy Agency	Cyprus Energy Agency (CEA) aims to enhance the role of local authorities in sustainable energy planning, providing technical support for developing and implementing actions to mitigate and adapt to climate change; supports the Covenant of Mayors for Climate & Energy initiative; designs and implements projects to reduce the effects of climate change and create resilient communities through adaptation measures. Since 2022, CEA coordinates and supports four investments approved for funding under the National Recovery	Consult	✓	✓	

Stakeholder name	Mandate	Engagement	Adaptation process		
			Design	Implement	Monitor
	and Resilience Plan of Cyprus, including to promote energy transition and climate adaptation in local authorities.				
Cyprus Forest Association	The mission of the Cyprus Forestry Association is to contribute to the protection and expansion of greenery, especially forest greenery in cities and countryside. Through the collection and dissemination of knowledge and information in relation to forests, arboriculture and nature in general, we promote love and respect for the forest and nature and greenery in general.	Consult	✓		
Federation of Environmental Organizations of Cyprus	The Federation coordinates and supports the actions of its 20 members. As an officially recognised body (representing no political affiliation) it participates in committees, councils and it also cooperates with other organised institutions related to the environmental field in Cyprus and abroad. The topics of interest include public awareness and environmental education, environmental policy, forest and biodiversity, agricultural and rural development, climate change, energy and transportation, water management, management of natural resources, cultural heritage.	Consult	✓		
BirdLife Cyprus	Through science, advocacy, education and on the ground conservation work, the NGO works to protect wild birds, their habitats and wider biodiversity in Cyprus through, inter alia, influencing decision-makers and to pressuring for positive change. The organisation advocates for ecosystem-based approach to climate change planning.	Consult	✓		
Terra Cypria	The main goal is to promote environmental awareness and the concept of sustainability in Cypriot society through educational programs, policy making and awareness-raising activities. The Cyprus Environmental Studies Centre (CESC), founded in 1995 to supply practical environmental education, is the Educational and Research branch of Terra Cypria.	Consult	✓		

Stakeholder name	Mandate	Engagement	Adaptation process		
			Design	Implement	Monitor
Cyprus Water Association	The Cyprus Water Association aims to address the challenges of Cyprus' water issues, to support research and development in this field and to promote and apply best practices, techniques and modern methods in the field of water and wastewater. The Cyprus Water Association, through public, private, research and academic cooperation, aims to act as a think tank for the development of innovative ideas, modern methods and best practices for the sustainable development of water and wastewater, taking into account the protection of the environment and sustainability.	Consult	✓		
Panagrotikos Farmers Union of Cyprus	Main objectives are the development of the rural economy, the improvement of working conditions and living standards of the rural world, the social and technological rise of the agricultural and livestock sector and the protection of the environment.	Consult	✓		
Enalia Physis - Environmental Research Centre	Enalia Physis' purpose is to conduct and promote environmental research in marine and terrestrial ecosystems and to encourage and enhance education and ecological awareness of the general public. The members of Enalia Physis are experts in biological and environmental research and management, covering a wide range of fields such as conservation of terrestrial and marine ecosystems, marine and freshwater biology, fisheries, ecology and environmental education.	Consult	✓		
Research					
Cyprus Institute - Climate and Atmosphere Research Center (CARE-C)	CARE-C uses environmental observations for a better prediction of the impacts of climate change. This research is used to support the monitoring of, and provide feedback on, national mitigation and adaption policies for climate change, as well as support the development of innovative solutions towards sustainability and green economy transition. The Center's research activities are focused in areas of Environmental Observations and Environmental Predictions, including experimental and modelling activities on key climate drivers such as reactive trace gases, aerosols, clouds, greenhouse gases, and addressing impacts on regional air pollution and climate.	Engage	✓		✓

Stakeholder name	Mandate	Engagement	Adaptation process		
			Design	Implement	Monitor
Cyprus Institute - Energy, Environment and Water Research Center (EEWRC)	EEWRC works on novel monitoring techniques and numerical models of hydrologic and ecosystems' processes; and the development and environmental and economic assessment of sustainable water and land management innovations for climate change adaptation and combatting desertification, considering the Water-Energy-Food Ecosystems (WEFE) Nexus. The Department has established the Cyprus hydro-ecological observatories for monitoring and analysing the effect of a changing and variable climate on hydrologic and ecosystems processes in marginal, semi-arid Mediterranean agro-ecosystems. The Department cooperates with various departments of the Ministry of Agriculture, Rural Development and Environment in Cyprus on resource management and policy issues and serves as an independent reviewer for validating the adequacy and accuracy of the financial calculations of the measures of the Rural Development Program.	Consult	✓		
Cyprus Institute - Science and Technology in Archaeology and Culture Research Center (STARC)	STARC is committed to cross-disciplinary approaches in the study and protection of artistic and architectural heritage in Cyprus and the Eastern Mediterranean. The inter-disciplinary exploration of art and architecture leads to new knowledge that contributes to their preservation for future generations. Of primary significance is the collaboration with the Department of Antiquities for the preparation of Management Plans for the World Heritage Sites in Cyprus.	Consult	✓		
Cyprus Institute - Science and Technology Driven Policy and Innovation Research Center	STeDI-RC is a cross-disciplinary endeavour to engage in policy research and innovation addressing sustainability challenges. It uses scientific knowledge created in Institute's four thematic Research Centers and its Innovation Department, to offer support for public policies. Examples of recent areas of work are the development of policy recommendations in the frame of the EMME Climate Change Initiative; the scientific support to the Cypriot government for the implementation of the European Green Deal; the integration of Sustainable Development Goals in economic policies; and the support to the city of Limassol in the framework of the EU mission for "100 Climate Neutral and Smart Cities''.	Consult	✓		

Stakeholder name	Mandate	Engagement	Adaptation process		
			Design	Implement	Monitor
University of Cyprus - Research and Innovation Center of Excellence (KIOS)	The KIOS CoE is the largest research and innovation centre in Cyprus on Information and Communication Technologies (ICT) with an emphasis on monitoring, control, management and security of critical infrastructures such as electric power systems, water distribution networks, telecommunication networks, transportation systems, healthcare systems as well as emergency management and response systems. The goal of the Center is to conduct outstanding interdisciplinary research and innovation and produce new knowledge and tools that can be applied to solve real-life problems.	Consult	✓		
University of Cyprus - NIREAS International Water Research Center	Nireas-IWRC's research delivers visionary concepts and techniques, and strategic integrated approaches addressing water-related applications that are cost-effective, easy to set up and to operate. The activities of the Center aim at dependable, flexible and user-centric shared solutions for sustainable use of water resources and for better management of ecosystems including the mitigation of environmental degradation and associated threats.	Consult	✓		
CERIDES – Excellence in Innovation and Technology (European University Cyprus)	Focus is on development, use, and evaluation of quantitative and qualitative methods to measure, assess, manage, and communicate risk, and to analyse, design, and implement decision-making mechanisms and systems. Among key research areas are climate change, civil protection, critical infrastructure protection and disaster resilience.	Consult	✓		

Annex B: Assessment of NAP measures

Measure	Effectiveness	Comprehensiveness	Mitigation co-benefits
Water			
Maintenance and repair of water transport systems/networks and related infrastructure	Works are still in progress, but the costs envisaged are very low reflecting to real costs. Urgent need for funding.	The measure is comprehensive but is implemented in a fragmentary way due to lack of funding.	Yes
Control and avoidance of intensive water demands in all areas with insufficient water resources (e.g., golf courses, tourist facilities, water-intensive crops)	The way this measure gets effective is through the establishment of relevant terms in the environmental permitting (included in the Planning Permits) of big developments. Redefining the licensing criteria of water-intensive developments and examining adaptation scenarios has not yet been implemented, therefore effectiveness cannot be fully assessed. However, environmental permitting process, emphasizes adequately on this aspect.	The measure is comprehensive but will be fully implemented in a mid-term to long-term period.	No
Enhancing the efficient use of water in buildings, industry and agriculture	The issuance of a relevant Guidance document, as provided in the RBMP was not completed. The current RBMP includes actions only for awareness. The way this measure gets effective, is through the inclusion of relevant environmental permit conditions for big developments such as buildings and industry, and the enforcement of effective water use in new buildings.	The measure is comprehensive but will be fully implemented in a mid-term to long-term period.	Yes
Reuse of treated urban wastewater after strict control of its suitability	Works towards establishing supply networks for the reuse of treated wastewater are either being implemented or being designed or planned to be implemented in a short-term to mid-term period. Demand for recycled water has been increased.	The measure is comprehensive but is implemented in a fragmentary way due to lack of funding.	No
Periodic reviews of progress and priorities, and corresponding adaptation of objectives, instruments and resources taking into account climate change	Already into implementation through the revisions of the RBMPs under the WFD.	The measure is comprehensive but at an initial stage of implementation.	No

Measure	Effectiveness	Comprehensiveness	Mitigation co-benefits
Expanding the use of water supply meters	The measure is already implemented through RBMPs actions and Water Boards initiatives.	The way that this measure will be expanded, needs clarifications.	No
Implementation and regular reviews of the Drought Management Plan (DMP)	The measure has an administrative form of implementation. The DMP is systematically being revised. According to the 2016 version of the DMP, the indices set were evaluated as effective and sufficient.	The measure is comprehensive. The procedure of updating the DMP is adequately documented.	No
Promotion of residential rainwater collection grant scheme	The measure was added to the NAP in Oct. 2022, and is planned to be implemented in a mid-term period, therefore assessment of effectiveness is not yet possible.	The Grant Scheme terms must be made available in order to assess its comprehensiveness.	No
Creation of a single data platform for analysing and evaluating synergies between water, energy	The measure was added to the NAP in Oct. 2022. Pilot implementation of the measure by Nicosia Water Board, shows effectiveness in the data assessment. Larnaca Water Board is still planning such a platform.	The measure is comprehensive but is implemented at different time stages due to Water Boards' planning.	No
Creating a platform for use by water consumers	The measure was added to the NAP in Oct. 2022, and is planned to be implemented in a mid-term to long-term period, therefore assessment of effectiveness is not yet possible.	The measure is comprehensive but is implemented at different time stages due to Water Boards' planning.	No
National Investment Plan for Water Works	The measure was added to the NAP in 2024 and is planned to be implemented in a mid-term to long-term period, therefore assessment of effectiveness is not yet possible.	Adoption of the National Water Investment Plan is expected to bring the following benefits: (a) Establishment of a long-term government policy in the water sector; (b) Prioritization of projects in order of priority; (c) Provision of a useful tool for the Water Resources Management Sector Reform which was set as a milestone in the National Recovery and Resilience Plan.	Yes
Soil			
Development and implementation of a Plan of Measures to Combat Desertification in Cyprus	The previous Strategy and Action Plan for Desertification Combat, is under revision.	Due to the fact that the existing version of the Strategy and Plan was issued in 2008, in order for it to be comprehensive it needs to be updated.	No

Measure	Effectiveness	Comprehensiveness	Mitigation co-benefits
Continuation and increase of interventions through the implementation of the CAP Strategic Plan 2023-2027	According to available data and reporting on the implementation of Rural Development Plan (RDP), there was high participation and full absorption of funds for the agri-environmental measures. The first report on the Assessment of the CAP Strategic Plan implementation will be issued in February 2025 and will cover years 2023 and 2024.	The measure is considered comprehensive.	No
Control of illegal and free grazing by reintroducing the field guard, modernizing the Goat Law and extending it to all areas of Cyprus	The Goat Law has not yet been updated and the field guard has not been reintroduced. Control in the areas of State Forests is done through the Forest Law, while in Akamas area a Grazing Capacity study was performed.	The actions must be put in place, as the only area where this is applicable is the State Forests' area.	No
Implementation of a study for the sustainable use of good agricultural land	Such a Study has not yet been implemented, although priority given to this measure was high. A re-assessment of erosion is deemed necessary to facilitate this Plan, along with soil fertility.	There is need for a new round between the relevant stakeholders in order that this measure will get to a form that it will be comprehensive.	No
Promote the practice of incorporating compost to reduce desertification and degradation of agricultural soils	A relevant LIFE Project (AgrOassis) is ongoing regarding this as a pilot implementation. Effectiveness could be assessed through the results of relevant monitoring.	Relevant policy must be developed in order for the measure to be comprehensive, and able to be replicated in other areas too.	Yes
Promote the practice of installing plant barriers to reduce soil erosion	A relevant LIFE Project (AgrOassis) is ongoing regarding this as a pilot implementation. Effectiveness could be assessed through the results of relevant monitoring.	Relevant policy must be developed in order for the measure to be comprehensive, and able to be replicated in other areas too.	Yes
Promote the practice of no-till or reduced tillage of soils to reduce organic matter loss, and reduce erosion	The measure was added to the NAP in 2024, and is planned to be implemented in a mid-term period, therefore assessment of effectiveness is not yet possible	Relevant policy must be developed in order for the measure to be comprehensive, and applicable.	Yes
Coastal areas			
Elaboration of a study to identify coastal areas vulnerable to climate change	The study has not yet been implemented.	The study will cover the whole island. For the study to be comprehensive, the Specifications for the Study must be agreed between all relevant authorities.	No

Measure	Effectiveness	Comprehensiveness	Mitigation co-benefits
Research on sea level rise and factoring into existing and new coastal infrastructure	The research has not yet been implemented.	The study will cover the whole island. For the study to be comprehensive, the Specifications for the Study must be agreed between all relevant authorities.	No
Development and implementation of a Strategic Framework for the Integrated Management of Coastal Zones. Creation and implementation of a framework for Maritime Spatial Planning	A special committee has been assigned by the Council of Ministers in order to structure the governance framework for the Integrated Management of Coastal Zones and the Maritime Spatial Planning. Maritime Spatial Planning has recently been granted the Environmental Authority's approval and is pending finalisation through the Council of Ministers.	Both the implementation of a Strategic Framework for the Integrated Management of Coastal Zones and the Maritime Spatial Planning are comprehensive and cover the whole island. However, since implementation has not yet started, comprehensiveness is still subject to the results.	No
Actions to protect and improve coastal zones from coastal erosion, including the construction of protective dams as well as measures to mitigate the effects of dams on coastal ecosystems (e.g., actions to transport sediments from the dams to the beach, actions to protect river ecosystems, etc.).	No actions have yet been implemented. These actions were set with low priority and with long-term planning of implementation. Moreover, funding source for these actions has not yet been identified.	The comprehensiveness cannot be assessed due to the immaturity of the actions' designation,	No
Biodiversity			
Protection, conservation and proper management of the important natural wetlands of Cyprus	Relevant studies were implemented through LIFE IP PHYSIS project for Larnaca Salt Lake and Paralimni Lake. For Oroklini this has already been implemented through the LIFE10 NAT/CY/716.	The areas cover the natural wetlands that face drought impacts.	No
Creation of a database on the biodiversity (ecosystem types, habitats, population data, population distribution, genetic diversity) of species living in Cyprus with an emphasis on endemic, rare and vulnerable species and species habitats.	The Cyprus Forest Association (NGO) has coordinated the development of the Red Data Book for the Flora of Cyprus. Relevant actions for Fauna, and mapping habitat types and species of Annexes I and II of Directive 92/43/EEC, are foreseen in the LIFE IP PHYSIS project.	The combination of the outcomes through the aforementioned projects are expected to result in a comprehensive database on biodiversity.	No

Measure	Effectiveness	Comprehensiveness	Mitigation co-benefits
Action plans to protect species and their habitats threatened by climate change	The Action Plans for species and habitats of Community interest are being implemented within the LIFE IP PHYSIS project (Action A4).	Results are expected to be comprehensive.	No
Promotion of research on issues related to biodiversity and climate change	The DoF has already completed the recording of the Woody Forest vegetation. Further actions must be implemented in regards with other species. This data set may then be utilised for statistical trend analysis and relevant research.	The combination of the outcomes through the aforementioned projects will be a good source of information for further assessment of the effects of climate change to biodiversity.	No
Analysis of the vulnerability of ecosystems (structure and functions) and their services, with an emphasis on protected areas and the Natura 2000 Network, in the light of climate change	In terms of ecological coherence and connectivity it is noted that the larger areas of state forests (Paphos Forest, Troodos and Adelphi) are connected, and the ecological routes are not interrupted. Ecosystems Services Assessment in selected Natura 2000 sites is foreseen in the LIFE IP PHYSIS project.	Results are expected to be comprehensive.	No
Addressing the risk of invasive alien species	The DoF has prepared a Guide (2013) for the control of invasive trees in the natural ecosystems of Cyprus. Action Plans for the management of invasive alien species are also included in LIFE IP PHYSIS project. Actions against the invasion of the lionfish in the Mediterranean were implemented through the RELIONMED LIFE project. The DFMR applies programs for the elimination of specific species, runs programs for data collection with regards to invasive alien species caught by fishermen. The DoE has prepared a Guidance Document for invasive alien species.	Results are expected to be comprehensive.	No
Agriculture			
Incentivize farmers to use recycled water to irrigate selected crops	The measure is being efficiently implemented.	Applicable in selected areas of Cyprus. Mountainous areas face a problem with treated wastewater reuse due to easier access to freshwater.	No

Measure	Effectiveness	Comprehensiveness	Mitigation co-benefits
Identifying and promoting the use of indigenous and other genetic material (plant and animal) adapted to the soil-climatic conditions that will be brought about by climate change	Some parts of this measure are partly implemented through practices of the relevant authorities. However, research activities have not yet been put fully in place. The priority set for this measure was medium/high, and its implementation time as immediate.	The actions must be put in place in order for this measure to proceed. In order for it to be comprehensive, effective organisation among relevant stakeholders must take place. Moreover, costing is deemed necessary to be re-examined.	No
Improving efficiency in the use of water for irrigation by implementing rational irrigation planning	Some steps are being taking place for its implementation. An online tool with water needs per crop per area has been developed. Grant schemes exist for the improvement of agricultural holdings, animal husbandry waste management, and other infrastructure. Farmers awareness raising and informative seminars are continuously taking place towards this target.	The combination of the actions proposed for this measure make it comprehensive.	No
Improving irrigation water use efficiency by adopting more advanced irrigation systems and maintaining existing irrigation systems	The actions towards the implementation of this measure are being planned through the RBMPs. Effectiveness is subject to later assessment when its implementation will be more mature. In general, efficiency is deemed as high.	The results are expected to be comprehensive.	No
Promoting research to study the effects of climate change on agriculture and livestock	A specific LIFE project, ADAPT2CLIMA, took place towards this measure.	The research is comprehensive for specific crops. Potentially, according to the needs, this research may be further expanded to other crops as well.	No
Development/improvement of early warning systems of extreme weather phenomena	Warning system exists; however, information sharing is through the media (TV-news) and email to relevant authorities. Farmers may not receive relevant warnings on time. An application may increase the effectiveness of this measure.	More actions towards comprehensiveness must take place, i.e., way information sharing.	No
Advice and training on crop adaptation to climate change	Informative seminars of various subjects are continuously taking place. However, this type of information sharing regarding agriculture-adaptation could take place ideally targeted only on this subject, and also focus on awareness – raising regarding climate change impacts.	More actions towards comprehensiveness must take place, i.e., way of information sharing.	No
Forests			

Measure	Effectiveness	Comprehensiveness	Mitigation co-benefits
Development and implementation of a Strategic Plan for the adaptation of the forests of Cyprus to climate change	High effectiveness as relevant actions are included in the Strategic Planning of the DoF and are already implemented: Forest adaptation measures (e.g., thinning of forests, reforestation, monitoring), Implementation of protocols for plant nurseries, Giveaway of free trees for planting (in 2019 60.000 trees were given to organized groups), Extension of program to also cover households.	The measure is comprehensive as it covers all the forests of Cyprus and all relevant activities (e.g., research and, monitoring of forest status, forestry, reforestation, logging etc).	No
Coping with increased forest fire risk	Cyprus has significantly improved the infrastructure and mechanisms for the early detection and extinguishing forest fires. Priority should be given to the implementation of the measures included in the Vegetation Management Study for Fire Protection, prepared by the DoF. The implementation of the measures included in the Study will be carried out: (a) within state forests by the DoF and (b) for areas outside state forests by the relevant DA in cooperation with the Local Authorities while the DoF can provide technical advice.	The measure is comprehensive as it deals with fire risk mitigation, protection of important forest habitats, early warning and effective repression of forest fires and management of burned areas.	No
Installation of a pest population monitoring system with the ultimate goal of early detection of a potential epidemic/ Pest population monitoring	The measure is effectively implemented. The DoA prepares annual reports for specific noxious organisms. Action plans for dealing with *Ips sexdentatus* and *Bursaphelenchus xylophilus* have been implemented.	The measure is comprehensive as it covers noxious organisms that are included in Regulation 2016/2031/EE.	No
Research, data collection and systematic monitoring of the effects of biotic and abiotic factors related to climate change in forests/ selection and use of suitable forest species with high resistance to adverse climatic conditions (e.g., drought)	Already in implementation. The last study about drying out was implemented in 2007 and has to be updated.	The results are expected to be comprehensive.	No
Fisheries			

Measure	Effectiveness	Comprehensiveness	Mitigation co-benefits
Protection of breeding habitats	Some parts are effectively implemented, i.e., habitat mapping, assignment of closed areas and establishment of artificial reefs.	Including the parts pending to be implemented, results are expected to be comprehensive.	No
Public Health			
Providing instructions for personal heat protection through the media	Already in effective implementation.	The results are expected to be comprehensive.	No
Preparation of an Action Plan to define the roles of the various Health Services and social care services	Already in effective implementation. Different action plans for infectious and non-infectious diseases have been prepared. Regarding dust episodes, DLI publishes relevant announcements which are spread to all relevant services and organisations.	The results are expected to be comprehensive.	No
Empowering and preparing medical/nursing and utility staff to deal with climate change emergencies	Already in implementation. To be fully effective, the measure must be updated every few years.	For the results to be more comprehensive, the Ministry of Health must collaborate with the academic community to further investigate the impact of climate change on human health and the necessary mitigation measures.	No
Development of an intervention plan (contingency plan) in the health and social care systems as well as in the municipalities to serve an increased number of patients/incidents related to climate change	Already in implementation. To be fully effective, the measure must be updated every few years.	For the expected results to be comprehensive, a number of different stakeholders must collaborate effectively.	No
Development and implementation of an information system for diseases linked to climate change.	Partly already in implementation.	The results are expected to be comprehensive.	No
Recommendation to avoid the thermal stress of the workers during the summer period when special conditions are created with the increase in temperature and relative humidity that can lead to heat conditions.	Already in implementation. To be fully effective, an extensive auditing must be carried out by the competent authorities in outdoors workplaces.	For the expected results to be comprehensive, the competent authorities must check the implementation of the measures in workplaces.	No

Measure	Effectiveness	Comprehensiveness	Mitigation co-benefits
Development and strengthening of heat wave early warning systems	Already in effective implementation.	The results are deemed comprehensive.	No
Operation of community centres in each municipality/community (e.g., town halls, schools, Open Elderly Protection Centres, etc.) to provide protection (air conditioning, shade, fluids) to the population at risk	Already in effective implementation by the majority of big municipalities.	For the results to be comprehensive, the measure must be also applied in smaller communities.	No
Energy			
Increase in production and use of energy from RES	Measures implemented: Support schemes for net-metering, virtual net-metering, net-billing, virtual net-billing and autonomous systems, Two schemes for promoting RES projects, Schemes for promoting the use of solar water heaters, the replacement of energy-intensive appliances, PV panels for electric car charges in houses. A Strategic Environmental Impact Assessment has been implemented for the siting of new RES projects, while the TPHD is preparing a new order and the amendment of existing of Local Development Plans to specify suitable areas for RES projects, Significant steps for the inclusion of RES projects in the competitive electricity market.	The measure is comprehensive and of high priority but will be fully implemented in a mid-term to long-term period (until 2050). Also, it is related with the energy isolation of Cyprus and the limited, so far, use of energy storage systems.	Yes
Good maintenance and possible upgrade of electricity transmission lines. Promoting smart networks with the aim of minimizing losses in the transport system.	The measure is not under implementation yet. By the next decade, new infrastructures must be constructed, and the existing ones must be updated to be able to receive energy from RES projects.	The expected results to be comprehensive with the full implementation of the measure.	No
Grant Schemes to encourage the use of Renewable Energy Sources and Energy Saving	The measure is under effective implementation, and the number of applications for the funding schemes in 2022-2023 was: Thermal isolation of existing buildings: 685, Thermal isolation and use of PV panels: 348, Use of PV panels in existing building: 18308, Use of PV panels in building of energy vulnerable citizens: 2179, Installation/ replacement of solar water heaters in houses: 2341.	The measure is comprehensive as it covers the use of RES, solar water heaters, electric car charges and energy saving systems in houses, funding Scheme for the replacement of energy consuming appliances in houses and the energy efficiency upgrade of building.	Yes

Measure	Effectiveness	Comprehensiveness	Mitigation co-benefits
Use of natural gas in energy production to increase the efficiency of production units and reduce environmental pollution.	The LNG Import Terminal is under construction. Planned due date for the construction was in 2023, but after severe delays during the construction, it is not expected to finish before 2025.	The measure is comprehensive but will be fully implemented in a mid-term to long-term period.	Yes
Establishment and implementation of minimum energy efficiency requirements in new and renovated buildings	In implementation. Since 1st of July 2020, all new building must be Nealy Zero Energy Buildings	The measure is comprehensive as it covers all new buildings and existing buildings after renovation.	Yes
Projects of Common Interest - (a) natural gas pipeline EastMed Pipeline (b) electrical interconnection Great Sea (former EuroAsia) Interconnector (c) development of gas infrastructure in Cyprus "Cyprus Gas2EU"	The initial launch day for the three projects is: Great Sea (former EuroAsia) Interconnector: 2029, EastMed Pipeline: 2028, CyprusGas2EU: 2023 (not achieved)	The measure is comprehensive but will be fully implemented in a mid-term to long-term period.	Yes
Operation of the Competitive Electricity Market in Cyprus	The Competitive Electricity Market is expected to become operational in 2025.	The results are expected to be comprehensive.	No
Application of Transitional Regulation of the Electricity Market in Cyprus	Transitional Regulation of the Electricity Market in Cyprus is in operation since 2021.	The results are expected to be comprehensive.	No
Regime of imposing an energy efficiency obligation on the Obligated Parties	A relevant National Decree been in force since 2023, where obligations have been imposed on seven (7) Obligated Parties, of which one electricity distribution company and six (6) motor fuel distribution companies. The relevant annual decrees, for the moment include measures for buildings and transportation.	The results are expected to be comprehensive.	Yes
Grant Scheme for the Promotion of Energy Efficiency Investments by SMEs and Non-Profit Organisations	The last application period closed by the end of 2023. Effectiveness is pending on the results of the scheme.	The results are expected to be comprehensive.	Yes
Promotion of Energy Upgrading and Use of Renewable Energy Sources in Houses - "Save - Upgrade in Houses" Funding Scheme	The last application period closed by the end of 2023. From 1 June 2022 to date, a total of 4092 applications with a total requested amount of €74.7 million have been submitted under the Thalia 2021-2027 programme. Of	The results are comprehensive.	Yes

Measure	Effectiveness	Comprehensiveness	Mitigation co-benefits
	these, upgrades have already been completed in 769 homes and received a total grant amount of €11.21 million. It should be noted that a similar scheme has been implemented in the 2014-2020 programming period, under which €17.38 million were granted to 1778 applicants.		
European Regional Cooperation Programme INTERREG V-A Greece - Cyprus 2014-2020	According to the Long-term Strategy for Building Renovation of the Energy Service (2020) the expected annual primary energy saving based on the Energy Performance Certificate of the four buildings would total around 3.000.000 kWh.	In order for the measure to be comprehensive, financing should be ensured in order to be applicable in more existing public services/ municipal buildings.	Yes
Implementation of soft measures (information campaigns, training, workshops, etc.)	Due to the pandemic in 2021, most of the actions were not implemented. Full implementation of the measure is planned to be completed by 2030, therefore assessment of effectiveness is not yet possible	The results are expected to be comprehensive.	Yes
Energy efficient road lighting	The replacement of the lamps in all communities has been completed in 2022. By the end of 2022, funding was approved and granted to 11 municipalities. The funding tool remains open for use by municipalities.	The results are expected to be comprehensive.	Yes
Controlling the quality of petroleum products and fuels and reducing the sulphur content of certain liquid fuels to protect the environment, protect the air from emissions of harmful pollutants generated by the combustion of petroleum products	The measure is considered to be effectively in place, since the controls' results show that the qualitative limits are met in the majority of samples analysed.	The results are comprehensive.	Yes
Tourism			
Investments in infrastructure/technologies to deal with increased temperatures	No specific measures have been implemented yet for hotels. Only the requirement for Nearly Zero Energy Building as described in previous chapter.	No specific actions have been set.	Yes
Infrastructure			

Measure	Effectiveness	Comprehensiveness	Mitigation co-benefits
Development of flood relief projects in cities (e.g. green spaces, artificial lakes)	The actions that are included in the RBMPs and are implemented: Promotion of measures for surface runoff from private areas. A scheme for regulating soil sealing in new developments is under preparation from the TPHD. Promotion of measures for better surface runoff management in public areas.	The measure is comprehensive as it covers all flood vulnerable areas.	No
Effective rainwater management in existing and new buildings	The action is included in the RBMP and is under implementation.	The measure is comprehensive as it covers vulnerable areas.	No
Revision of building regulations to ban building in floodplains and coastal zones	The areas with possible flood risk have been identified and assessed (low, medium, high risk). Measures regarding flood risk (ban or restrictions on new buildings) are included in the RBMP and are implemented. In the Coastal Protection Zone, new buildings are not allowed to be constructed.	The Protocol for the Integrated Coastal Zone Management has not been adopted by Cyprus but is implemented as is a European Direction. Also, the funding for the implementation of the ICZM Action Plan has not been specified. As for the existing Coastal Protection Zone, it is smaller than 100m (as specified in ICZM) and its width is not uniform in all coastal areas of Cyprus.	No
Improving the design and construction materials of buildings and transport infrastructure	The implementation has not started yet.	For the results to be comprehensive., specific actions and stakeholders' responsibilities must be determined.	No
Informing insurance companies to integrate climate change risks into insurance premiums to incentivize increased prevention measures	The implementation has not started yet.	For the results to be comprehensive., specific actions and stakeholders' responsibilities must be determined.	No
Create and maintain urban parks and other green practices to reduce the urban heat island effect	The relevant study has not been implemented. Similar actions are proposed in previous measures.	For the results to be comprehensive, a study must be implemented to identify necessary mitigation actions.	Yes
Grant Scheme for adaptation to climate change	The Grant Scheme has been announced in 27/7/2023 with a budget of €2,9m and all communities are eligible to participate	The measure is comprehensive as its eligible for all communities.	Yes
Additional – transport			

Measure	Effectiveness	Comprehensiveness	Mitigation co-benefits
Shifting Vehicular Traffic to Sustainable Means of Transport – Actions of Urban Mobility Plans	Urban Mobility Plans are obligations rising from other legislation. For the time being, Integrated Mobility Plans have been prepared for Limassol, Larnaka while for Nicosia the SUMP is under review, for the non-occupied area of Famagusta the Plan is prepared but is currently under environmental impact assessment. The relevant Plan for Pafos is currently being prepared.	The measure is considered comprehensive with regards to the target areas.	Yes
Extensive Tree Planting	This is implemented in parallel with the construction of new road infrastructure but is also programmed mainly through local authorities' actions.	The measure is considered comprehensive.	Yes
Use of buses with minimal or zero pollutants	There are already 50 electric buses in the public transport fleet and there are expected more until 2030.	The measure is comprehensive but will be fully implemented in a long-term period.	Yes
Increasing the Use of Electric and Other Non-Polluting Cars	Two Grant Schemes have been implemented so far, with total budget of €53m concerning the purchase of electric cars (including taxis, busses, motorbikes and bikes).	The results to expected to be comprehensive.	Yes
Increasing efficiency in the field of logistics of freight transport	Not specific actions have been implemented so far.	The measure is comprehensive but will be fully implemented in a long-term period.	Yes
Promotion of Micromobility (cycling as a means of transport, electric bicycle, e-scooters, scooters etc.)	Legislation has been in place but needs update. Relevant Action Plan and grant schemes for the promotion of bicycle use has been in place since 2021 and has been effective since more than 8000 applications have been submitted.	The results are expected to be comprehensive.	Yes

Annex C: Sectoral key risks

This section includes key risks for each sector, including the assessment of current and future risk as well temporal dynamics and spatial variability.

Table 37. Key risk assessment for the agriculture sector

Key Risk	Current Risk Assessment	Near Future (2041-2070)		Distant Future (2071-2100)		Temporal Dynamics	Spatial Variability
		Optimistic	Pessimistic	Optimistic	Pessimistic		
Risk of loss of agricultural land and the associated loss of cultural identity	low	low	medium	medium	high	slow onset	regional
Risk of loss of livelihoods and income from agriculture due to increases in costs	medium	medium	high	medium	high	slow onset	regional
Risk of loss of agricultural practices and rural culture	low	low	medium	medium	medium	slow onset	regional
Risk of failure of water management systems in agriculture	high	very high	very high	very high	very high	acute	local

Table 38: Key risk assessment for the biodiversity and ecosystems sector

Key Risk	Current Risk Assessment	Near Future (2041-2070)		Distant Future (2071-2100)		Temporal Dynamics	Spatial Variability
		Optimistic	Pessimistic	Optimistic	Pessimistic		
Risk of loss of biodiversity and ecosystems due to wildfires	high	high	very high	very high	very high	acute	regional, local
Risk for ecosystems to lose their capacity to provide ecosystem services	medium	medium	high	high	very high	slow onset	regional
Risk from biological invasion	medium	medium	high	medium	high	slow onset	regional, local
Risk of loss of biodiversity and rare and/or endemic species	high	high	very high	very high	very high	slow onset	national
Risk of loss of ecosystems due to a decrease in water quality and quantity	high	high	very high	very high	very high	slow onset, acute	local

Table 39: Key risk assessment for the cultural heritage sector

Key Risk	Current Risk Assessment	Near Future (2041-2070)		Distant Future (2071-2100)		Temporal Dynamics	Spatial Variability
		Optimistic	Pessimistic	Optimistic	Pessimistic		
Risk of loss of historical, archaeological, cultural and natural values and authenticity	medium	medium	high	medium	very high	slow onset	national, local
Risk of loss of cultural values will impact tourism and related revenues	low	medium	medium	medium	high	slow onset	national, regional

Table 40: Key risk assessment for the sector Disaster Risk Management, Civil Protection and Critical Infrastructure.

Key Risk	Current Risk Assessment	Near Future (2041-2070)		Distant Future (2071-2100)		Temporal Dynamics	Spatial Variability
		Optimistic	Pessimistic	Optimistic	Pessimistic		
Risk to human life and health from disasters and secondary diseases e. g. pulmonary diseases	medium	high	high	high	very high	acute	regional, local
Risk of widespread disruptions of transport and supply infrastructure due to wildfire and flood events (coastal, pluvial)	medium	medium	high	high	very high	acute	regional
Risk of increasing costs for maintenance, provisions and emergencies	medium	high	high	high	very high	slow onset	national
Risk to communities prone to increasing frequency and intensity natural disasters (vulnerable to different extreme events)	high	high	very high	very high	very high	slow onset	regional, local

Table 41. Key risk assessment for the economy, industry and finance sector

Key Risks economy, industry and finance sector	Current Risk Assessment	Near Future (2041-2070)		Distant Future (2071-2100)		Temporal Dynamics	Spatial Variability
		Optimistic	Pessimistic	Optimistic	Pessimistic		
Risk to fiscal and individual financial instability due to climate-related events	low	low	medium	medium	high	slow onset	national
Risk of increase in insurance costs and withdrawal of reinsurance companies	medium	medium	high	high	very high	slow onset	national

Key Risks economy, industry and finance sector	Current Risk Assessment	Near Future (2041-2070)		Distant Future (2071-2100)		Temporal Dynamics	Spatial Variability
		Optimistic	Pessimistic	Optimistic	Pessimistic		
Risk of financial instability and economic downturn due to health issues, limitations on work performance from extreme events (fires, heat- and dust-related stress on people and heat load on materials and operating sites), limitations on established methods of production and loss/ displacement of infrastructure	low	low	medium	medium	high	slow onset, acute	national

Table 42. Key risk assessment for the fisheries and aquaculture sector

Key Risk	Current Risk Assessment	Near Future (2041-2070)		Distant Future (2071-2100)		Temporal Dynamics	Spatial Variability
		Optimistic	Pessimistic	Optimistic	Pessimistic		
Risk of loss of income or collapse of fishery and aquaculture industry	low	medium	medium	medium	high	slow onset	regional, local
Risk of loss of marine biodiversity (e. g. due to expansion of touristic period)	medium	medium	high	medium	high	slow onset	national, regional

Table 43. Key risk assessment for the forestry sector

Key Risk	Current Risk Assessment	Near Future (2041-2070)		Distant Future (2071-2100)		Temporal Dynamics	Spatial Variability
		Optimistic	Pessimistic	Optimistic	Pessimistic		
Risk of loss of forested areas and forest soil from wildfires	high	high	very high	high	very high	acute	regional, local
Risk to natural forests and endemic and rare species due to aridity and droughts	medium	high	very high	high	very high	slow onset	regional, local

Table 44. Key risk assessment for the health sector

Key Risk	Current Risk Assessment	Near Future (2041-2070)		Distant Future (2071-2100)		Temporal Dynamics	Spatial Variability
		Optimistic	Pessimistic	Optimistic	Pessimistic		
Risk to human health from extreme events (heat, sand and dust storms, floods, fire)	medium	medium	high	high	very high	acute	regional, local
Risk to health systems and insufficient supply of energy for the operation of the health system during extreme events (floods, heat waves, sand and dust storms)	medium	medium	high	high	very high	acute	national, regional
Risk to health and livelihoods of vulnerable and disadvantaged groups incl. children	high	high	very high	very high	very high	slow onset, acute	national
Risk to a change in air-, insect-, food- and water-borne diseases	low	medium	medium	high	high	slow onset, acute	national
Risk of a lack of access to public infrastructure, lack of sanitation (isolation)	medium	medium	high	high	very high	acute	national, regional

Table 45. Key risk assessment for the hydrological regime and water management sector

Key Risk	Current Risk Assessment	Near Future (2041-2070)		Distant Future (2071-2100)		Temporal Dynamics	Spatial Variability
		Optimistic	Pessimistic	Optimistic	Pessimistic		
Risk to population and infrastructure in flood-prone areas	medium	medium	high	high	very high	acute	local
Risk to the provision of ecosystem services from water bodies due to changes in precipitation patterns and increase in low water flows	high	high	very high	very high	very high	slow onset	regional
Risk of an increase in social conflicts due to increasing water scarcity and water demands	medium	high	very high	very high	very high	slow onset	national, regional
Risk of security for water provision (domestic and irrigation)	high	high	very high	very high	very high	slow onset	regional, local

Table 46. Key risk assessment for the sea and coastal areas sector

Key Risk	Current Risk Assessment	Near Future (2041-2070)		Distant Future (2071-2100)		Temporal Dynamics	Spatial Variability
		Optimistic	Pessimistic	Optimistic	Pessimistic		
Risk of loss of touristic value and threat to livelihoods of coastal communities	low	medium	high	medium	very high	slow onset	regional
Risk to human health from altered freshwater availability and storm damages	low	low	medium	medium	high	slow onset	regional, local

Table 47. Key risk assessment for the soil sector

Key Risk	Current Risk Assessment	Near Future (2041-2070)		Distant Future (2071-2100)		Temporal Dynamics	Spatial Variability
		Optimistic	Pessimistic	Optimistic	Pessimistic		
Risk of soil degradation and loss of soils due to erosion and extreme events	high	high	very high	very high	very high	slow onset, acute	regional, local
Risk of pluvial floods from decreased water retention capacity of soils	medium	high	very high	high	very high	slow onset, acute	regional, local
Risk to the provision of soil ecosystem services (e. g. capillary flow, water and nutrient availability for plants)	medium	high	very high	very high	very high	slow onset, acute	regional, local

Table 48. Key risk assessment for the spatial planning sector

Key Risk	Current Risk Assessment	Near Future (2041-2070)		Distant Future (2071-2100)		Temporal Dynamics	Spatial Variability
		Optimistic	Pessimistic	Optimistic	Pessimistic		
Risk to human well-being and health	medium	medium	high	high	very high	slow onset	regional, local
Risk to economic productivity from unrestricted urban sprawl (loss of agricultural land) and mismanagement of urban green spaces	high	high	very high	very high	very high	slow onset	regional
Risk to settlements and anthropogenic structures (esp. near coasts from erosion and storm surges)	low	medium	high	high	very high	slow onset, acute	regional, local

Table 49. Key risk assessment for the tourism sector

Key Risk	Current Risk Assessment	Near Future (2041-2070)		Distant Future (2071-2100)		Temporal Dynamics	Spatial Variability
		Optimistic	Pessimistic	Optimistic	Pessimistic		
Risk of increasing costs for tourism providers (adaptation, energy, water, labour etc.)	low	medium	medium	medium	high	slow onset	local
Risk of newly emerging, competing destinations	low	medium	high	high	very high	slow onset	national
Risk of loss of touristic attractiveness due to extreme heat and other extreme events (dust storms, fires)	low	medium	high	high	very high	acute	regional

Table 50. Key risk assessment for the transport, infrastructure and buildings sector

Key Risk	Current Risk Assessment	Near Future (2041-2070)		Distant Future (2071-2100)		Temporal Dynamics	Spatial Variability
		Optimistic	Pessimistic	Optimistic	Pessimistic		
Risk of loss of livelihoods and income due to damages to infrastructure and buildings	medium	medium	high	high	very high	acute	national
Risk to human comfort and health due to increased heat in urban centres and buildings	medium	high	high	very high	very high	acute	regional
Risk of decrease in public funds due to increasing maintenance costs for infrastructure	low	medium	high	high	very high	slow onset, acute	national

Annex D: Summary table of measures

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
AGRI 1n	Ensure that the next Cyprus CAP strategic plans make most out of the EU programs to adapt the sector to climate change	Make the sector more resistant to climate change	The new CAP at EU level will come into force in 2027. It is expected that the overall structure will not change in comparison to the current one. The new rules should be mobilised as much as possible to adapt the sector to the impacts of climate change. To do so, a more detailed SWOT assessment of the existing measures and a detailed CVRA should be ready.	BIODIV 2n BIODIV 4n BIODIV 5 BIODIV 6n AGRI 6 SOIL 1
AGRI 2n	Develop pilot projects on the use of desalinated water for irrigation with photovoltaic energy	Provide water to the sector from sustainable desalination	Desalination based on the use of renewable energy sources can provide a sustainable way to produce fresh water. It is expected to become economically attractive as the costs of renewable technologies continue to decline and the prices of fossil fuels continue to increase.	WAT 3
AGRI 3n	Encourage the community to adopt sound land management practices and change the use of soil, cultivation methods and varieties	Make agriculture more resilient	A community-based Soil Health Program aims to empower local communities to adopt sustainable land management practices through education, incentives, and support. Key components: A. Soil health assessment: • Comprehensive soil health assessments to determine baseline conditions and identify areas for improvement. • Provide farmers with detailed soil reports and recommendations. B. Education and Training: • Workshops, demonstrations, and field days on sustainable land management practices, including crop rotation, cover cropping, reduced tillage, precision agriculture, integrated pest management, nutrient management • Partner with local universities or extension services to provide expert knowledge. C. Financial Incentives: • Implement cost-share programs to support farmers in adopting new practices. Offer tax breaks or rebates for implementing soil-building practices. • Provide access to low-interest loans for purchasing equipment or implementing conservation measures. D. Peer-to-Peer Learning: • Create a network of successful farmers who can mentor and share their experiences with others. • Organize farm tours and field visits to showcase successful practices. E. Certification and market premiums: • Develop a soil health certification program to recognize farmers who meet specific standards (link to tourism). • Establish market channels for certified products to command premium prices. F. Data Collection and Monitoring:	GOV 2n GOV 3n

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
			• Track the adoption of sustainable practices and measure their impact on soil health. • Use data to refine program interventions and inform policy decisions. G. Community Engagement: • Involve local stakeholders, including farmers, landowners, and community leaders, in program development and implementation. • Build partnerships with local businesses, organizations, and government agencies to support the program.	
AGRI 4	Develop infrastructure that will facilitate the use of recycled water in agriculture and incentivize its use by farmers	Addressing the shortfall in water supply for irrigation purposes	A. Develop pipelines/network infrastructure that facilitates the use of recycled water in agriculture with a particular focus in areas high demands are located B. Incentivize its use in agriculture (i.e. through its lower pricing) and at the same time providing effective disincentives (e.g. fines) for the use of groundwater for irrigation of green areas. C. Implement strict preventive measures and monitor the quality of treated urban wastewater to avoid the burden on the environment, public health and agriculture. D. Campaigns informing farmers about: a. The necessity of using the resource and the benefits arising from its use such as increasing production, b. the environmental costs of groundwater depletion and c. ensuring the quality of recycled water to increase social acceptance.	WAT 8
AGRI 5	Identify and promote the use of indigenous and other genetic material (plant and animal) adapted to the soil-climatic conditions that will be brought about by climate change	Addressing abiotic stresses (drought and high temperatures) and strengthening the resilience of agriculture and livestock to climate change	A. Promote research to identify appropriate Indigenous or other abiotic stress resistant genetic material through national genetic improvement programmes. B. Preservation in the Seed Bank of native genetic material and promotion of its use. C. Informing farmers about the selection of genetic material that is most suitable for the climatic conditions of their region. D. Strengthening the incentives through the RDP for their cultivation/breeding. E. Conservation and strengthening of measures of protection and rational management of local and over time adapted to Cypriot conditions breeds of agricultural animals. F. Use of mixed systems for the production of agricultural animals, appropriate to the conditions of each region, and implementation of measures for their protection and sustainable conservation. G. Promote research to characterise and improve the resilience and adaptability to climate change of native breeds of productive animals. H. Strengthening production systems with biological tools that promote the resistance of varieties resulting from national abiotic stress improvement programmes.	
AGRI 6	Improve efficiency in the use of water for irrigation by implementing rational irrigation planning, adopting more	Addressing the shortfall in water supply for irrigation purposes	A. Operation / enhancement of a system for informing farmers about the planning of irrigation and the needs of the crop in water. B. Strengthening incentives for the implementation of relevant measures through the Rural Development Programme. C. Maintenance of existing improved irrigation systems.	AGRI 1 GOV 6n

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
	advanced irrigation systems and adequately maintaining existing systems		D. Research for the adoption of new even more effective irrigation systems such as underground irrigation and control these in local conditions to select the most suitable technology for each crop. E. Exploring the possibility of adopting the method of deficient irrigation on specific crops, in areas with reduced water availability. F. Continue to provide financial and technical support to farmers for the selection / installation / maintenance of irrigation systems.	
AGRI 7	Promote research to study the effects of climate change on agriculture and livestock.	Addressing changes in crop yield and livestock farming	A. Promote research to update or expand knowledge on the assessment of risks (hazards, exposure, vulnerability) and impacts of climate change on: • the main types of crops, yield of specific crops of economic importance for Cyprus, using crop simulation models that combine climatic, meteorological, soil and crop data to determine the degree of impact; • livestock productivity and costs for farmers; • fish species; • pests and diseases; • the food sector, including interrelationship of all elements of the food system. B. Integrate this knowledge into plans, regulations and strategies of these sectors. Identify timely adaptation measures	
AGRI 8	Development / improvement of early warning systems of extreme weather phenomena for agriculture	Increase of protection measures taken by farmers whose decision is based on timely and valid information on extreme weather events	For outdoor crops, the development or improvement of extreme weather early warning systems is considered an effective measure to address extreme weather events. Early warning systems help to inform farmers of the impending weather events to take the necessary measures to protect their crops in a timely manner.	DRM9n
AGRI 9	Provide site-specific advice and training on crop adaptation to climate change and create a forum for information exchange between the administration and agricultural professions	Upgrading the level and strengthening of the network of agricultural advice and training for adaptation of crops to climate change	Farmers need multifaceted agricultural advice both in relation to the available adaptation measures they can apply to their growing systems, and in relation to weather or climate in general (e.g. weather reports, seasonal forecasts and long-term forecasts of climate change trends). With the effects of climate change becoming more pronounced, it becomes imperative to upgrade agricultural advice, given the need to adapt the agricultural sector to the effects of climate change. However, improved consulting services will no longer provide solutions of the type "one for all" or static advice (i.e. lubrication packages). On the contrary, there should be cooperation between the advisory service providers (provincial agricultural offices and private consultants) with public and private research centres in order to disseminate the knowledge produced to farmers more effectively.	GOV 2n
BIODIV 1	Create a database on the biodiversity of Cyprus with an emphasis on endemic,	The purpose of this measure is to update and improve the current situation in Cyprus regarding biodiversity and trends of species and habitats	This measure proposes the creation of a digital and online database where data will be collected on ecosystem types, habitats, population data, population distribution, genetic diversity of species living in Cyprus, with emphasis on endemic, rare and vulnerable species and priority species as well as habitat types of mainly priority habitats and habitats of species.	FISH 1 BIODIV 3

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
	rare and vulnerable species and habitats	and the effects of climate change to take the necessary adaptation measures for their conservation in a timely manner.		
BIODIV 2n	Identify and develop contractual, regulatory and financial tools to enhance land use practices compatible with biodiversity conservation in the context of climate change adaptation	Create and maintain biodiversity-friendly habitats through working partnerships with private landowners.	A great barrier for effective management of Natura 2000 areas and biodiversity conservation in Cyprus is the land ownership. Most areas, outside State Forests, have high percentage of private owners. It is important to articulate mechanisms that allow for collaboration with private land stewardship. There are some relevant measures in the Rural Development Plans, but these need to be expanded. The implementation of this measure requires the following actions: A. Mapping private lands, B. perform economic valuations, C. develop legal framework to enable Land Stewardship agreements D. develop financial incentives to encourage private land stewardship. See CAP strategic plan measures AA 4.3.3, AA 1.3	AGRI 1 GOV 6n
BIODIV 3	Promote studies on the expected effects of climate change on Cyprus' flora, fauna and geological heritage, as well as on the structure and functioning of the terrestrial and marine ecosystems of which they form part.	Recording of all impacts on biodiversity & ecosystem services.	Within the framework of this measure, it is proposed to promote research on biodiversity and climate change through the following actions: A. Study on the vulnerability of ecosystems in the light of climate change B. Monitoring of biotic and abiotic parameters related to climate change. C. Monitoring of the phenology of species in climate change. D. Monitoring of the effects of climate change on the activity of microorganisms to which ecosystem services are due. E. Monitoring particularly vulnerable / sensitive habitat types and species and their habitats. F. Integration of research topics on the effects of climate change on biodiversity and adaptation, in the priorities of the relevant universities and Research Institutes of the country and in other co-financed European and international research programs. G. Ensuring the binding of necessary funds to finance research.	BIODIV 1 BIODIV 8 BIODIV 9 BIODIV 10n GOV 6n
BIODIV 4n	Improve water quality, preserve aquatic ecosystems and integrate water ecosystem resilience into public policies and sectoral plans	Fully implement the objectives of the WFD.	Fully implement the measures set out under the 3rd RBMP. Under the 4th RBMP more efforts need to be taken to fully implement the WFD.	AGRI 1
BIODIV 5	Protection, conservation and proper management of the	Addressing the risk of degradation of water-dependent ecosystems, due to reduced soil moisture and	Actions for the strengthening and protection of wetlands, rivers (mainly estuaries) and coastal ecosystems, with emphasis on The Salt Marsh complex of Larnaca, the lakes of Paralimni and Oroklini, which are the three main natural wetlands of Cyprus, as well as coastal habitats, mainly sand dunes.	AGRI 1

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
	important natural wetlands of Cyprus	drying, drought episodes, reduced water quantity and increased demand of society in water, but also due to other projects, such as tourist facilities and activities, urbanization and related infrastructure (e.g. road network).		
BIODIV 6n	Preserve, restore and strengthen hydrogeomorphological and ecological continuities of river ecosystems	Restore hydro geomorphological continuity of river ecosystems	The best way of restoring ecological continuity is to implement actions such as: a) Reducing the size of certain hydraulic structures. b) Creating gaps. c) Installing crossing devices for migratory fish (fish passes, ramps, bypass rivers, etc.) d) Rehabilitation of riverbeds and banks e) Appropriate management measures, such as temporarily opening floodgates to encourage sediment transport f) More environmentally friendly farming practices.	AGRI 1
BIODIV 7	Action plans to protect species and their habitats threatened by climate change	Habitat and species protection considering the negative effects of climate change	This measure provides for the development of National Action Plans for the habitats and flora and fauna species of Cyprus, with an emphasis on the threatened and those considered to be most vulnerable to climate change, as well as the possible adaptation of existing action plans already available to consider the risk of climate change.	
BIODIV 8	Analysis of the vulnerability of ecosystems (structure and functions) and their services to climate change, with an emphasis on protected areas and the Natura 2000 Network	Protection at the level of ecosystems (habitats and species) and their functions, considering the negative effects of climate change	Action 5 of the EU Biodiversity Strategy to 2020 calls Member States to map and assess the state of ecosystems and their services in their national territory with the assistance of the EC. A. Mapping and evaluation of the ecological status of ecosystems and their services and updating of biodiversity databases (e.g. SDFs). The Commission has developed a consistent approach for measuring the condition of 12 different terrestrial, freshwater and marine ecosystems covering the whole EU. The one developed for Cyprus in LIFE IP is of limited depth and spatial scale. Following these guidelines this measure will revise Cyprus' MAES taking climate change risks and adaptation into consideration B. Maintaining or strengthening ecological cohesion, both intraconnectivity – connectivity within the protected area (PA), ensuring each PA is not fragmented in view to climate change; and interconnectivity: ensuring that PAs are part of well-connected network, ecological corridors play a crucial part facilitating movement/expansion/dispersal through suitable areas outside Natura 2000	BIODIV 3
BIODIV 9	Addressing the risk of invasive and alien species	Addressing increased risks from invasive alien species	A. Mapping and evaluation of the status of invasive alien species (being done to some extent) B. Establishment and implementation of action plans to address the pathways of introduction and spread of Invasive alien species of Union concern (being done)	BIODIV 3

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
			C. Official controls are carried out at Official Border Control Posts. The Customs authorities and the Department of Agriculture are involved in control procedures. D. Surveillance system and monitoring of invasive alien species of Union concern to prevent their spread (being done). E. National list of invasive alien species, management measures to prevent their spread (being prepared) F. Management measures for invasive alien species of Union concern which are spread in Cyprus (action plans are being prepared)	
BIODIV 10n	Promote the introduction of climate change adaptation criteria in the planning and management of protected areas	Promotion of adaptive planning and management of protected areas	The promotion of adaptive planning and management of protected areas can take the form of measures such as: A. Promote the development of pilot projects to incorporate climate change adaptation criteria into the planning and/or management of protected areas. B. Facilitate the training of staff working in protected area on impacts, risks and adaptation. C. Conduct a prospective review of protected area networks in a context of climate change D. Develop analyses of the foreseen effects of climate change scenarios on the distribution of habitat types of community interest. E. Update the Natura 2000 network conservation guidelines to better consider climate change.	BIODIV 3 GOV 2n
CULT 1n	Identify the elements of country's cultural heritage that are most vulnerable to climate change and define possible adaptation strategies	Gain a deeper, more localized understanding of the impacts of climate change to cultural heritage. Identify the elements of Cyprus' cultural heritage most vulnerable to climate change and identify adaptation strategies.	A. Conduct studies to gain a deeper, more localized understanding of the impacts of climate change to cultural heritage. Former risk assessments for Cyprus have connected the loss of cultural heritage mainly to an increase in flood events. However, other climate extremes, like droughts, heat, fires and hazards such as rising temperatures, increasing aridity, sea levels, landslides, erosion and desertification will, either directly or indirectly, affect cultural heritage. Especially archaeological sites near coasts are threatened, as changes in atmospheric composition, i.e. salinity, sea level rise and storm surges occur. B. Map areas of intense erosion and landslide risk where cultural heritage is at risk C. Take steps to protect the structure of archaeological sites, monuments as well as moveable objects, e. g. museum exhibits, from damages have compromise their authenticity. Reparations with different materials, reinforcement of drainage systems, walls or roofs or sun covers may impact the individual aesthetics of the sites.	GOV 1n
CULT 2n	Prioritize maintenance work on cultural heritage over restoration work	Ensure the conservation of cultural heritage in the context of climate change	A. Make small repairs regularly, rather than infrequent large interventions. B. Decide whether to relocate (physical) cultural assets away from sites threatened by change climate. C. Define long-term plans for the management of risky sites. D. Change management strategies in favour of more rigorous and frequent inspections maintenance and monitoring of facilities E. Promote different long-term financing strategies for maintenance, in particular: • linking different funding resources and financial approaches; • recognizing the insurance sector as a valuable ally;	

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
			• introducing tax breaks for maintenance; directing resources in training on traditional and artisanal building techniques to complement advanced technologies with the aim of improving our understanding of cultural heritage in a period of change	
CULT 3n	Support reassessment and adjustments in all stages of heritage practice including inventorying, documentation and monitoring, impact assessments, conservation and management planning	Integrate the impacts of climate change into cultural heritage management plans and cultural heritage preservation actions and ensure that cultural heritage safeguarding plans are adapted to foreseeable climatic hazards.	Incorporate the climate change variable into the preventive conservation plans for cultural heritage (including cultural landscape conservation plans, like the Plan for the Conservation and Enhancement of the Intangible Cultural Heritage of Cyprus for the period 2016-2017), and the incorporation of climate change observations and projections into cultural heritage conservation plans.	
CULT 4n	Train professionals involved in the study and conservation of cultural assets to incorporate the climate change dimension into their professional activity	Enhance the incorporation of climate change considerations into cultural heritage conservation work.	Develop and offer training programs on the climate change risks and impacts for cultural heritage management professionals in both private and public sectors.	GOV 2n
CULT 5n	Collect and transfer vernacular knowledge useful for climate change adaptation	Recognizing, collecting and enhancing the value of traditional vernacular knowledge useful for climate change adaptation.	Vernacular and traditional knowledge has clear potential value in the fight against climate change. The Paris Agreement recognises that adaptation should, where appropriate, build on and be inspired by traditional knowledge and local knowledge systems. Cyprus has an extensive heritage of vernacular knowledge that is closely adapted to the climate conditions that characterise each of our geographical regions. In the current context of climate change, this knowledge could be put to good use to provide inspiring solutions for territories that will need new solutions in the face of a new climate. Actions required to move progress in this regard could include: A. Identifying good practices in the use of technologies and vernacular knowledge for adjusting to climate conditions. B. Developing a catalogue of useful traditional technologies and practices for adaptation. C. Organising training activities on the use of traditional technologies and practices for adaptation.	
CULT 6n	Develop climate change adaptation plans in heritage cities through the “green heritage” approach, which uses nature-based solutions	Contribute to climate change adaptation in heritage cities using the “green heritage” approach: introducing nature-based solutions that take into consideration specific	Within climate change adaptation plans in cities, heritage areas require specific measures and present different conditions compared to the rest of its climate zones. For instance, attention must be given to ensuring that exterior finishes on pavements and walls are compatible with historical assets, their preservation, and their appreciation; guarantee that vegetation does not cause structural damage or worsen humidity conditions while allowing for its visual appreciation. To achieve this, different actions can be implemented such as:	

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
	that consider the specific requirements for the conservation of cultural heritage	requirements of heritage buildings, streets, and public uses.	A. Develop an adaptation guide for historic buildings focusing on preservation, ensuring habitable interior conditions and taking into consideration specific materials and conservation requirements. B. Consider specific requirements of heritage areas when developing & implementing green and blue infrastructure for adaptation. C. Develop green corridors through using historic ways and spaces (for instance historic livestock routes).	
CULT 7n	Build synergies with other national policies and sectors to enhance the effective protection of cultural heritage and goods	Achieve coherence with other national policies by building synergies between the heritage sector and other sectors such as environment, urban and disaster risk management.	Some potential actions include: A. Identification and mapping of relevant sectors that can collaborate and creation of shared data sources and benchmark methodologies. B. Promote collaboration to ensure that adequate financial resources are made available to support property-level climate action, including investment in infrastructure for adaptation. C. Work in partnership with relevant organisations, stakeholders and rightsholders in field activities to develop and implement adaptation strategies. D. Share methodologies and tools, respecting traditional knowledge and methods.	
CULT 8n	Encourage international cooperation in knowledge transfer to protect cultural and architectural heritage in the face of climate change	Enhance cooperation and exchanges of information and experiences for conservation of cultural heritage in the context of climate change.	Some possible actions include: A. Incorporate climate change considerations in the work of the Technical Committee on Cultural Heritage and the collaborative conservation of cultural heritage in the island. B. Participate actively in international initiatives for heritage-based climate action (e.g. ICROM 2024 international conference, training courses; ICOMOS Climate Action Working Group; etc.) C. Standardise and share data gathering across World Heritage properties to facilitate identification and analysis of common hazards and impacts of climate change D. Develop pilot projects that promote good practices in climate action for World Heritage properties, inclusive of diverse values and knowledge systems and disseminate these at international, national and property levels	
DRM 1	Establishment of pilot regions for disaster risk management	Pilot regions, either spatially connected or threatened by the same/similar climate hazards and impacts, are connected in a network that enables knowledge exchange and site-based adaptation.	Drawing inspiration from the Austrian KLAR! programme, a national two-level funding programme promoting inter-communal and cross-sectoral collaboration is developed. In this scheme, multiple communities work together, to strengthen site-based adaptation, strongly rooted in the specific needs of the region. On the first level, the funding is used for contracting an “adaptation manager”, who works closely with representatives from the communities, gathering their input and needs regarding disaster risk management and organises the planning and effective implementation of risk preparedness and adaptation measures. The second funding level focusses on the implementation of investment-related measures, such as green and blue infrastructure or flood protection. Each year, a call for pilot regions enables communities to work together, decide on an adaptation manager or an investment-related measure and gives these regions a chance to continuously adapt to climate change-related needs.	

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
			Note: This measure is not sector-specific but rather cross-sectoral. Using returning funding schemes (e.g. with time frames for up to three years), with calls each year, holds the opportunity for focus areas, e.g. DRM, Civil Protection and Critical Infrastructure.	
DRM 2n	Strengthen the knowledge base on regional and local sensitivity regarding different risk typologies	Strengthen the knowledge base on regional and local sensitivity regarding different risk typologies	Following the regular development and update of flood risk and flood hazard maps, which are part of the Floods Directive, other risk maps for forest and wildfire, storms or heat can unveil local vulnerabilities and be used as a communication and decision management tool for private, public and economic stakeholders. Hence, they are a spatially focussed analysis of data represented in the EFFIS Wildfire Risk Viewer, for example. Local risk maps should take local sensitivity and adaptive capacity, hazard, and exposure into account and have different focus areas, e.g. population, ecology, economy etc. Risk maps display the spatial distribution of people, nature or the economy at risk and uncover areas, where adaptation measures are needed, thus supporting well-informed decision making and planning.	
DRM 3n	Promote case study-based response mechanisms as a basis for disaster management to cope with wildfire risk	Increase knowledge and expertise on effective adaptation and disaster risk management responses to cope with wildfire risk threatening ecologically relevant areas, infrastructure, critical infrastructure and cultural heritage	To identify and assess various adaptation and disaster risk preparedness mechanisms addressing the effects of climate change on wildfire risk and the threats this poses to ecology, infrastructures and cultural heritage. A case study-based approach strengthens the understanding of the cause-and-effect relationship causing damages to the above-mentioned natural and human-made assets and various types of measures for prevention and recovery. The implementation of these case studies is supported by national calls for papers, interdisciplinarity connecting research and disaster risk management and emergency teams. These case studies can then serve as basis for effective disaster management for singular assets, e.g. cultural heritage sites, infrastructure or natural areas. This measure could also include the active participation in international or EU-based research and funding programmes such as Horizon Europe. *Note: Overlaps with measures from the sector "Forestry" should be used in an efficient manner, utilizing synergies wherever possible, e.g. attribution studies for forest fire.*	
DRM 4n	Adapt emergency response systems to increased frequency and intensity of climate extremes	Adapt emergency response systems to changing weather and climate extremes	In Cyprus, competences in this area are distributed over two levels depending on the disaster risk: the Central Administration, where responsibility for civil defence rests with the Ministry of the Interior, and the local level, with a Civil Defence Force that operates through civil defence units in urban areas and villages. Possible actions in this measure include: A. Incorporate knowledge on climate-related vulnerabilities and threats into emergency response planning at the national and local levels. B. Identify and allocate the necessary human (professional and voluntary) and material resources for the protection of people and property in the event of an emergency under new risk conditions C. Conduct simulated practice runs of emergency response systems.	

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
DRM 5n	Review post-disaster recovery action plans to incorporate climate change adaptation considerations	Incorporate climate change adaptation into recovery actions aimed at restoring normality to the affected area after the immediate response to the emergency has been completed	Post-recovery action plans incorporate climate change adaptation considerations to avoid actions that increase vulnerability to climate change risks. Post-event assessment of the recovery action plans (attribution studies) are conducted to adapt future actions to evolving climate risks.	
DRM 6n	Secure financial resources for adapting essential networks and critical infrastructure providing basic services (e.g. electricity, water, health) from climate-related disasters, emphasizing on alternative solutions (e.g. nature-based solutions)	Ensure financial resources are available for climate-risk proofing critical infrastructures	In order to identify funding resources for adapting essential networks and critical infrastructure from climate-related disasters an update of the National Risk Assessment (2018) as well as an update of the identified critical infrastructure needs to be performed. The latest Report on DRM in Cyprus (Cyprus Civil Defence 2020) has identified critical infrastructure for the continuation of vital societal functions and lists the relevant managing authorities. Critical infrastructures include water (supply and distribution), electricity, ICT (telephone and internet access), finance (banking and government treasury), and transport (airports, ports, and highways). Climate-related disasters with the highest risk factor in Cyprus are wildfires, coastal floods, and temperature extremes. Climate change is expected to increase these risks in the future in Cyprus. Activities in this measure can include: A. Update the 2018 National Risk Assessment to include climate-change related risks. B. Identify funding sources to address identified risks. C. Develop funding programs to fund strategies and plans to climate proof critical infrastructure identified in the 2020 Cyprus Civil Defence report.	GOV 6n
DRM 7n	Review Cyprus' national DRM and civil protection system with updated climate change projections and scenarios	Incorporate the latest knowledge on climate related risks into DRM and civil protection policies and plans	Some actions in this measure include: A. Conduct vulnerability and risk assessments on local/regional level based on climate change projections and scenarios, which can later be compiled into a national database/map showing the national vulnerabilities and risk areas. B. Incorporate the conclusions of these studies into the development and updating of the plans that make up Cyprus' national civil protection system – including Civil Defence Law and relevant regulations, programs and plans	
DRM 8n	Apply the *Pluvial Hazard, Risk Assessment and Adaptation Tool* to assess pluvial flood risk hotspots and prioritize areas for adaptation solutions	Provide a quick assessment of pluvial flood risk hotspots and support the prioritization of areas for adaptation solutions, focused on nature-based approaches.	The Pluvial Hazard, Risk Assessment and Adaptation Tool is designed to assess flooding associated with intense rainfall in urban settings (pluvial flooding) and estimate benefits associated through the implementation of disaster risk reduction and climate adaptation solutions. The tool can assist cities in analysing risks and solutions under various scenarios and plan future actions according to their disaster risk reduction and climate adaptation goals. For example, nature-based solutions at the urban scale aimed at reducing economic building damage and population exposure. The tool can be used to assess the benefits of nature-based and traditional solutions based on local criteria and priorities, including walking distance to existing green spaces, green space and green roof conversion feasibility, and population vulnerabilities to prioritize areas to implement solutions.	

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
DRM 9n	Support and reinforce disaster risk preparedness: Observation, early warning, communication and education with climate change adaptation criteria	Instruments related to disaster risk preparedness (observation, early warning, communication and education) incorporate climate risks and response.	Disaster preparedness is *'the knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters'* (UNDRR, 2017)[9] Some activities for this measure can include: Strengthen early warning systems with information about evolving trends in the frequency, intensity and duration of weather and climate hazards, associated impacts, sectors and communities likely to be affected, and preparedness strategies. Early Warning Systems for Adaptation (EWSA) constitute a component of the international framework for climate services that link science-based climate projections, data and information with the management and mitigation of climate-related risks in support of adaptation to climate change. Generate comprehensive, harmonised and interoperable databases of disaster losses to improve existing damage models. Involve statistical offices, national meteorological and hydrological services and civil protection authorities in data standardisation, quality assurance and data accessibility. Incorporate the integration between climate change adaptation and risk management into public communications, consultation with interested parties and education programmes related to disaster risk. Communication of key messages that link current and future timeframes and general information on possible responses is key to support an evolving state of preparedness.	AGRI 1 GOV 2n GOV 3n
DRM 10n	Encourage the consideration of risk analyses associated with climate change in the study, analysis and definition of self-protection measures and promote self-protection for the different disaster risks related to climate change	Promote the consideration of climate projections in the study, analysis and definition of self-protection measures and the promotion of their development for the different disaster risks related to climate change.	Self-protection systems and understanding how to act in adverse situations are considered essential in reducing the impacts of disasters. These systems consist of management and organisational procedures with the primary purpose of ensuring the maintenance of previously defined safety conditions and a minimum emergency response structure, with the particularity that it is generally the population itself (individuals or organisations) that are responsible for these measures and not the public administrations. However, the administrations usually study and recommend the self-protection measures considered most appropriate for each risk, providing, where necessary, training and technical or financial support for their uptake by interested parties. Self-protection measures depend on the type and category of the risk, so these aspects must be identified before the self-protection measures can be defined. Recognising the circumstances that condition risk requires the analysis of various aspects, and these rarely include climate change.	GOV 6n
ECON n	Conduct specific sectoral foresight studies to identify vulnerabilities of	Improve knowledge of adaptation needs of climate-vulnerable industrial sectors	Cyprus' Industrial Policy 2019-2030 positions the industrial sector as central to the country's growth strategy. While the Industrial Policy 2019-2030 recognizes the urgency of climate change, its focus is primarily directed towards mitigation efforts within industry, with no attention paid to climate adaptation action. Actions within this measure include:	

[9] https://www.undrr.org/terminology/preparedness

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
	Cyprus' industry to climate change, develop sectoral adaptation strategies and revise Cyprus' 2019-2030 Industrial Policy accordingly	and develop appropriate adaptation strategies.	A. Conduct a study to identify vulnerability of Cyprus' industry and service sector arising from climate change B. Develop adequate adaptation strategies in collaboration with sectoral actors and experts C. Integrate adaptation into sectoral legislation and industrialisation plans, including Cyprus' 2019-2030 Industrial policy, incorporating findings and recommendations	
ECON 2n	Develop a framework for projects and investments assessment that include climate vulnerability evaluation criteria to help inform investment decisions and redirect investments when necessary	Avoid investments whose profitability would be significantly reduced due to climate change and redirect investments.	In collaboration with relevant stakeholders develop a framework for project/investment assessment that incorporates climate vulnerability assessment parameters.	
ECON 3n	Promote the use of the DERRIS climate risk self-assessment tool for Small and Medium Enterprises (SME) to Increase the climate risk awareness of local SMEs	Increase the climate risk awareness of local SMEs. Encourage the private and public sector/business entities to adapt to climate change.	The self-assessment tool helps small and medium enterprises to first identify their exposure to climate hazards and secondly, measures to reduce negative climate impacts. The tool was developed in 2016 for SMEs in Turin. It has been used by SMEs in 14 municipalities all over Italy, such as Genoa and Padua. At the end of 2023, the tool had been used by almost 10,000 users for a total of almost 13,000 sessions (+1000 respect to 2022).	
ECON 4n	Promote frameworks for collaboration and coordination on adaptation among the different agents involved in the financial system, with special attention to insurance activity, and strengthen adaptation capacities in the sector.	Mobilise all actors involved in the financial system, especially in the insurance business to develop frameworks for collaboration and coordination on climate change adaptation between public institutions, private entities, academic institutions and other key agents to promote, among other things, the exchange of information and knowledge.	This line of action is aimed at consolidating permanent frameworks for collaboration and coordination on climate change adaptation. These frameworks for collaboration may be formalised, where appropriate, by the definition and signing of specific agreements with the competent bodies in areas particularly vulnerable to the impacts of climate change. These collaborative frameworks will seek to establish systems for the exchange and dissemination of finance, insurance and climate change indicators, which will provide an understanding of the evolving role of the financial and insurance sector in adaptation. They will also explore the different ways of using the information gathered in the field of insurance for the development of public policies and concrete measures related to climate change adaptation. Participate in EU and international networks – such as Climate Adapt or the UNFCC Finance portal – to exchange experiences and information on adaptative financial and insurance practices.	

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
ECON 5n	Capacity building on adaptation in the financial system and insurance business	Promote the generation of knowledge and capacities on the impacts of climate change on the financial system and insurance activities, as well as on the identification of opportunities to contribute to climate change adaptation	Understanding the connections between the activity of the financial system and climate change adaptation is fundamental when considering measures to promote the active role of the sector in the construction of a more resilient economy and society, as well as for the stability of the financial system. This knowledge must also be integrated into decision-making by strengthening the capacities of all key actors involved. Potential specific actions include: A. Continued assessment of the vulnerability and impact of climate change and adaptation options in those branches of insurance activity that are most closely linked to climate risks. B. Promote research to develop tools aimed at identifying investment opportunities that contribute to climate change adaptation and informed planning in the sector, for example, specific models combining risk and financial parameters to recreate historical events and estimate possible future losses. C. Develop training actions and resources on climate change adaptation in coordination with the sector. D. Promote and provide training on the EU taxonomy regulation E. Create incentives for risk prevention by promoting the role of the financial system as a catalyst for climate change adaptation and continue to explore and promote the specific contributions of insurance activities to adaptation	GOV 2n
ECON 6n	Incorporate climate change adaptation into sustainable finance initiatives	Understanding the exposure to the effects of climate change, considering it as a fundamental element of business strategies. Mainstreaming climate change adaptation into sustainable finance initiatives as a key element to respond to the impacts of climate change and provide support to companies to improve knowledge on the evolving international and national framework on this issue.	EU legislation includes several initiatives on this topic: A. Regulation on sustainability-related disclosures in the financial services sector. B. Development of a unified classification system (or taxonomy) to help investors and companies make investment decisions that contribute to the achievement of six environmental objectives, including CCA. C. Legislation on sustainable finance that establishes disclosure obligations for financial information related to climate change for certain actors in the financial sector.	
ENER 1n	Improve knowledge on the (potential) impacts of climate change (including extreme events) on: (i) the production potential of renewable energies and translate the results into	Improve knowledge on the (potential) impacts of climate change on the energy sector and incorporate results into energy planning to increase resilience of the sector and avoid or limit spikes in demand.	Several measures are included in this line of action: A. Carry out a detailed study that explores the diverse range of impacts on the energy sector resulting from gradual climate change and extreme weather events, and the potential ways to counter them. • Explore all elements of the supply chain: resource base, extraction and transport of depletable energy sources, power generation, transmission and distribution.	

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
	energy planning; (ii) the functionality and resilience of energy generation, transmission, storage and distribution systems; (iii) energy demand and develop a strategy to avoid or limit spikes in demand, especially those associated with heat		• Identify the energy infrastructures that are highly vulnerable to extreme events and promote specific adaptation programmes. • Incorporate this information into energy planning and develop adaptation measures to reduce or avoid identified risks. B. Conduct an analysis on the impact of changes in average and extreme temperatures on daily and seasonal electricity demand profiles by climate zones. • Develop a strategy to incentivise the public not to increase energy demand in critical situations, especially in high heat. This work could draw on the work of the International Energy Agency (IEA), which is examining the possibilities of reducing electricity demand in critical periods without jeopardising security of supply through blackouts and causing damage to the economy. • Develop targeted at the most vulnerable sections of the population, to avoid increases in seasonal energy poverty rates in certain regions associated with cooling needs.	
ENER 2n	Consider future climate change scenarios and projections in the revisions of Cyprus' Long-Term Strategy for Building Renovation and fund the necessary upgrades, for instance through the "Energy efficiency – Upgrade Homes" program	Incorporate the latest knowledge in updates of long-term climate change adaptation strategies, protect buildings from extreme temperatures and relevant material deterioration and apply adequate funding mechanisms	This line of action includes several measures A. Consider future climate change scenarios and projections in the revisions of Cyprus' Long-term strategy for Building Renovation in the construction sector. B. Promote insulation of buildings and use of renewable energy sources in houses through the "Energy efficiency - Upgrade Homes" Funding Scheme. Eligible costs include thermal insulation of the building envelope (walls, beams, ceilings, etc.), replacement of windows and windows frames, installation of shading systems, installation of high energy efficiency heating/cooling systems as well as the installation of renewable energy systems (solar water heaters/photovoltaic systems operating on a net-billing basis). In addition, sponsorship may be granted for electricity storage batteries. C. The Ministry of Energy, Trade and Industry has scheduled for September 2024 the announcement of the "Energy Efficiency - Upgrade Homes (2024)" project with a total budget of €30 million, which aims to upgrade the energy efficiency of existing homes. The Project will be implemented under Measure C6.1I3 of the Cyprus Recovery and Resilience Plan (RRP) and will be funded by the European Union (EU) Recovery and Resilience Mechanism, the central instrument of Next Generation EU and the temporary instrument to finance the EU's recovery and exit from the crisis caused by the COVID-19 pandemic. Specifically, this measure has been included in the RRP through the new REPowerEU chapter and will be funded from the relevant additional allocation received by Cyprus in 2023 to address also the most recent energy crisis.	
ENER 3	Good maintenance and possible upgrade of electricity transmission lines to account for climate adaptation. Promoting smart	Breakdown management related to transmission line overheating and adapt existing transport system to identified climate risks.	Management of failures and damages caused by overheating of power transmission lines	

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
	networks with the aim of minimizing losses in the transport system.			
ENER 4	Increase Cyprus energy security by increasing interconnection with international energy transmission networks	Interconnection of Cyprus with the Trans-European energy, electricity and gas networks as defined by European regulation 347/13. CSR contributes to: diversification of the country's energy mix; eliminate energy isolation; energy security; completion of the internal energy market.	Projects of Common Interest: (a) EastMed Gas Pipeline; (b) Great Sea (former EuroAsia) Electricity Interconnector; (c) development of gas infrastructure in Cyprus Gas2EU	
FISH 1	Protection of breeding habitats	Secure the sustainable production of fish	A. Establish closed areas and seasons to improve habitat protection, including no- fishing zones. B. Develop management plans for protected areas as required in the legislation, when a management plan has not yet been developed. C. Evaluate if the current protected marine areas network is a coherent and representative network in the face of climate change risks as required by the MSFD. D. Introduction and promotion of the use of selection tools that limit or eliminate by-catch of species not targeted by the fishing activity. E. Introduction and promotion of fishing methods which have limited physical effects on the environment. F. Raise awareness – both within the fishing sector but also in other sectors, such as tourism – about the impacts of climate change, and the importance of marine protection as a critical factor for securing fishing the fact that these measures gradually result in increasing yields in their operations	
FISH 2n	Improve enforcement of fishing legislation and monitor fishing activity	Secure sustainable fisheries by controlling the activity of professional and recreational fisheries.	In certain periods of the year, fish catching rate might be 50:50 between professional and recreational fishermen – including boats, fishing nets, spearguns, and other not acceptable fishing methods and tools. The measure's implementation includes the following activities / stages: A. Analysis of the administrative and technical capacity to monitor fishing activity; gap analysis of the legislation in force; findings and recommendations. B. Planning and phased implementation of the necessary activities to implement the recommendations developed within stage 1. Enforcing Regulations and controlling recreational and preventing illegal fishing would result in a more sustainable fisheries sector, helping sustainable production of fish.	
FISH 3n	Strengthen adaptation to climate change in the Common Fisheries	Strengthen adaptation to climate change in Cyprus	In 2023 the EC launched the communication: “The common fisheries policy today and tomorrow: a Fisheries and Oceans Pact towards sustainable, science-based, innovative and inclusive fisheries management”	

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
	Policy (CFP), national management and recovery plans and the aquaculture sector	national fisheries policy in line with the revised CFP	The EC has launched a consultation on the Common Fisheries Policy (CFP) which closes in September 2024. The results of the consultations, alongside other analyses and studies will be used to assess the CFP's performance in achieving its objectives, economic implications, and relevance in the context of emerging needs. The Commission will publish a summary report of the consultations, including the evidence gathered, at the beginning of 2025. It is assumed that this will lead to a revised CFP addressing also challenges related to climate change more widely. It is therefore proposed that the effects of climate change continue to be considered in the design, implementation and monitoring of the future CFP in Cyprus. Similarly, the national fisheries policy will integrate climate change considerations in the design, implementation and monitoring of management and recovery plans, as well as in the aquaculture sector.	
FISH 4n	Value Chain Development	Secure and increase the added value of local fisheries and aquaculture product while ensuring social, ecological, and economic sustainability.	A. Invest in processing and marketing infrastructure to increase the value of local fisheries and aquaculture products. B. Support the development of local brands and certifications for quality and sustainability. C. Invest in making aquaculture fisheries more sustainable through improved management and other cost reduction measures. D. Encourage diversification into value-added products, such as smoked, dried, or processed seafood. Support ongoing initiatives of the marine aquaculture private sector. Promote inland aquaculture – such as trout and sturgeon. E. Promote direct sales and e-commerce platforms to connect producers with consumers. Support the work already being done by the private sector. F. Raise awareness about the quality of local products to promote their consumption	
FISH 5n	Promote fishing and consumption of invasive alien species	Control invasive fish species and protect marine biodiversity	Promote fishing and awareness of invasive alien species through incentives (such as financial €/kg). This is being done at the moment for certain IAS fish and should be continued with additional funds. Some fish (such as Lagocephalus spp) not edible are destructed, while others such as the lionfish is promoted to hotel and restaurant chefs on how to clean them and cook them for consumption. There have been certain demo projects which need to be sustained. Need financial incentives – particularly important for promoting measure to businesses (especially SMEs).	GOV 6n
FOR 1n	Tourism supports forestry through tourism tax and stakeholder networks to develop sustainable tourist offers	Generate a funding mechanism	The tourism tax offers municipalities the opportunity to finance sustainable tourism infrastructure; development and promotion of sustainable tourist offers; protection of ecosystem services in areas that are touristic resources. The measure requires a study of the legal, financial and budgetary implications. Create a stakeholders' network (local authorities, NGOs etc.) to develop sustainable tourist offers	GOV 6n
FOR 2n	Increase firefighting staff in the Department of Forests	Reduce the impacts of forest fires	See also https://www.moa.gov.cy/moa/fd/fd.nsf/fd51_en/fd51_en?OpenDocument for further details	
FOR 3	Coping with increased forest fire risk	Reduce the risk of forest fires occurring and spreading.	A. Proposed actions include • Reduce the risk of forest fires occurring and spreading through measures such as:	GOV 2n

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
		Protect important forest ecosystems and their dependent species of flora and fauna.	• 100% funding of wood shredders to forest communities • Create more fire breaking strips in forests (See also https://www.moa.gov.cy/moa/fd/fd.nsf/fd51_en/fd51_en?OpenDocument for further details) • Promote controlled grazing: Pilot project under study to use controlled grazing around forests to keep vegetation short (Grazing Capacity Study) B. Early detection and effective and immediate suppression of forest fires. C. Effective post-fire management and restoration of burned areas, with the aim of restoring and enhancing natural vegetation, reducing the risk of erosion and reducing the future risk of fires. D. Creation & publication of a daily digital forest fire forecast map for Cyprus based on topography and meteorology. E. Public outreach campaigns: training and information to reduce activities that cause fire.	
FOR 4n	Integrate fire risk into regional planning and harness the potential of nature-based solutions in a context of climate change adaptation	Contribute to reducing the risk of fires and increasing resilience to this risk, as fires have a very negative effect on the carbon balance of forests and the resilience of ecosystems	A. Mobilise all forest stakeholders, in particular competent local and regional authorities, to ensure forest management is gradually adapted to the foreseeable increase in forest fire risk (frequency of occurrences and areas affected). B. Ensure consistency in the mitigation and adaptation potential of forest management or conservation policies and wood and biomass recovery and recycling.	
FOR 5n	Model fire-climate relationships to identify areas sensitive to forest fire risk	Reduce the risks of forest fires and their impacts.	Close current knowledge gaps identified in past and ongoing research projects. The model should include Fire Risk Assessment, characterization of Ecological Sensitive areas etc.	
FOR 6n	Promote the recultivation of abandoned agricultural land	Reduce forest fire risk in abandoned agricultural lands	Abandoned rural areas that undergo natural afforestation processes are more vulnerable to fire risks due to lack of management. Promoting the recultivation and management of these lands reduces exposure through improved management.	
FOR 7	Develop and implement a Strategic Plan for the adaptation of Cyprus' forests to climate change	Adaptation of forest ecosystems to climate change	Designing strategies for adapting forest ecosystems to climate change is essential to prevent larger changes and facilitate in situ forest adaptation and species migration. Such strategies should have a preventive approach, to avoid undesirable consequences and irreversible losses and damage to forest ecosystems. To this end, it is proposed to develop and implement the "Medium-Term Strategic Plan for adaptation of Cyprus Forestry to climate change" of ten years duration, which the Department of forests plans to develop and which, according to the Forest Policy Statement of the DoF (2013) will include adaptation measures, covering the whole range of activities, such as forest status research and monitoring, Forestry and plant health, afforestation and forestry, nurseries, production and use of forest propagating material, fauna, protection from forest fires and enlightenment.	

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
FOR 8	Research, data collection and systematic monitoring of the effects of biotic and abiotic factors related to climate change in forests/ selection and use of suitable forest species with high resistance to adverse climatic conditions (e.g., drought)	Address the increased risk of drought damage/forest productivity decline and improve knowledge on the impact of climate change on forests	These measures are provided for: A. The classification of forest species according to their adaptation to climate change. B. The identification of high-risk areas (with results from For 5_n) where specific interventions and measures for the protection and adaptation of forests should be proposed. C. The use of native species in aid and rehabilitation actions, which are well adapted to drought. D. Research on the selection of suitable reproductive material with drought and pest resistance characteristics.	
FOR 9	Installation of a pest population monitoring system with the goal of early detection of a potential epidemic/ Pest population monitoring	Addressing the increased risk of pest infestations, insect pathogens (diseases), etc. endemic to the forests of Cyprus or belonging to the category of quarantine organisms.	This measure is provided for: A. The use of available data from the monitoring of populations of harmful forest organisms (organisms endemic in Cyprus or quarantine organisms that may be introduced such as e.g. Ips sexdentatus and Bursaphelenchus xylophilus) in the forests of Cyprus and the development of specific models to predict the displacement of the area of their spread based on various climate change scenarios in order to timely address the effects they cause. B. Control of the pest population in areas where serious problems occur. This control can be implemented through practices that do not disturb the ecological balance of forest ecosystems, such as the implementation of integrated plant protection."	
FOR 10n	Develop forest management plans and strategies for Cyprus that take into account climate change adaptation to ensure the continued provision of ecosystem goods and services and the improvement of forest resources	Better and more holistic forest management	Developing effective forest management plans and strategies is essential for ensuring the long-term health and sustainability of forests. Here's a general outline of the process: A. Define Objectives and Goals B. Conduct a Comprehensive Forest Inventory C. Develop Management Zones D. Create Management Plans, that incorporate climate change adaptation: E. Develop strategies to address the impacts of climate change on the forest. F. Implement and Monitor	
GOV 1n	Expand and update knowledge on the impacts and risk of climate change on the	Generate updated information to assess the impacts and risks of climate change on the different sectors according to	Adaptation measures and decisions must be based on a comprehensive and updated understanding on climate change risks and impacts. In addition to the specific knowledge generating actions proposed in sectoral measures, in the framework of the NAS the following actions will be promoted: A. Incorporate the contributions generated by successive IPCC into the risk and vulnerability assessments and the definition of adaptation measures.	All NAS measures

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
	different sectors (update CRV)	the latest available climate models and scenarios.	B. Update the national climate risk and vulnerability assessment every 6 years C. Develop guidelines for the preparation of sectoral evaluations of climate change risks and impact assessments (contents and recommended methodologies for sectoral evaluations). D. Develop practical tools (projections, scenario viewers, guidelines for the use of the scenarios, manuals, etc.) for the preparation of sectoral studies of exposure and vulnerability E. Detect pending knowledge gaps and develop action plans to address them.	
GOV 2n	Training and capacity building on adaptation to climate change	Improve understanding of the implications and impacts related to climate change to enhance the implementation of climate adaptation actions at the regional and local level, and the resilience of individuals and communities to climate change risks.	This measure encompasses the following activities: A. Identify outreach, training and capacity building needs B. Develop (online) interactive presentations: Explain the local impacts of climate change, such as rising sea levels, heatwaves, and extreme weather events. C. Design discussion sessions that can be implemented at the local level (by DLGO, municipalities, businesses or citizen organizations): Encourage participants to share their experiences and concerns related to climate change. D. Practical solutions: Discuss, share and demonstrate adaptation strategies like water conservation, energy efficiency, and resilient infrastructure. Target Audience: Staff at DLGOs, municipal and community governments; residents, community leaders, and businesses. Since different target groups are interested in different kinds of knowledge, the material needs to be developed and made relevant for the target audience - from generic knowledge (e.g. for school age population) to very specific and in-depth information (e.g. for professionals, such as doctors and health care providers).	All NAS measures
GOV 3n	Communication and social outreach on climate change adaptation	Increase the general understanding of the implications and impacts related to climate change	The campaigns should cover the following activities: A. Share informative graphics and videos: Use visually appealing content to convey complex climate change concepts. B. Encourage user-generated content: Organize contests or challenges that invite people to share their experiences or ideas related to climate change. C. Partner with influencers: Collaborate with popular social media personalities to reach a larger audience and amplify the message. Target Audience: A wide range of individuals, especially vulnerable population and younger generations.	All NAS measures
GOV 4n	Promote the development of regional and local climate adaptation plans in coordination with the National Adaptation Strategy	Promote DLGO and municipalities implement climate change adaptation measures within their respective areas of competence that are aligned with and contribute to Cyprus'	DLGO, municipalities and communities are responsible for developing policies, plans and actions in various sectors – water supply and sanitation, urban transportation, tourism, cultural heritage, etc. – that are the focus of the NAS. These policies, plans and actions should be aligned with the NAS and be integrated into a regional/local climate adaptation plan to enhance synergies and complementarities and avoid contradictions.	Hydrological Regime and Water Management measures Spatial planning measures

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
		National Adaptation Strategy goals		
GOV 5n	Develop an IT monitoring and reporting system for climate change adaptation	Facilitate monitoring and evaluation of implementation of the National Adaptation Strategy	A. Definition of an IT monitoring and reporting platform that allows local, regional and national authorities to report online on progress in implementation of adaptation measures based on the indicators developed. The platform will comply with EEA reporting requirements. B. Implementation of the IT platform within the IT framework of the Department of the Environment.	All NAS measures
GOV 6n	Develop national funding streams for climate change adaptation	Ensure availability of public funds for climate change adaptation	A. Develop a competitive funding mechanism for competent authorities to apply for to fund NAS measures. A potential model could be the PIMA Adapt program in Spain, developed in 2015, which uses funds from the sale of emission rights to fund priority activities of the National Plan for Adaptation to Climate Change. B. Allocate funds from competent authorities' annual budgets (EU, ministerial, DLGOs, municipalities) to implement NAS measures.	All NAS measures
GOV 7n	Create an Intergovernmental Working Group on Adaptation to Climate Change and designate focal points for adaptation in competent ministries, District Local Government Organizations and municipal representatives	Strengthen the consideration of climate change in all ministries and competent authorities and ensure a coordinated and effective implementation of the National Adaptation Strategy	The Intergovernmental Working Group on Adaptation to Climate Change (IWGCCAS) oversees the work on: A. Monitoring and evaluation of the NAS B. Updating the NAS within the national government. C. Further development of the National Adaptation Plan (NAP) D. Improve inter-administrative cooperation – both cross-sector and across levels of government E. Promote public outreach/participation processes, when necessary, for instance to disseminate the biannual implementation evaluation reports. To achieve this, each competent Ministry and DLGO will designate a climate change adaptation strategy focal point (CCASFP). The Union of Municipalities will also designate a CCASFP in representation of municipal governments and communities. All competent authorities will work together in the IWGCCAS under the leadership of MARDE, regularly inform each other about their activities and continuously set new goals in order to create the conditions for effective climate adaptation in Cyprus. The Department of Meteorology regularly accompanies the IWGCCAS to provide new information on observed climatic changes. In addition to regular communication between focal points, the full IWGCCAS will meet at least once a year. The IWGCCAS will coordinate with the Disaster Risk Management governance body that is currently being developed under the EU-funded Reforming, Developing and Enhancing the Civil Protection System in Cyprus project (September 2024-September 2026) .	All NAS measures
HEAL 1n	Identify the risks of climate change on human health and develop the most	Reducing the health risks posed by climate change	Climate change generates diverse impacts on the health of the population, aggravating existing health risks or creating new ones (for example, by altering the geographical distribution of vector-borne diseases). For this reason, the effects of climate change, already observed or foreseeable, should be identified and incorporated into national health plans – at the national, regional and local levels – and	GOV 2n GOV 3n

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
	effective adaptation measures by integrating climate change into national health plans.		in its various dimensions: extreme temperatures, air quality, natural disasters, sanitary quality of water and food, and disease-transmitting vectors. The Cyprus general Strategic Plan 2024 – 2026 does not incorporate these considerations. Some of the main lines of intervention to be addressed by the plans include: A. Research to improve knowledge on the health impacts of climate change and the effectiveness of adaptation measures B. Training and risk communication to improve the knowledge of both health professionals and the public C. Identifying actions to address short-, medium- and long-term risks D. Develop and implement an information system for applying the Social Vulnerability Index (SVI) to assess a community's vulnerability to climate hazards and impacts such as flooding, extreme heat and drought events	
HEAL 2n	Improve the governance of heat waves to reduce their impacts on human health	Act upon state-of-the-art heat-health action plans fed by scientifically sound data monitoring and evaluation and monitor compliance with existing safety legislation.	A. Develop and strengthen the early warning system for heat waves throughout Cyprus through an online platform where the relevant information will be published. This system should use the available climate information to quantify specific climate indicators that express a person's thermal comfort, such as the Humidex index (Masterton and Richardson, 1979) which expresses the level of discomfort experienced by a person as a function of temperature and humidity and suggests taking relevant precautions according to the level of discomfort. B. Provide guidance through mass media to protect against heatwaves C. Obligate each employer and each self- employed person to apply measures in accordance with the provisions of the legislation to avoid, or reduce to an acceptable level, the risks arising from exposure of workers to heat-burdened workplaces. Ensure compliance with the provisions of Decrees 291/2014, 206/2020 and 231/2023 regarding heat waves and thermal conditions. D. Re-evaluate the governance of heat-health action plans (HHAP) based on monitoring and evaluation principles	GOV 1n
HEAL 3	Operation of community centres in each municipality/community (e.g., town halls, schools, Open Elderly Protection Centres, etc.) to provide protection (air conditioning, shade, fluids) to the population at risk	Climate change impact management on mortality and morbidity	Operation of community centres in each municipality / community to provide protection to the population at risk.	
HEAL 4	Empower and prepare medical/nursing and municipal staff to deal	Manage impacts of climate change in relation to mortality and morbidity.	A. Create an interdisciplinary team to monitor the effects of climate change on health and provide early warnings to alert relevant health stakeholders. Based on the data gathered in HEAL1, notify	GOV 1n

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
	with climate change emergencies and serve an increased number of patients/incidents related to climate change		the competent authorities and provide recommendations for further research, training, monitoring and adaptation measures B. Develop contingency plans in the health and social care systems as well as in the municipalities to serve an increased number of patients/incidents related to climate change. C. Develop specific information material and organize training seminars on the effects of climate change on health and ways to address them.	
HEAL 5n	Develop a national strategy to prevent the health risks from vector-borne and non-vector-borne infectious and parasitic diseases favoured by climate change	Prevent the health risks from vector-borne and non-vector-borne infectious and parasitic diseases favoured by climate change and have the best available knowledge at hand to appropriately react to emerging health risks if required	Climate change favours the spread of several vector-borne and non-vector-borne infectious and parasitic diseases in southern Europe such as Dengue, Chikungunya and Zika, all of which are transmitted by Aedes mosquitoes, which are expanding due to climate change. Diseases already present in some areas of southern Europe that will require attention in this regard include leishmaniasis, tularaemia, Crimean-Congo haemorrhagic fever, West Nile fever and Lyme disease, and among the vectors, ticks and other species of mosquito. Tackling emerging risks will require a multi-sectoral coordinated approach, pooling expertise from different medical specialties and other areas of expertise – ecology, entomology, etc.- to tackle both the vectors and their distribution as well as the health implications. There is a need to address this risk by improving the following lines of action: • epidemiological and microbiological surveillance to detect, diagnose and treat all patients as quickly as possible; • entomological surveillance to detect the presence of the vector; • vector management to prevent and control its presence and, if possible, eradicate it; • individual protection of the population; • training and information and, if necessary, research, on various fields – epidemiology, public health, taxonomy, entomology, ecology, etc.; • promote communication, networking and coordination between the administrations and agents involved, without which the activities contemplated in the plan could not be carried out. It is also worth highlighting the interest of citizen science initiatives for the evaluation and control of the presence of the vectors that cause these diseases. These lines of action could be included in a National Preparedness and Response Plan or Strategy for Vector-borne Diseases.	GOV 3n
HEAL 6	Establish an effective multilevel governance system that identifies a lead agency, defines clear roles and responsibilities of the various health and social care services, and facilitates intersectoral and	Improve the health care system response to climate related health-risks, improve the flow of information and enhance capacities of competent authorities and communities to respond to climate-related health risks	• Develop an emergency plan that defines the responsibilities of the various health and social care services for the direct control of the effects of climate change on health in the event of an outbreak of disease or the occurrence of extreme weather events (heatwaves, floods, fires). • Establish a multilevel governance system involving national, regional and local authorities, that defines clear roles and responsibilities formally and in advance, identifying a lead agency. Promote formal and informal intersectoral coordination mechanisms, such as working groups. • Provide all relevant actors with the necessary information and resources to implement the actions under their responsibility, ensuring bi-directional information flows as close to real-time as possible and provide opportunities for stakeholder engagement. Specifically:	GOV 3n

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
	intergovernmental coordination to manage climate change impacts on public health		○ Define effective routes of information flows for different climate-related related risks, competent authorities and stakeholders ○ Organize awareness campaigns to develop and disseminate educational messages on the effects of climate change on health and how to deal with and protect it ○ Develop appropriate channels of communication to receive real-time on the ground information on health risks. ○ Create forums for stakeholder involvement in the development of plans and procedures	
WAT 1	Periodic reviews of progress and priorities of water policies and plans, and adaptation of objectives, instruments and resources, considering climate change.	Integrate climate change adaptation into water policy and planning - RBMPs, FMPs, DMPs - giving special priority to the management of extreme events (droughts and floods).	Periodic reviews of the water policies and plans should consider the effects of climate change, both at the stage of monitoring and assessing the state of the water, as well as at the stage of planning and selection of adaptation measures.	
WAT 2	Improve, upgrade, modernize and repair the water supply and distribution networks and related infrastructure to reduce water losses	Water savings to address water scarcity / high water costs due to increased demand for desalination / energy from water suppliers	Water losses in water distribution networks especially in rural areas are quite high. Considered water losses in networks, also known as uncounted-for water in distribution networks in the main urban areas, are estimated to range from 15% to 20% and in rural areas from 30% to 50%. The water savings from the replacement of networks are expected to be very effective compared to other saving measures. A survey conducted in 2009-10 on the water supply networks of municipalities that are not serviced by water supply councils found that more than 80% of the networks in 63,4% of municipalities have been replaced. It is proposed to continue the replacement and repair of all old and poorly maintained water distribution networks and the detection of leaks by adopting appropriate technologies.	
WAT 3	National Investment Plan for Water Works considers the revised National Adaptation Strategy and addresses the identified strategic and specific objectives	The targeted allocation of resources for the implementation of infrastructure projects for water protection and the sustainable satisfaction of water needs taking into consideration climate change adaptation.	In the context of fulfilling the essential conditions for the approval of the Cohesion Policy Programme "THALIA 2021-2027", the Water Development Department (WDD) and the Council of Ministers has approved the National Investment Plan for Water Works, which applies to projects of WDD and other water supply and sewerage institutes (Water Supply Boards, Sewerage Boards, Municipalities, Communities, etc.) which are either in progress or planned for implementation within the decade.	AGRI 4
WAT 4	Create an early leak detention tool and a digital platform (app) to inform consumers about their consumption, submit	Early detection of leaks in domestic water supply systems. Behavioural change of consumers in relation to water protection, resulting in water savings. Consumer facilitation.	Creation of a platform (application) to inform consumers about their consumption, if there is a smart metering system (for any increased consumption, leaks, etc.), to submit applications and to pay bills.	

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
	applications and pay bills.	Upgrading of services. Increased reliability of the water supply operator.		
WAT 5	Expand the use of water meters	Supply deficit of irrigation. Improve monitoring of consumption patterns and reduce overall water use.	Expansion of the use of water supply meters and parallel expansion of the counting of "pressure". Installation of water supply meters to all users and water providers as well as the parallel installation of modern systems of automatic centralized collection and evaluation of meter readings for effective monitoring.	
WAT 6	Implementation and regular reviews of the Drought Management Plan (DMP) incorporating information on climate change impacts on water resources and integrate contingent drought risk management into water planning and management	Implementation and regular revisions of Drought Management Plan	• Implementation of the measures required for the implementation of the drought/water scarcity Management Plan • Implementation and strengthening of early warning systems • Periodic reassessment of indicators and limits assigned to them	DRM 2n GOV 1n
WAT 7n	Improve application of the polluter pays principle to improve water quality	Reduce pollution and improve water quality	The polluter pays principle is at the core of EU environmental policy: those responsible for environmental damage should pay to cover the costs. This applies to prevention of pollution, remediation, liability (criminal, civil and environmental liability) and the costs imposed on society of pollution that does happen. Incorporating environmental costs into water fees in Cyprus can contribute to reduce pollution, improve water quality through better water use practices. Urban water use fees can incorporate the cost of advanced water treatment to enhance wastewater reuse in agriculture – because of reduced costs – to replace freshwater sources and improve water quality.	WAT 9n
WAT 8	Reuse of treated urban wastewater after strict control of its suitability; and provide incentive schemes for sectoral uptake of water reuse (farming, livestock, other uses)	Reuse of treated urban wastewater with strict control of their suitability in compliance with existing regulations	Develop the necessary infrastructure to make the treated urban wastewater available for irrigation of green areas, sports fields and irrigation of crops, where these infrastructures are not available. Conduct the necessary studies (technical, cost-benefit, etc.) for the development of the water distribution networks.	
WAT 9n	Protect groundwater resources from	Improve status of groundwater bodies	Groundwater is a strategic resource for water management in situations of drought since it typically responds more slowly to changes in precipitation. It plays a fundamental role for ensuring water	WAT 7n

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
	pollution and overuse and promote the reduction of groundwater abstractions where sustainability limits are exceeded		supply in times of drought, in the maintenance of aquatic ecosystems, providing the base flow of river systems, and its deterioration jeopardises the environmental status of rivers and the sustainability of their water supply and flow maintenance services. For all these reasons, the recovery of groundwater bodies is a priority objective in terms of adaptation. The reduction of groundwater abstractions should be promoted where sustainability limits are exceeded, and the effective reduction of pollution should be encouraged, particularly that related to agricultural and livestock farming. Measures in this line of action can include: A. Improved characterization of groundwater bodies / understanding of annual renewable resources and groundwater dynamics B. Require all groundwater uses to install water meters (smart meters if funds are available) and periodically report to the river basin authorities. C. Improve monitoring and control of groundwater uses to enhance the aquifer's sustainability. This requires the review of the existing monitoring network to check and improve its representativeness, resources for periodic monitoring, data gathering, processing and (semi-automatic) regular reporting. It could be implemented potentially on a pilot base. D. Limit non-essential groundwater uses – landscaping, irrigation – when sustainability limits are exceeded taking into consideration socioeconomic and environmental criteria	

WAT 10n	Reduce flood risks through river ecosystem restoration and rewilding in rural and urban areas	Adapt planning practices so that ecological and hydrological continuities and ecosystem functionality inform spatial planning (regional, urban), the approval of projects impacting inland waters and strengthen the resilience of territories to the impacts of climate change	National, regional and local authorities collaborate to develop medium- and long-term balanced land strategies that:
			• limit the consumption of natural, agricultural and forestry areas to reduce artificialisation and favour infiltration of precipitation
			• recuperate the floodplain – providing "room to the river"
			• promote the restoration of aquatic ecosystems and hydromorphological restoration of rivers through the removal and/or improvement of longitudinal and horizontal barriers – weirs, dams that are not used anymore, etc.
			• In urban areas, identify and rewild riverbeds and other areas that have the potential to evolve into 'green corridors,' functioning not only as flood zones but also offering advantages for residents and acting as a haven for wildlife. Some actions include:
			  ○ Restoring the slopes of the valley and the riverbed.
			  ○ Rebuilding trails using natural materials.
			  ○ Planting indigenous trees and plant species.
			  ○ Install flexible and adaptable infrastructure
			• Use the Climate Resilient City Tool (CRCTool) to explore the spatial planning of adaptation options (mainly NBS) in urban areas to facilitate the exploration and selection of nature-based adaptation options for urban planning.
			• Actively involve residents and space users, such as landowners, and their knowledge of past flooding events to inform the plans
				DRM 8n
				INFR 3

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
WAT 11	Enhance the efficient use of water in buildings, industry and agriculture	Water savings to address water scarcity / high water costs due to increased demand for desalination / energy from water suppliers.	Strengthening efficient water use in buildings, industry and agriculture (e.g. more efficient household appliances, installation of water saving devices, water recycling in industries, promotion of improved irrigation systems in crops). Proposal for the mandatory adoption of the measure by all large private enterprises and the public sector and incentives for the residential sector and small and medium-sized enterprises (provision of free equipment, subsidy, discounts on fees and taxes). Mandatory for new buildings. Conduct a feasibility study on the potential of rainwater harvesting for certain domestic and agricultural uses and promote through a grant scheme, if viable.	INFR 1n
WAT 12	Control and limit intensive water demands activities (e.g., golf courses, tourist facilities, water-intensive crops) in water-scarce areas	Water savings to address water scarcity and high-water costs due to increased desalination demand	• Redefine the criteria for permitting and prohibition of water intensive developments. • Develop and consider of adaptation scenarios for the control of water intensive developments in areas with insufficient water resources. Incorporate Planning Permitting procedures of new developments.	
WAT 13n	Develop future water availability and demand scenarios (for 2050, 2070) under climate change projections and develop strategic plans to adapt demands to projections	Generate updated information to assess the effects of climate change on water resources, extreme events, water uses and the status of water bodies and associated aquatic ecosystems, according to the latest available climate models and scenarios. Develop plans to adjust current and future water demands to available resources in a climate change context in consultation with affected sectors and actors.	Promote and fund studies and research project that generate the following information: • Effects of climate change on water resources. • Effects of climate change on extreme events (droughts and floods). • Effects of climate change on water uses. • Effects of climate change on the status of water bodies and associated aquatic ecosystems. Actions to adjust demands to current and projected available resources include: • Adjust water use permit allocation to expected future available resources • Co-develop solutions in each region that are adapted to local needs and contexts, through public consultation processes. Develop publicly managed water reallocation mechanisms in situations of scarcity or droughts based on equity, socioeconomic, territorial and environmental criteria in consultation with stakeholders	GOV 1n
INFR 1n	Adapt the different building codes towards climate change adaptation	Increase the resilience of infrastructures	Climate proofing of building codes involves various aspects of the building sector related to construction, manufacturing, maintenance and provision of services. Beyond improving the adaptation to climate change and contributing to the mitigation, climate proofing of building codes also has the potential of contributing to the improvement of the quality of urban spaces and of the life of their inhabitants. In exemplary cases the implementation of building codes is carried out by administrative technicians, practitioners and researchers, and the dissemination of the updates through citizens involvement (direct or through the information channels). Making buildings more resilient also requires progress in:	WAT 11

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
			• the deployment of the urban green infrastructure, • the recovery of rainwater and greywater from buildings and innovations both in terms of materials (for example, permeable road surfaces, timber constructions) and building solutions (for example, bioclimatic architecture, green facades or roofs, seasonal shading solutions, night cooling strategies), • address the cooling/heating effects on the buildings on the public spaces outside of buildings taking into consideration the impact of the building materials used on the outside; the number and types of trees to be planted, etc.	
INFR 2	Create and maintain urban parks and other green spaces to reduce the urban heat island effect	Management of urban heat island effect	This measure includes several activities: • Conduct a survey of planned Green Spaces, assess their status and promote their development as green spaces. These could include undeveloped Planning Zones planned for green areas, existing bike lanes/ paths, storm drain protection area that may be landscaped. • Conduct a study of best practices for limiting the urban heat island phenomenon. The findings of this study will be adapted and integrated into the appropriate institutional frameworks (development plans, building regulations etc.) to avoid/reduce the phenomenon of urban heat island, reduce energy consumption for cooling and outdoor shading etc. • Include shading in cycling and pedestrian's infrastructures through tree planting, installing solar panels, and other bioclimatic shading options (pergolas, etc). • Use stormwater and flood risk management projects to create "climatic havens" through landscaping, permeable pavements, fountains, channels and other blue infrastructure, etc. Possible sources good practices: Mission stories Building heat resilience in Zagreb: After the 2020 earthquake, the process of rebuilding was an opportunity to address increasing heat stress. As a first step, a heat map for one city district was developed, and the impacts of heat on different sectors analysed. The spatial distribution of heat showed significant temperature variations of up to 4°C in a same building block, primarily determined by the existence or absence of green infrastructure. In general, areas rich in green infrastructure were cooler than those without. Based on the analysis of urban heat distribution at the block level, green infrastructure and NBS were included in the rebuilding process. Refreshing the city of Toulouse	
INFR 3	Develop flood relief projects in cities to complement existing and new flood relief solutions	Reduce flood risk: insurance premiums for flood risk; flooding of transport infrastructure, critical utilities and archaeological sites; number of persons exposed to significant flood risk; number of owners to significant flood probability	• Conduct studies to find appropriate areas for the development of flood decongestion projects and select appropriate implementation methods. These projects can be carried out in the wider context of sustainable stormwater management policies by including a range of measures, such as permeable surfaces, green spaces, green roofs, retention ponds, absorbent wells, culverts. • Use flood relief projects to develop water features for cycling infrastructures – for instance running water channels under cycle paths to create cool conditions for cyclists; or fountains and other water features in urban green spaces to create cool conditions for citizens while providing flood relief protection.	WAT 10n

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
			• Build on the experience from the implementation of similar or relevant projects in other areas of Cyprus. • Provide for the creation of such projects when establishing or extending development zones.	
INFR 4n	Change public procurement practices to incorporate climate change adaptation criteria in the development of call for tenders and the establishment of allocation criteria	Incorporate climate change adaptation criteria in infrastructure public procurement processes	This line of action includes the following possible measures: • Promote the incorporation of CCA criteria in the development of call for tenders • Promote the incorporation of CCA considerations in the development of the public procurement allocation processes, so that climate-related technical criteria are incorporated and adequately weighted. In order for this to be implemented, a study has to be conducted in order to find the ways to do this possible and reliable.	
INFR 5	Extensive tree planting	• Shading and temperature reduction • Aesthetic improvement and urban landscaping • CO2 absorption • Improved conditions for walking and cycling	This measure can include: • Tree planting along roads in towns and villages • Tree planting along intercity and rural roads • Tree planting in public places and state land • Tree planting along existing and planned cycling / pedestrians' infrastructure for comfortable conditions Implementation should consider: • Develop and implement legislation on the percentage coverage of trees (and the tree species in a city) • Ensure enough space for growing of trees and shrubs • More detail required (green corridors between green spaces and roadside tree planting in urban areas etc.) • Provisions for maintenance of tree planting	
INFR 6n	Incorporate climate change adaptation criteria into the strategic planning of the transport sector, including the support and strengthening of climate change adaptation capacities in public administrations and other key sectors and actors	Improve climate resilience of transportation sector	Incorporate climate change adaptation criteria into the strategic planning of the transport sector. Support and strengthen climate change adaptation capacities in public administrations and other key sectors and actors. Create a forum for information exchange between administration and managers of infrastructure and transport systems.	

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
INFR 7n	Improve public transport adapting it to new climatic conditions, especially heat stress	Reduce the heat stress in public transport	Some measures in this line of action include: • Public transport stops in cities are transformed into self-sufficient short-stay climate shelters. • Radiant cooling and nature-base solutions can be used in an innovative way for thermally conditioning urban open spaces. • Materials and designs that minimize heat absorption are employed to enhance passenger comfort. • Cooling mechanisms are employed – AC cooling, cooling panels, fans, etc. – are used for vehicles and stations. Capacity building is required prior to implementation to design proper measures.	GOV 2n
INFR 8n	Review maintenance protocols for the transport infrastructure considering the risks arising from climate change	Increase the lifetime of infrastructure	The main objectives of the systematic review of standards are: • Adapt technical requirements of transport infrastructure to expected changes in climate. • Provide an unbiased review and identification of revision needs and priorities. • Address transport infrastructure resilience in a comprehensive way, including design, maintenance and operations. • Update climate parameters and indicators commonly used in transport standards, to take account of potential changes Cyprus' climate.	
INFR 9	Grant Scheme for adaptation to climate change of communities' infrastructures	Mitigation of climate change impact to communities' infrastructure	Funding of investments in communities' infrastructures for climate change adaptation. 1. Investments that enhance the resilience of communities to high temperatures (greening) and flooding (permeable materials) 2. Investments in sustainable mobility infrastructure (construction of cycling paths and walking trails connecting communities including cycles parkin 3. Consultancy costs for participation in the Scheme and successful implementation of the interventions	GOV 6n
INFR 10n	Provide training and capacity building to staff from competent authorities – planning department, municipalities, new regional organizations – on the benefits of green spaces and nature-based solutions for climate adaptation	Improve the resilience of cities and communities to climate related risks by training staff on available measures.		GOV 2n
SEA 1	Elaboration of a study to identify coastal areas vulnerable to climate change	Protection of tourist assets at risk of flooding due to sea level rise / impacts on coastal development.	This study will include: A. Calculation of the soil that will be eroded or lost up to the years 2050 and 2100 based on different climate scenarios, in order to estimate the land losses due to sea level rise, soil erosion and the	GOV 1n

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
			possible action of wave storms, in coastal areas of Cyprus, which have increased vulnerability (either due to low soil slope or high erosion rates). B. Develop appropriate databases and digital maps of the coasts to more effectively monitor the pressures on them. C. Assess adaptation measures already taken and identify additional necessary measures. D. Revaluate coastal geohazards as a result of climate change E. Provide information for the definition of the coastal setback zone. Article 22 of the ICZM Protocol establishes that "undertake vulnerability and hazard assessments of coastal zones and take prevention, mitigation and adaptation measures to address the effects of natural disasters, in particular of climate change". Articles 22, 23 and 24 of the ICZM Protocol provide more info on the risks affecting the coastal zone.	
SEA 2n	Develop adaptation initiatives and promote nature-based solutions for stabilising and enhancing the coastline resilience against climate risks	a. Maintain and restore the natural capacity of the coast to adapt to changes by increasing the application of nature-based solutions aiming for: protection of land affected by coastal erosion and wave action; addressing impacts on coastal development; preventing loss of bottom marine habitat b. Reduce the negative impact of existing hydro-technical facilities – for instance dams – that prevent the natural flow of sediments to the coast causing a change of hydrodynamic conditions in the adjacent area and siltation of the bottom habitats..	A. Set up a fund (mainly based on EU funding) that finances projects that employ nature-based solutions and ecosystem-based adaptation) to help vulnerable communities adapt to the impacts of climate change, including: • protecting the coast from erosion, wave impacts, and storm overflows • restoring negatively impacted areas; • reducing the negative impact of existing hydro-technical facilities in the coastal area. • Include NbS in Strategic plans for coastal protection. B. Provide capacity building/training and financial incentives for local authorities regarding climate risks and potential adaptation options on the coast C. Public information campaigns on: • the importance of natural habitats for coastal resilience and the need to further protect them • coastal risk from climate change to private property developers D. Involve local stakeholders in coastal monitoring (e.g. recording illegal practices which can be linked to increased coastal erosion, such as the removal of sand and rocks).	GOV 2n GOV 6n SPAT 1n SPAT 3n
SEA 3n	Implementing a coastal contract for integrated wetland management in	Protecting coastal (wet-)lands for climate change adaptation and environmental protection	Healthy wetlands are crucial in mitigating global warming, acting as natural carbon sinks, and providing resilience against extreme climatic events. However, the fragmentation of governmental responsibilities typically challenges the management of wetlands. Governance mechanisms encouraging multi-actor cooperation are considered a good practice in river basin management.	

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
	the context of climate change		Specific actions to be developed within the measure: 1. Establishment of a governance mechanism for cooperation on integrated wetland management; 2. Research and analysis of the coastal wetlands risks associated with climate change 3. Proposal of specific measures (incl. for individual wetlands where applicable) for protecting ecosystems, resp. biodiversity and to increase the capacity of wetlands for carbon sequestration; 4. If there is an identified need, proposals should be made to change or supplement the protection regimes of the wetlands that are an object of protection (NATURA 2000, conventions, etc.).	
SOIL 1	Continuation and increase of interventions through the implementation of the CAP Strategic Plan 2023-2027	Addressing increased soil erosion/ desertification	Soil protection by promoting agri-environmental measures	AGRI 1
SOIL 2	Improve management of extensive livestock farming and control of illegal grazing	Addressing increased soil erosion/ desertification Prevent desertification, prevent soil erosion and promote the restoration of degraded land	Extensive livestock farming is an integral part of mediterranean agricultural practices. In climate change contexts, excessive stocking rates cause soil degradation, ecosystem deterioration and economic losses. Strategic plans need to be developed to adjust stocking rates to carrying capacity under new climate conditions – reduced rainfall and increased temperatures. • Revise the Goat Law to promote sustainable livestock farming and protect the environment and extend its application to all areas in Cyprus • Control grazing through licensing according to the carrying capacity of each area • Conduct studies to determine the carrying capacity of sensitive areas and under new climate conditions. • Develop strategic plans to adjust stocking rates to carrying capacity • Reintroduce the field guard to help control illegal grazing and compliance with permitted stocking rates. • Restore and implement the institution of the farmer who will have the authority, among other things, to control illegal grazing. • Combination with compensatory measures for breeders.	
SOIL 3	Promote the practice of incorporating compost to reduce desertification and degradation of agricultural soils	Reduction of desertification and degradation of agricultural soils	Increasing the SOM of agricultural soils by incorporating organic additives such as compost directly increases soil permeability, water retention capacity, creates conditions for an increase in soil biodiversity and in particular beneficial soil micro-organisms, contributes to soil carbon storage and makes soil more resistant to erosion due to heavy rainfall. However, in Cyprus there is a striking discrepancy between the need to increase SOM to improve fertility and combat desertification on the one hand and the availability of waste biomass, such as park and garden cuttings and prunings, food waste, etc., which could be used as soil additives. Diverting these materials from landfill and using them for compost and incorporation into soil could, in addition to the benefits mentioned, reduce methane production from landfills.	AGRI 3n

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
SOIL 4	Promote the practice of installing plant barriers to reduce soil erosion	Limitation of soil erosion	The establishment of drought-resistant hedgerows on degraded agricultural field margins can significantly reduce soil erosion and help adapt to climate change. At the same time, they can contribute to the retention of rainwater in the field, enhance the biodiversity of agro-systems and provide sources of alternative income for producers.	
SOIL 5n	Limit land occupation and soil sealing by applying various tools (e.g. spatial planning etc.)	Limit land occupation and soil sealing	This measure can include the following actions: A. Stricter land-use planning: Enforce zoning regulations and urban development boundaries. B. Brownfield redevelopment: Prioritize development on previously developed land. C. Recultivation of urban areas D. Green roofs and walls: Encourage vegetation on buildings to reduce impermeable surfaces. E. Tax incentives: Offer tax breaks for land conservation and green infrastructure. F. Impact fees: Charge developers fees to offset the environmental costs of new construction. G. Infrastructure sharing: Promote shared underground infrastructure to reduce land use. H. Mandatory use of technological options (e.g. permeable surfaces) I. Public Awareness and Education	GOV 2n GOV 3n SPAT 1 SPAT 3n
SOIL 6n	Include soil erosion prevention measures in remediation requirements after mines are abandoned	Prevent soil erosion	When abandoned mines are and restored, be stricter, with more specifications on erosion too, besides landscaping, e.g. utilize as amphitheatres, hotels etc. also promoting tourism. This could be done through new requirements to be included in procedures of Tenders	
SOIL 7n	Reuse of excavated soil from construction industry waste depending on their specifications for soil improvement	Prevent loss of good quality soil	Reuse soil from development sites – when of adequate quality – for soil improvement. GSD to determine which areas have good soil quality. Include reuse for the specific purpose as a condition e.g. in Planning/ Building Permitting.	
SPAT 1n	Integrate climate change adaptation into territorial and urban planning, by climate proofing according to specific guidelines	Improved integration of climate adaptation into spatial and urban planning is supported through the analysis and monitoring of the spread of urbanised land in the territory from a climate change perspective	Cities and regions have strong planning capacities, either directly or via energy, climate, and development agencies. However, they often lack options to support and facilitate implementation. Although spatial plans are a multidisciplinary tool that covers most, if not all, aspects of development in an area, they are not widely used to enforce energy and climate ambitions beyond the implementation of national construction standards. By expanding their use and including key elements to fulfil local or regional energy and climate goals, spatial plans can become a great lever of change. This process requires cooperation between key actors: local and regional governments, energy and climate planning experts, and urban and spatial planners. It is also necessary to harmonise plans and strategies such as development plans, Sustainable Energy and Climate Action Plans, climate change adaptation and resilience plans, etc. Some possible actions to implement this measure include: A. Incorporate climate change considerations and prevention of natural risks in spatial plans to be developed or amended,	

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
			B. Incorporate natural risk maps into planning to avoid urban developments that could be affected by floods, torrential rains, rising sea levels, water insufficiency, risk of landslides, etc. C. Include climate change scenarios, implementation of climate change emergency plans and promotion of prevention and adaptation actions on urbanised land susceptible to natural hazards D. Incorporate the concept of urban green and blue infrastructures into planning, as multifunctional nature-based solutions, which solve urban problems such as improving biodiversity, managing flood-prone areas reducing heat islands, combating climate change and improving air quality. E. Promote the incorporation of urban climate risk mapping into urban planning, which can encourage the creation of climate refugia. F. Implement, Monitor and Evaluate the Sustainable Urban Mobility Plans in all cities G. Establish urban planning obligations for new residential buildings and large constructions, including tree planting and upgrading the surrounding environment of the building, in a way that promotes the sustainable development of the area (e.g., bike racks, electric vehicle charging stations, sidewalks, bike lanes, solar panels, water features, etc.). H. • Drafting guidelines for urban planning by the Department of Town Planning and Housing, aiming at drawing up a framework of specifications for the creation of sustainable parks, squares, roads, and more generally public spaces that respond to the climate crisis through the use of water elements, the Introduction of high-biodiversity greenery aimed at creating a favourable microclimate and finally through urban equipment, such as playgrounds, paving, etc.	
SPAT 2n	Create a forum for information exchange between local authorities	Enhance the exchange of information and best practices on climate change adaptation.	The creation of a forum for the exchange of information between local authorities on climate changes would make it possible to better estimate the consequences and improve adaptation policies. Emphasis should be placed on the adaptation dimension in the reference framework for territorial approaches to sustainable development and an exchange of good practices should be organised on this subject.	
SPAT 3n	Map land and soil reserves, and secure crucial areas (e.g. for air corridors, ecologically relevant areas)	Prepare the ground for spatial planning decisions and in particular for measure SPAT 4.	The measure involves the following steps: A. Land and Soil Mapping • Inventory of land and soil resources: A comprehensive assessment of land and soil types, quality, and distribution within a specific region. • Data collection: Gathering information on soil composition, fertility, erosion rates, and other relevant parameters. • Geographic Information System (GIS) mapping: Creating digital maps to visualize land and soil characteristics. B. Identification of Crucial Areas • Ecological assessment: Identifying areas with high ecological value, such as biodiversity hotspots, wetlands, or forests. • Infrastructure assessment: Determining the location of existing and planned infrastructure, including transportation routes (air corridors).	

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
			• Overlay analysis: Combining ecological and infrastructure data to identify areas that require protection. C. Securing Crucial Areas • Legal protection: Establishing legal frameworks to safeguard identified areas from development or harmful activities. • Land acquisition: Purchasing or leasing critical land parcels to ensure long-term protection. • Conservation easements: Implementing legal agreements to restrict land use while maintaining private ownership. Monitoring and enforcement: Establishing systems to monitor the condition of protected areas and enforce regulations.	
SPAT 4n	Develop, in collaboration with local and regional authorities, medium- and long-term balanced land strategies that limit the consumption of natural, agricultural and forestry areas to achieve the objective of zero net artificialisation	Limit the consumption of natural, agricultural and forestry areas to achieve the objective of zero net artificialisation and minimize soil sealing.	This measure requires a two-step approach: A. Activities under SPAT 3: Map land and soil reserves B. Discuss measures to disincentivize artificialization such as: • Land Tax: Implementing a higher land tax on artificialized land can make it less economically attractive to convert natural areas. • Development Fees: Increasing development fees for projects that involve significant artificialization can discourage such developments. • Subsidies for Conservation: Providing subsidies or incentives for land conservation and restoration can make these options more economically viable than artificialization. • Zoning Restrictions: Implementing stricter zoning regulations to limit the expansion of urban areas and protect natural landscapes. • Urban Renewal Policies: Promoting urban renewal and redevelopment within existing urban areas to reduce the need for new development on natural lands.	
SPAT 5n	Apply the Climate Resilience City (CRC) tool to elaborate adaptation options in urban planning	Support the collaborative planning of climate adaptation measures for a more resilient and attractive cities.	The CRC Tool supports the selection of nature-based adaptation options in urban adaptation planning and stakeholder dialogues, to address precipitation, drought and heat hazards. It uses a conceptual urban water balance model to calculate the hydrological effects of solutions that are drawn in by users. The CRC Tool can be used on a computer to explore and compare adaptation options, or on a touchscreen for the co-creation of urban designs with stakeholders. These results are shown on a map interface and in an accompanying table. The tool provides information on the hydrological effectiveness and an indication of the construction and maintenance costs.	
TOUR 1n	Conduct study of the regionalized impacts of climate change in the tourism sector and integrate adaptation into plans, programmes and strategies in the field of tourism	Actively promote the adaptation of the tourism sector in Cyprus, maintaining its competitiveness and utilizing the opportunities and potential that result from climate change.	Some of the measures of this line of action include: • Conduct a study on the impacts of climate change on tourism and the economic consequences due to possible changes in tourism patterns • Develop climate factsheets (overview of climatic changes) per region and tourism region-specific vulnerabilities • Develop climate impact chains (visualisation of the cascading impacts of climate change) on the different tourism activities and infrastructures • Adaptation compass (navigation aid in the complex process of adaptation)	GOV 1n

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
			• Create a funding program for climate adaptation of the tourist sector and a funding radar to support finding appropriate funding opportunities for adaptation • Create interdepartmental and intersectoral working spaces to exchange of ideas (good practice examples for inspiration), tackle adaptation in the tourism sector and promote inter-administrative coordination and cooperation with the private sector	
TOUR 2n	Diversify tourism models toward those more resilient to the impacts of climate change	Reformulate current tourism model, seeking models that are sustainable, diversify away from the dominating "sea, sun, sand" model, and consider sector specific climate change risks and vulnerabilities. Contribute to the overhaul of tourism in areas affected by obsolescence, as well as to its revaluation and innovative projection.	Interventions to achieve this diversification could include, among others: • Diversify economic activities in tourist areas, changing tourist activities (for example, from ski tourism to mountain tourism), redistributing tourist flows to untapped destinations (from coastal areas to inland) and de-seasonalising sun and beach destinations • Promote alternative tourism models to beach tourism: gastronomic, sports, cultural, leisure, rural, agrotourism, health tourism, winter sports, or others. • Promote sustainable tourism destinations and products. • Reinforce the collaboration between public administrations with competences in tourism and the private sector, the former creating intervention frameworks that favour long-term strategies and synergies	

TOUR 3n	Promote the resilience of tourist resources - including natural and cultural resources - and infrastructures to climate change impacts	Identify, plan and develop adaptation initiatives to protect tourism destinations and resources, as well as promote the resilience of infrastructures and facilities.	Tourist resources include those natural or cultural elements located in tourist destinations that are likely to attract tourists. Tourism infrastructures can be understood as the collection of constructions and services used by tourism to boost its activity. This line of action includes measures such as:
			• Promote investment in the development of bioclimatic infrastructure and the use of advanced technologies to improve climatic conditions in tourist units.
			• Adaptive planning and management of natural protected areas.
			• Develop adaptation initiatives in the coastal areas.
			• In the cultural sector:
			  ○ Integrate climate change risks in the conservation of cultural heritage.
			  ○ Promote responsible, climate change-adapted and low-carbon cultural tourism.
			  ○ Use interpretative media associated with cultural heritage as a vehicle for climate awareness and communication of climate actions, including generating visibility of good practices.
			  ○ Analyse the needs for climate change adaptation in cultural tourism in Cyprus.
			  ○ Analyse mitigation-adaptation synergies in cultural tourism (for example, electric mobility reduces harmful vibrations for the built environment and reduces pollution, which can damage heritage elements).
			• Take climate change risks into consideration in the management and maintenance of transport infrastructure.
				GOV 3n

Code	Measure	Goal	Short description including stakeholders addressed	Relates to
			Institutional coordination of the tourism sector with these other areas is therefore essential to ensure that the adaptation needs of tourism are incorporated into the planning and development of these initiatives. For its part, the tourism sector can promote the adoption of measures that favour the incorporation of adaptive criteria for the protection of tourism resources, as well as the adaptation of infrastructures and facilities.	

Annex E: District Local Government Organizations projects and plans that can contribute to the National Adaptation Strategy

Larnaka District Local Government Organization

Ongoing Projects

57. **Improved wastewater treatment and electricity generation using biogas**: As part of the Recovery and Resilience Fund, the District Local Government Organization of Larnaka will proceed with the expansion and upgrade of the existing infrastructure at the Larnaka Wastewater Treatment Plant to increase its capacity and serve a larger population. The expansion is planned with a design horizon extending to 2040, by which time the full operation of phases A, B, and C of the Larnaka Sewerage System is expected. Within this framework, the project will also include the construction of primary sedimentation facilities with anaerobic digestion for energy production from biogas un action that will take measures to reduce the energy consumption of the Larnaka Wastewater Treatment Plant through biogas solutions. Additionally, the upgrade of the Treatment Plant will involve the installation of a sixth ultrafiltration membrane line and the replacement of the existing five lines with new membrane systems. This will restore proper tertiary treatment at the plant, ensuring a higher quality of reclaimed water suitable for reuse.

58. **H2S System (Construction, Equipment and Operation):** The project involves the construction of a comprehensive and automated system aimed at preventing the formation of hydrogen sulfide (H2S) in the Larnaka sewer network. Hydrogen sulphide causes corrosion to the network infrastructure and intense odour, creating a nuisance. Its production is due to the anaerobic conditions prevailing in the sewer network, combined with the high temperatures observed for most months of the year in Cyprus. These factors increase the amount of hydrogen sulphide produced, as well as its negative effects. Through the project, calcium nitrate will be produced in a unit currently under construction at the urban wastewater treatment plant. Calcium nitrate ($Ca(NO_3)_2$), as a chemical substance, will combat the phenomenon of hydrogen sulphide formation. Subsequently, this substance will be transported to strategically selected points in the sewer network, where it will be applied as a preventive measure.

59. **Construction of a New Water Reservoir in Klavdia**: The construction of a new concrete water reservoir with a total capacity of 10,000m^3 in Klavdia. This project is being carried out to supply water to consumers for 48 hours in the event that the provider (Water Development Department) is unable to supply water to the Organization, to meet additional demand in the event of an expansion of the Organization's boundaries, and to address the increased water demand from new

60. **Smart technologies**: The DLGO of Larnaka in order to detect, manage and mitigate the water losses within the water distribution network, along with the correct and sustainable water

management, will install water quality and pressure sensors in its water distribution networks and is expected to replace at least 50% of its conventional consumer meters with smart meters. Additionally, the organization will develop a Digital Twin decision support tool and a data bank that will utilize information from the installed sensors, smart water meters, and existing systems to accurately estimate water flow, pressure, and quality for the timely detection of events. Furthermore, the organization plans to replace conventional consumer meters with automated smart meters and install additional pressure and quality sensors to monitor infrastructure and develop innovative customer services, such as early warnings in the case of leaks. A customized software solution will also be designed to integrate all operations and support data-driven decision-making.

61. **Flood Mitigation Projects in Larnaka**: In response to the needs for flood management in the city of Larnaka during periods of intense rainfall, the organization is proceeding with the implementation- construction of flood mitigation projects. Specifically, the projects include the construction of flood control works in various areas of Larnaka.

62. **Construction of sewage network in suburbs areas of Larnaka** (i.e. Dromolaxia Kiti, Meneou, Pervolia): Due to the need of complying with EU's Urban Wastewater Treatment Directive 91/271/EEC of serving areas with population equivalent of more than 2000 people, new sewage network need to be constructed to serve this particular population .With that being said construction of the city's sewage network, along with the study and supervision of these projects is implemented.

63. **Watermining project**: The organization participated in the Watermining EU-funded project, through the Horizon 2020 Innovation Action, which implemented innovative solutions for clean water access and sanitation. Some of the objectives of the project were the upscaling of technologies to produce valuable biobased products from the residues of wastewater treatment, the design of new methods for ensuring energy-efficient nutrient recovery from wastewater, the development zero-liquid-discharge loop systems for pollution -free industrial wastewater and the promotion of innovative circular economy business models within the wastewater cycle.

In general, the case study in which the DLGO of Larnaka participated focused on improving treated water by desalinating it and extracting valuable products from wastewater. Furthermore, different innovative solutions were implemented for phosphorus removal to ultra-low levels through adsorption and salts removal using filtration and evaporation technologies (potentially powered by renewable energy).

The treated water after its improvement can be then used for irrigating more sensitive crops or even expanding usage in the industrial sector. As in the aspect of circularity, valuable salts and phosphorus can be recovered and marketed.

Planned Projects:

17. **DESALMED Project**: Desalination within an integrated approach to tackle the water scarcity in the mediterranean islands (Funded by the Interreg EuroMED Co-funded by the European Union): The project aims to demonstrate the value of desalination as a tool of an integrated

strategy to tackle the water scarcity in islands addressing some critical aspects: social acceptance, energy consumption and impacts on coastal ecosystems. The overall objective is reducing the impacts of desalination and enhance its acceptance in local communities. DESALMED aims to enhance the awareness of communities for the advantages that a desalination plant can made for the economy and the environment. The main outputs is a project strategy on the application of technologies, procedures and management methods to reduce the environmental footprint of desalination and the application of participatory procedures to promote its social acceptance. The beneficiaries will be the Local Authorities that manage desalination plants and the local communities. A transnational approach addresses both environmental issues and acceptance of local communities to different contexts as well as allowing us to work on better risk mitigation. The integrated approach will allow to address the issues by exploring and applying new ways for reducing the ecological footprint and the social impacts of desalination.

18. **FRESSNESH project**: Promoting Energy Efficiency and Conservative Water Use towards a Low Carbon Urban Freshwater Supply Chain (Funded by Interreg VI-A Greece-Cyprus 2021-2027 - Co-funded by the European Union): As part of consortium of the FRESHNESS Cooperation Program, the DLGO of Larnaka intends to focus on the improvement, upgrading, and modernization of certain water supply networks in the mountainous area of Larnaka, specifically in four municipal districts of the Larnaka Municipality. The networks in question were taken over by the DLGO of Larnaka on July 1, 2024, as part of the local government reform, and are facing serious issues with smooth water supply and a high rate of unbilled water. Specifically, a case study will be conducted for one of the sixteen networks taken over on July 1, 2024, to address and reduce the issue of water losses. The selected networks are in the areas of Kato Lefkara, Vavla, Laya, and Skarinou.

Limassol District Local Government Organization

Below is a list of projects planned by the Limassol DLGO. In parenthesis the expected implementation timeline:

Project plans under development

81. Sewer Networks of 250 km, pumping stations, and a new sewage treatment plant (2027-2032)
82. New pipework for water supply system in western communities (2027-2032)

Projects under study

83. Installation of 60.000 additional water meters (2027-2030)
84. New drainage works in areas with flood risk (2027-2032)
85. Extension of sewer system to cover areas not served (2028-2034)
86. Construction of sewer system to serve small communities with sewer problems (2029-2035)

87. New water supply network in small communities with significant losses in the existing network (2027-2029)
88. New water reservoirs to extent the ability to supply water in new development areas (2028-2032)
89. Increase the capacity of the wastewater treatment plant from 40.000 to 54.000m^3/day (2029-2032)
90. Installation of sensors for online monitoring of water quality and technical parameter

Annex F: Measures Impact Assessment Fact Sheets

Annex is presented as a separate document to the Strategy.

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Annex G: Public consultation contributions

This annex will include a summary of the two-stage public consultation process (see Figure 1*) of the National Adaptation Strategy and Plan.*

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