



Regional strategy for mitigation and adaptation to climate change in the Region of Crete

The Consortium:



Project Information	
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Project Overview

The Mediterranean region is one of the most vulnerable hotspots in the current biodiversity and climate crises, warming 20% faster than the global average and being the second biodiversity hotspot in the world. The increase of severe climate events are also likely to influence the choice of destinations and time to travel for its over 510 million inhabitants. The effects of climate change will put additional pressure on already strained ecosystems and vulnerable economies and societies, with Tourism being one of the most affected economic sectors.

The recent Transition Pathway for Tourism and the Glasgow Declaration are building a global momentum for Climate Action in Tourism, but policymakers and destinations need support to better develop efficient climate mitigation and adaptation policies using ecosystem-based approaches and improved multi-level governance structures, including robust planning and ensure the long-term engagement of the private sector and citizens. Indeed, ecosystem-based management is considered a good practice to effectively deal with these threats as it considers the different stakeholders and factors affecting ecosystems and the mechanisms involved, in order to find solutions.

NaTour4CChange builds on and capitalises on successful experiences at the Mediterranean and global level to test solutions for increasing the resilience of coastal destinations in the Mediterranean. The project will aim to set common methods to allow participating regions to assess their tourism-related climate adaptation and mitigation priorities, and take climate action via plans and strategies, supported by cooperative governance.

In coastal destinations, cross-sector teams will deliver specific tourism climate Action Plans, focusing on climate adaptation, where Nature-based Solutions (NbS) will be tested to ensure their feasibility. At the same time, innovative destination marketing and communication approaches will engage private stakeholders, visitors, and residents in climate action.

The project will also ensure cross-fertilisation among participating regions and destinations, to achieve common methods and to compare the different tested plans and solutions, leading to lessons, best practices, and policy.



Glossary

Climate Change Adaptation (CCA) means anticipating the adverse effects of climate change and taking appropriate measures to prevent or minimise the damage they may cause, or to take advantage of the opportunities that may arise.

Climate Change Mitigation (CCM) means making the impacts of climate change less severe by reducing the sources of emission of greenhouse gases (GHG) into the atmosphere or by improving the storage of these gases.

Ecosystem Services (ES) are the benefits that an ecosystem brings to society and that improve people's health, economy, and quality of life.

Ecosystem-based Approaches (EbA) focus on managing biodiversity and ecological systems in a holistic way to maintain and enhance ecosystem services benefits and functions.

Nature-based Solutions (NbS) encompasses all actions that rely on ecosystems and the services they provide to respond to various societal challenges such as climate change, food security, resource management, or disaster risk.

Introduction

Motivation & Purpose

This plan is motivated by the growing climate pressures on Crete's coastal tourism and the need to safeguard natural and cultural assets while sustaining local livelihoods. Its purpose is to provide a clear, shared roadmap for regional authorities, municipalities and market actors to act on climate risks and opportunities in tourism.

Scope & Principles

Scope: in-region impacts and actions within the Region of Crete; travel to/from the island is out of scope for targets. Principles: transparency in data, nature-based solutions, collaboration across public-private-civic stakeholders, and phased, evidence-led delivery.

Touristic development in Crete

This section introduces the tourism context of Crete and frames the strategy within NaTour4CChange. It follows the methods developed in WP1 for drafting regional tourism climate strategies and identifying enabling conditions for delivery.

Crete's development is characterized by mass tourism on a vast scale alongside a deep, diverse cultural and natural product that no other Greek region matches in its entirety. The future of Cretan tourism lies in leveraging its diversity to further extend the season and disperse visitors beyond the north coast resorts, promoting a more sustainable and resilient model that continues to set it apart from other Greek regions.

Table 1: Tourism infrastructure distribution across Crete

	Lasithi (destination)	Heraklion	Rethimno	Chania
Hotels	12,29%	30,98%	20,63%	36,09%



Beds	14,21%	40,95%	18,47%	26,37%
Ports	25,00%	25,00%	25,00%	25,00%
Airports	33,33%	33,33%	0,00%	33,33%

In 2024, Crete registered **5.3 million international** air arrivals, up +6.6% year-on-year. Heraklion Airport accounted for 14.6% of Greece's inbound international air arrivals and Chania for 5.9%, underscoring their pivotal role in the island's tourism system.

Tourism has immense economic importance for Crete but also has significant challenges, including environmental pressures, seasonal congestion, and water resource management. Significant tourism pressures occur in Heraklion and Chania, where most infrastructures are concentrated.

Crete's tourism sector faces mounting risks from accelerating climate change, which directly threaten its natural assets, infrastructure, and economic stability.

The island is experiencing a steady warming trend of about 1.5°C above pre-industrial levels, with more frequent and intense heatwaves. Rising temperatures and more frequent heatwaves reduce visitor comfort and strain energy systems during peak months. Simultaneously, rainfall has declined by an estimated 15%. Extended droughts and declining rainfall intensify water scarcity, increasing competition between tourism and agriculture and local communities. These pressures are particularly acute in eastern Crete, where soil moisture loss and desertification degrade landscapes and rural ecosystems vital for agrotourism.

Coastal erosion and sea-level rise further endanger beaches and tourism infrastructure concentrated along the northern coastline, increasing vulnerability to flooding and loss of beach assets and thus diminishing the island's appeal and leading to costly adaptation needs. Extreme weather events—such as flash floods, windstorms, and wildfires—add to this vulnerability by damaging transport networks, disrupting visitor mobility, and threatening both safety and destination reputation.

These climate-driven hazards compound the structural weaknesses of Crete's tourism model, notably its dependence on mass, coastal, and highly seasonal visitation. Environmental degradation and water stress reduce the quality of visitor experiences and the resilience of local communities that depend heavily on tourism revenues.

Building on this context, the strategy prioritizes **heatwaves/thermal comfort, water scarcity, and coastal erosion** as the top risks shaping tourism resilience in Crete. The next sections set goals, indicators and actions to address them.



Baseline assessment

This baseline section follows the project's common methods and focuses on **in-region** impacts within the Region of Crete (excluding travel to/from the island), to align findings with regional competencies and data availability.

Emissions note & baseline year

*Emissions scope: in-region operations and activities; baseline year provisional **2024** (to be confirmed after the rapid baseline).*

Existing policies & initiatives

Enabling environment: national climate law, regional spatial and adaptation plans, and ongoing regional initiatives on water efficiency, coastal management and mobility provide the policy basis for action. This plan builds on those instruments and translates them into tourism-specific measures, indicators and governance steps.

According to the existing Regional Plan for Adaptation to Climate Change, these are the possible impacts on tourism:

- Increase in visitor dissatisfaction
- Increase in energy consumption and therefore in the energy and operational costs of hotel units, due to the increased need for cooling and air conditioning systems. The same trend affects other tourism related infrastructures, such as restaurants and leisure venues, museums, etc. That also increases the sector's carbon footprint
- Possible reduction in the average length of stay of visitors
- Creation of a feeling of insecurity among visitors
- Reduction in tourist visits to the region's wetlands due to their qualitative and quantitative degradation
- Impact on ecotourism due to the degradation of natural ecosystems
- Damage to coastal tourist infrastructure, reduction in tourist visits
- Alterations, damage, or destruction of archaeological sites that attract visitors, with an impact on visitor numbers

Furthermore, the main climate threats for the region are:

- Drought & Water Scarcity – Declining rainfall and rising temperatures strain freshwater supplies.
- Extreme Heat – More frequent heatwaves impact health, agriculture, and tourism.
- Coastal Erosion & Sea-Level Rise – Beaches and infrastructure are at risk from flooding and storms.
- Flash Floods – Intense rainfall events cause sudden flooding and soil erosion.
- Biodiversity & Agriculture Loss – Desertification spreads, threatening ecosystems and crops like olives.
- Tourism Disruptions – Heat, water shortages, and beach degradation harm the economy.



While the existing Regional Plan for Adaptation to Climate Change lists multiple climate threats in different sectors, this strategy translates them into **three immediate operational priorities** for tourism resilience in Crete: **(i) coastal & ground erosion, (ii) extreme heat/thermal comfort, (iii) water scarcity**.

Long term vision

This vision reflects the Baseline assessment and translates identified pressures into clear, long-term strategic targets for Crete's tourism sector.

Goals and targets

From the results of the assessment, considering future possible threats a long term vision has been developed with the following targets:

1. Reduce ground and coastal erosion
2. Preserve biodiversity
3. Diversification of the visiting period
4. Promote use of renewable energy sources by tourism organizations and businesses
5. Monitoring climate change
6. Promote bicycling

Operational emphasis in the next phase focuses on protecting coastal assets (erosion), improving thermal comfort during heatwaves, and reducing water stress at peak season. These priorities guide the selection of measures, indicators and financing options in the action plan.

Targets will be tied to measurable KPIs (e.g., L/guest-night water use, days > 35 °C in peak months, % coastline under soft-protection plans) and phased milestones to 2027 and 2030.

Decarbonisation objective

Mitigation objective: reduce **in-region tourism carbon intensity (kg CO₂e/guest-night)** with 2027/2030 milestones **TBD after baseline**, prioritising energy efficiency and renewables in tourism facilities and mobility measures.

Actions and legislation

Greece has established a robust legislative framework focused on a rapid energy transition, binding emission reduction targets, and aligning its economy with the European Green Deal. It has significantly accelerated its climate legislation in recent years, moving towards a comprehensive national framework centered on achieving climate neutrality by 2050. The driving force is the National Climate Law (Law 4936/2022), which sets legally binding targets.

Table 2: Regulation frame

Regulation Level	National	Regional
Non Spatial regulations/directives	Law 4936/2022 (FEK 105/A/2022) (FEK 974/B/2001) 99605/3719	Tourism Strategic Planning & Operational Plan 2024 - 2028



Regulation Level	National	Regional
	National Action Plan against desertification	
Spatial regulations	Tourism National Spatial Plan	Regional Spatial Plan of Crete (2017) Regional Plan for Adaptation to Climate Change (2022)

Crete follows these national directives while tailoring implementation through its Regional Spatial Plan (2017) and the Regional Plan for Adaptation to Climate Change (2022). The latter prioritises adaptation to severe climate risks (e.g., water scarcity and wildfires) and informs destination-level measures for tourism.

In parallel, tourism enterprises are encouraged to align with the National Climate Law (Law 4936/2022) by accelerating energy efficiency and renewable energy uptake, in step with the island's resilience and competitiveness goals.

Future Vulnerability of tourism

This section follows the Regional Plan's methodology and scenario design. It reports **in-region** tourism vulnerability under the intermediate and adverse scenarios across three horizons (short-, medium- and long-term), keeping labels and classes exactly as defined in the Plan.

The geographical analysis of tourism vulnerability showed that in the short term (until 2040), in both the intermediate and adverse scenarios, all of the areas examined in the Region of Crete show moderate vulnerability to climate change. The greatest vulnerability is found in the regional units of Lasithi and Heraklion. Higher vulnerability values are found in tourist uses in the municipalities of Archanes-Asterousia, Gortyna, Sitia, Ierapetra, Faistos, Kissamos, Heraklion, and Rethymno.

In the medium term (until 2060), in an intermediate and adverse scenario, the areas with tourism uses in the Region of Crete are expected to show moderate and, for the most part, high vulnerability. In fact, in the adverse scenario, all areas with tourism uses show high vulnerability. Tourism uses in the regional units of Lasithi and Heraklion are expected to show greater vulnerability. At the municipal level, tourism uses in the municipalities of Archanes-Asterousia, Sitia, Ierapetra, Agios Vasileios, Gortyna, Faistos, Kissamos, Agios Nikolaos, and Heraklion are expected to be more vulnerable.

Finally, in the long term (until 2100), the situation is expected to become even more difficult, as the areas used for tourism in the Region of Crete are expected to show significant and, in most cases, very high vulnerability. In fact, in the adverse scenario, all areas used for tourism are highly vulnerable. The greatest vulnerability is found in the tourism areas of the Regional Unit of Lasithi. At the municipal level, the greatest vulnerability is found in the tourism areas of the municipalities of Sitia, Archanes-Asterousia, Ierapetra, Agios Vasileios, Agios Nikolaos, Sfakia, Gortyna, Lassithi Plateau, Rethymno, Faistos, and Heraklion.

The following figures show the vulnerability of tourism at the regional level for the two scenarios under consideration, over the three time horizons. In short term scenario RCP 4.5 for the period 2021-2040 and the long term scenario 2041-2060.

	Future vulnerability
Blue	insignificant
Green	low
yellow	moderate
orange	high
Red	very high

Table 3: Regional Climate change Indicators

Climate Change indicators	Future indicator trend at Regional Level
Increase of Temperature	high
Precipitation days <1 mm	low
Wind >6 beauford	moderate
Number of Days with temperature >35c	high
Number Frost days	Insignificant
Extreme precipitation days	moderate
Average snowfall	Insignificant
Average sea level rise	high

Implications for tourism: the **high** trends for **> 35 °C days** and **sea-level rise**, together with **moderate** trends in **extreme precipitation** and **strong winds**, align with the vulnerability patterns reported for coastal municipalities and key visitor areas. This supports prioritizing **thermal comfort**, **water stress**, and **coastal erosion** measures in the near term, while maintaining preparedness for flood and wind-driven disruptions. *(No formal ranking is implied.)*

The following maps are showing detailed tourism vulnerability areas according to the existing Regional Plan for Adaptation in Climate Change:

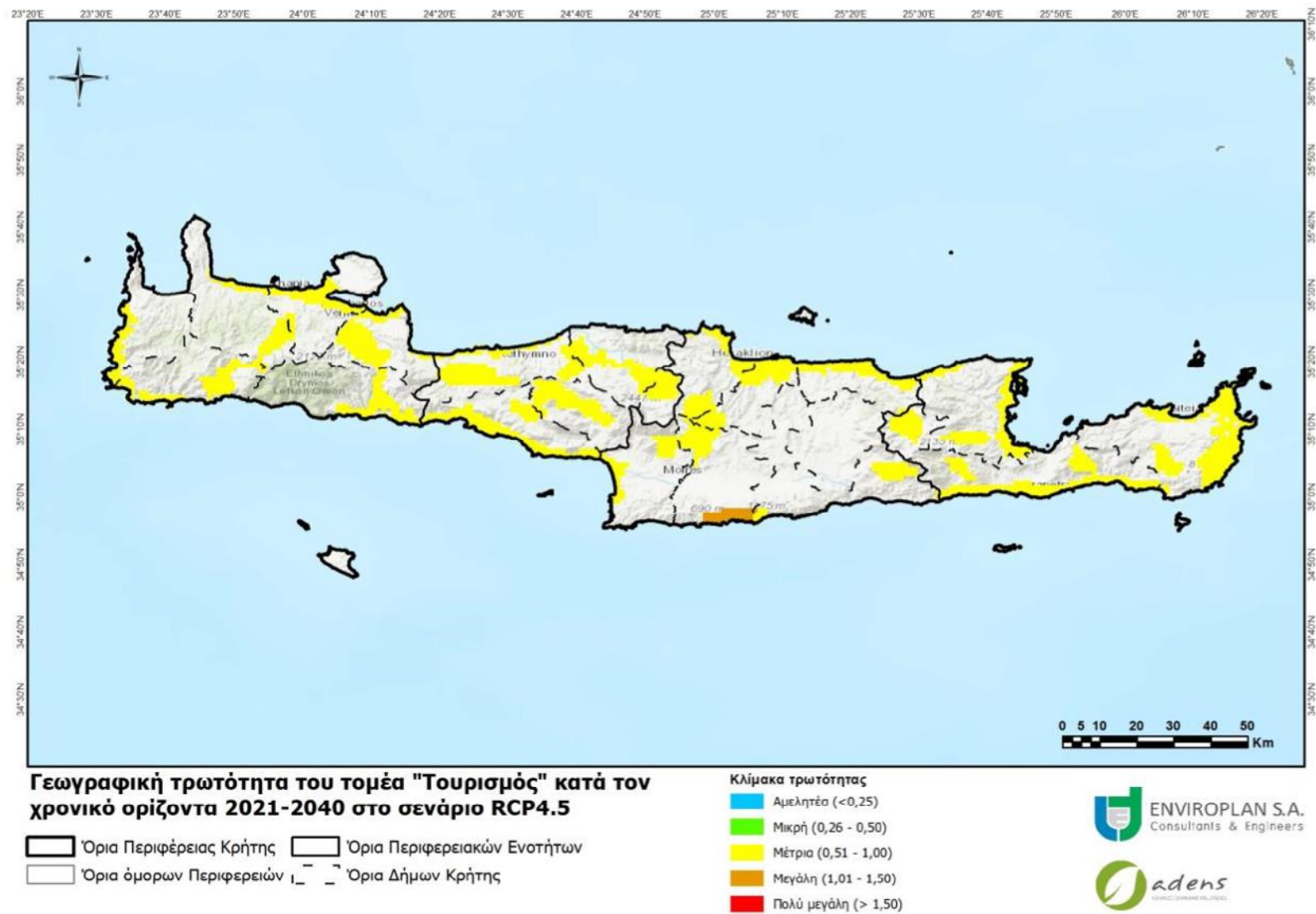


Figure 1: Future vulnerability tourism (2021-2040)

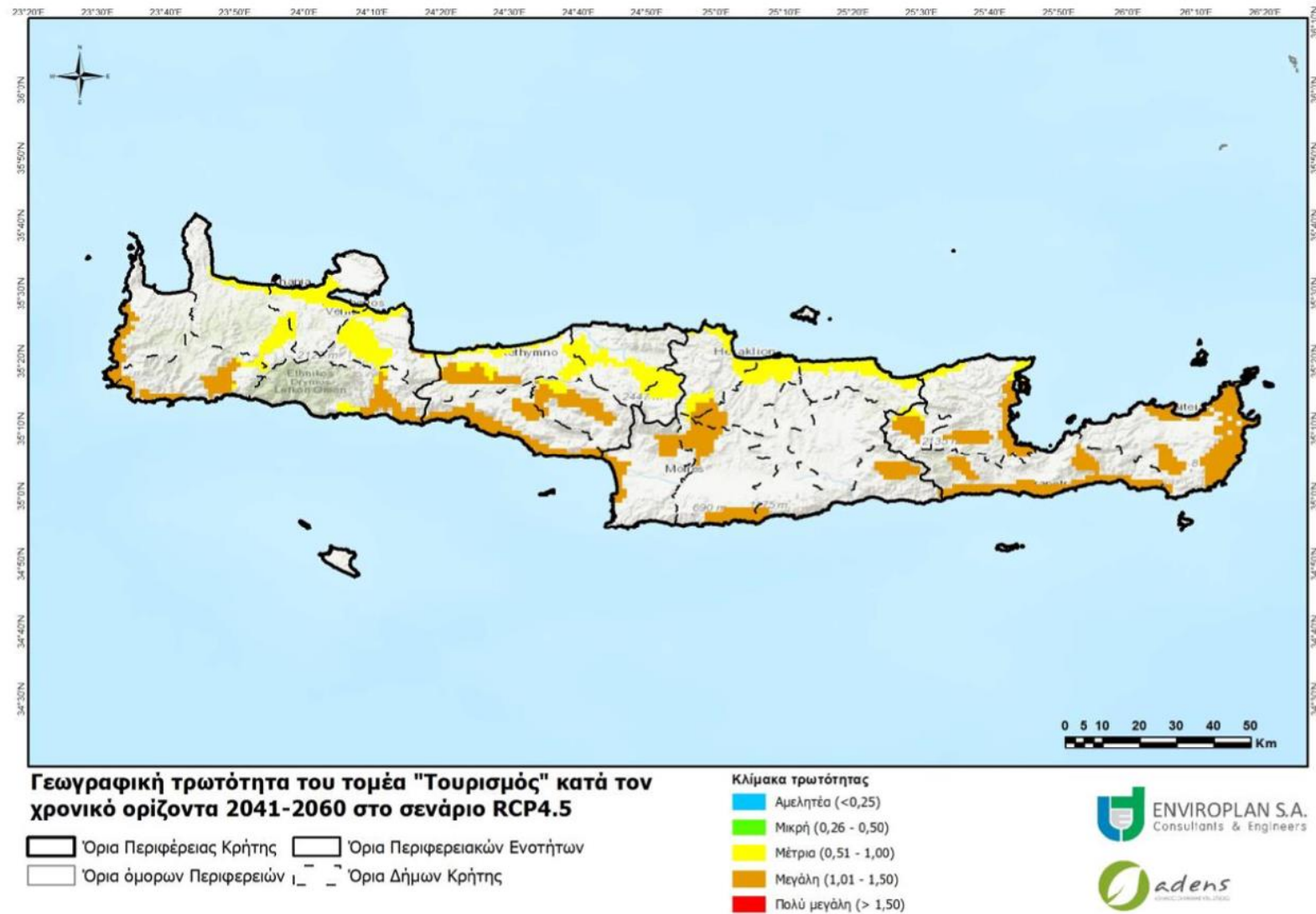


Figure 2: Future vulnerability tourism (2041-2060)

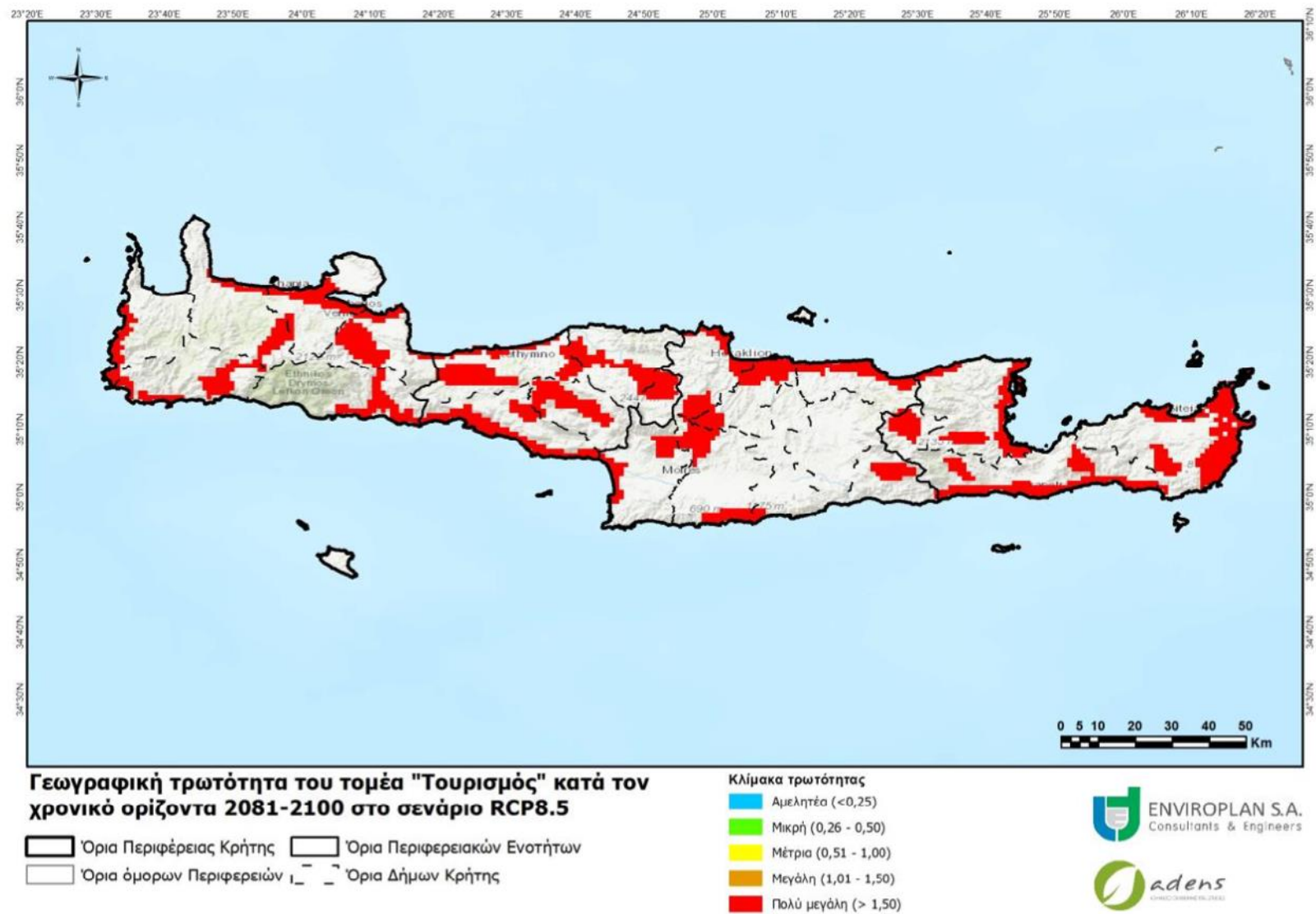


Figure 3: Future vulnerability tourism (2081-2100) - Extreme scenario



Proposed actions & measures

Adaptation & Mitigation focus

Adaptation actions focus on coastal protection (soft/NbS), heatwave readiness and water saving/reuse in tourism facilities and public spaces. Mitigation actions prioritise energy upgrades, heat pumps/Renewable Energy Systems (R), active mobility and operational efficiency in the tourism value chain.

Marketing & communication

Destination marketing will support seasonality diversification and visitor guidance on heat, water and low-impact mobility.

Training & supply chain

Capacity-building will equip regional stakeholders and tourism SMEs to implement measures; supplier engagement will encourage low-carbon, resilient products and services.

The following actions and measures—adopted from the existing Regional Plan—translate spatial vulnerability into practical steps for facilities, destinations and visitors, with a dual focus on adaptation now and mitigation co-benefits over the medium/long term.

The existing Regional Plan for Adaptation in Climate Change, proposed two (2) actions and eleven (11) measures:

Action 1 Adaptation of tourist facilities to climate change:

- Measure 1.1 Development of bioclimatic infrastructure in tourist areas, e.g., use of "green" materials in the construction of new buildings and renovation of existing ones, construction of vertical gardens, green roofs.
- Measure 1.2 Provision of incentives to tourism businesses to improve thermal comfort conditions during the summer season, save and reuse water, install Renewable Energy Systems (RES) and geothermal energy (heat pumps) to meet increased electricity demand.
- Measure 1.3 Energy upgrade (thermal insulation, replacement of windows and lighting fixtures, upgrade of air



conditioning systems, etc.) in buildings in tourist areas of Crete

Action 2 Actions to support tourism in adapting to climate change and coping with extreme events

- Measure 2.1. Identification of the need to redefine and diversify Crete's tourism product to align with climate change reality
- Measure 2.2 Measures for the development of specific and alternative forms of tourism (e.g., cultural, ecotourism) in the Region of Crete. Link to actions of the Tourism Promotion and Marketing Strategy of the Region of Crete
- Measure 2.3 Planning of awareness, advertising, and tourism promotion actions. Information on the changes in the tourism product due to climate change and promotion of the tourism sector after its adaptation to the new conditions resulting from climate change.
- Measure 2.4 Administrative support, organization, and awareness-raising on climate change in tourist destinations
- Measure 2.5 Use of communication technologies to disseminate information in cases of extreme events and to disseminate instructions for visitor safety
- Measure 2.6 Creation of a subsidy mechanism in the event of disasters caused by extreme events
- Measure 2.7 Development of public green spaces in tourist areas to address visitor discomfort. Emphasis on specialized information on thermal comfort for tourists/visitors, with a consequent increase in the value of the tourism product. It is recommended that suitable plants be selected to avoid increased exposure of people to natural allergens.



- Measure 2.8 Actions to improve the conditions for visiting archaeological sites and monuments in the Region of Crete during periods of very high temperatures

Table 4: Regional Measures & Effects

Adaptation actions – Short term effects	Mitigation actions – Long term effects
Measure 2.6	
	Measure 1.1 Measure 2.7
Measure 1.2 Measure 1.3	
Measure 2.2 Measure 2.3 Measure 2.4 Measure 2.5 Measure 2.8	Measure 2.1

Short-term effects emphasise adaptation (visitor safety, comfort, preparedness); long-term effects accrue from energy upgrades and resource efficiency that reduce operational emissions.

Furthermore, national law 4936/2022 established specific measures in order to mitigate climate change. These measures include increase of green spaces 5% until 2030 and are considered a very effective mitigation action that is expected to implemented from local spatial plans.

Local spatial plans should reflect **Law 4936/2022** provisions as they pertain to tourism areas—notably energy upgrades, water-saving, and green/blue infrastructure that reduce heat and erosion exposure. The regional tourism strategy will reference these measures in its action sheets with responsible bodies, indicative timelines and monitoring indicators.

Action plan proposal



This action plan applies a simple, transparent scoring across seven criteria (0–10 each) for every objective. Scores are equal-weighted unless noted. Important: the “Economic cost” scale is inverted—a higher score means lower cost, to keep “higher is better” consistent across criteria. Scores are based on current evidence and will be updated once the rapid baseline is completed.

Scoring key (quick guide).

- **0–3:** low/limited; **4–6:** moderate; **7–8:** good; **9–10:** strong/excellent.
- **Tie-breakers:** prefer (i) higher Adaptation Impact, then (ii) higher Tourism Impact, then (iii) readiness (Current Status = “developed” > “planned”).

Potential actions, Implementation and prioritization criteria

In order to develop a solid regional action plan for climate change prioritization criteria are applied in every objective to score the different factors of implementation.

- Urgency, higher value indicates higher urgency
- Internal capacity, higher value indicates higher capacity
- Economic cost, higher value indicates lower economic cost
- External enabling condition, higher value indicates higher enabling condition
- Mitigation impact, higher value indicates higher mitigation impact
- Adaptation impact, higher value indicates higher adaptation impact
- Tourism impact, higher value indicates higher tourism impact

Potential Actions					Prioritization Criteria							
Action reference number	Objectiv e	Action	Indicator s	Curren t Status	Urgen cy (x/10)	Internal Capacit y (x/10)	Econom ic Cost (x/10)	Externa l Enablin g Condi tions (x/10)	Mitigatio n Impact (x/10)	Adaptati on Impact (x/10)	Tourism Impact (x/10)	Total Score
1	<i>Reduce ground and coastal erosion</i>	<i>Restore erosion with natural methods</i>	5.2 Habitat Loss and Degradation	<i>Planned</i>	7	2	5	5	9	4	8	40
2	<i>Preserve biodiversity</i>	<i>Implementing water conservation programs and Implementing infrastructure that can be easily adapted or relocated as needed</i>	5.2 Habitat Loss and Degradation	<i>Planned</i>	6	5	5	4	9	3	7	39

Potential Actions					Prioritization Criteria							
Action referenc e number	Objectiv e	Action	Indicator s	Curren t Status	Urgen cy (x/10)	Internal Capacit y (x/10)	Econom ic Cost (x/10)	Externa l Enablin g Condi tions (x/10)	Mitigatio n Impact (x/10)	Adaptati on Impact (x/10)	Tourism Impact (x/10)	Total Score
3	<i>Diversific ation of visiting period</i>	Promoting alternative touristic periods	<i>* N visitors in low season / high season</i>	<i>Planne d</i>	4	6	2	8	5	4	9	38
4	<i>Promote use of renewabl e energy sources by tourism organizat ions and businesse s</i>	Use of "green" materials in the constructio n of new buildings and renovation of existing ones, constructio n of vertical gardens, green roof	<i>Percenta ge of energy from renewabl e sources</i>	<i>Planne d</i>	5	7	2	5	2	3	4	28
5	<i>Monitorin g climate change</i>	Create network of sensors	Ind 1.1 Change in Annual	<i>develo ped</i>	8	5	8	8	5	5	2	41

Potential Actions					Prioritization Criteria							
Action referenc e number	Objectiv e	Action	Indicator s	Curren t Status	Urgen cy (x/10)	Internal Capacit y (x/10)	Econom ic Cost (x/10)	Externa l Enablin g Condi tions (x/10)	Mitigatio n Impact (x/10)	Adaptati on Impact (x/10)	Tourism Impact (x/10)	Total Score
		and observatio n points	Tempera ture Ind 1.2 Number and Frequenc y of Hot Days Ind 1.4 Extreme Precipita tion Days Frequenc y of Hot Days 1.4 Extreme Precipita tion Days									
6	<i>Promote Bicycling</i>	Collaborate with local authorities to create a network of safe and well-	*Length of bike lanes	<i>Planne d</i>	5	8	9	7	4	4	6	43

Potential Actions					Prioritization Criteria							
Action referenc e number	Objectiv e	Action	Indicator s	Curren t Status	Urgen cy (x/10)	Internal Capacit y (x/10)	Econom ic Cost (x/10)	Externa l Enablin g Condi tions (x/10)	Mitigatio n Impact (x/10)	Adaptati on Impact (x/10)	Tourism Impact (x/10)	Total Score
		maintained cycling lanes and paths, connecting key tourist attractions, accommodations, and transportation hubs										

The resulting order (1→6) reflects today's best knowledge and capacities. It will be revisited after the **baseline data collection** and **stakeholder validation** to confirm costs, dependencies and site readiness. Where enabling conditions improve (e.g., permits, co-funding), actions may move up.

**Action Sheet — Ref 6 (Top priority)**

Field	Details
Objective	Promote bicycling
Action	Network of safe, well-maintained cycling lanes & paths linking attractions, accommodations, transport hubs
Indicator(s)	Length of bike lanes
Current status	Planned
Owner & partners	Regional Transport Dept. (lead); municipalities; tourism board; cycling associations
Timeline & milestones	Q2–Q3 2026: routes, stakeholder sign-off, prelim designs • Q4 2026–Q2 2027: phase-1 build & signage; wayfinding pilots • 2027–2028: phase-2 extensions; PT integration
Dependencies	Spatial-plan alignment; right-of-way approvals; co-funding
Risks & mitigation	Space constraints → traffic calming/shared streets • Maintenance → Operation & Maintenance duties via MoUs
KPI & target	Length of bike lanes — target TBD after baseline (2026)
Co-benefits	Modal shift; lower air/noise; low-carbon branding

**Action Sheet — Ref 5 (Second in ranking)**

Field	Details
Objective	Monitoring climate change
Action	Network of sensors & observation points
Indicator(s)	Annual temperature; hot days > 35 °C; extreme-precipitation days
Current status	Developed
Owner & partners	Regional Coordination Unit (RCU); Environment Dept.; universities/research institutes; Civil Protection (alerts)
Timeline & milestones	Q2 2026: procurement/specs; site list; data-governance • Q3–Q4 2026: install ≥ 20 nodes; dashboard v1; training • 2027→: quarterly reporting; seasonal public summary
Dependencies	Data-sharing agreements; IT hosting; device maintenance
Risks & mitigation	Data gaps → redundancy/calibration • Privacy → anonymised flows; clear notices
KPI & target	Operational nodes; quarterly releases — targets TBD after baseline
Use	Inputs to heatwave readiness, water-stress management, coastal monitoring

**Action Sheet — Ref 1 (Third in ranking)**

Field	Details
Objective	Reduce ground & coastal erosion
Action	Restore erosion with natural methods (soft-engineering/NbS)
Indicator(s)	5.2 Habitat Loss & Degradation (per framework)
Current status	Planned
Owner & partners	Regional Environment Dept.; coastal municipalities; NGOs; technical advisors
Timeline & milestones	Q2–Q3 2026: site selection; permits; community briefings • Q4 2026–Q3 2027: pilots (dunes/vegetation, sand-fencing, boardwalks) • 2027–2028: monitoring; adaptive tweaks; scale-up sites
Dependencies	Permits; coastal zoning; beach-management rules; peak-season blackout windows
Risks & mitigation	Storm damage → phased/seasonal works • Access conflicts → defined paths/signage
KPI & target	% coastline under soft-protection; # beaches with NbS — targets TBD after baseline
Co-benefits	Amenity quality; biodiversity gains; lower maintenance costs

The other actions will be planned in a long – term period.
From the evaluation score the following order of actions must be developed in the future:



1. Collaborate with local authorities to create a network of safe and well-maintained cycling lanes and paths, connecting key tourist attractions, accommodations, and transportation hubs
2. Create network of sensors and observation points
3. Restore erosion with natural methods
4. Implement water-conservation programs and infrastructure that can be adapted or relocated as needed
5. Promoting alternative touristic periods
6. Use of "green" materials in the construction of new buildings and renovation of existing ones, construction of vertical gardens, green roof

Finally must be underlined that promoting alternative touristic periods is a key factor in the tourism industry that tackles most effectively the impacts of climate change specifically in the tourism sector.

Implementation

Indicators

Progress will be tracked via a core KPI set (e.g., L/guest-night water use, kWh/guest-night, days > 35 °C, % coastline with soft-protection, in-region kg CO₂e/guest-night, seasonality index). KPI owners and data flows are assigned to the RCU and relevant departments, with annual consolidation.

Reporting

A public progress note and a lightweight dashboard will summarise KPI status, completed milestones and any delivery barriers.

Engagement

The RCU will convene coordination meetings and targeted workshops with municipalities, tourism bodies, SMEs and civil society for feedback and co-delivery.

Review



NaTour4CChange

Interreg
Euro-MED



Co-funded by
the European Union

A mid-term review (2028) will adjust targets and actions based on evidence, with formal adoption of updates.



Enabling conditions

In order to achieve the targets described previously basic enabling conditions are examined for each sector

Governance, Planning & Policy Enabling Conditions

This is the foundational layer. Without strong governance, other efforts become fragmented.

A Unified Regional Strategy for Sustainable Tourism: Crete must move beyond ad-hoc initiatives to a comprehensive, long-term strategy. This strategy should:

- Be formally adopted by the Regional Authority.
- Clearly define "sustainable tourism" for Crete with specific, measurable targets (e.g., % reduction in water consumption per tourist, % increase in tourist spending in local agriculture).
- Diversify tourism products (agritourism, ecotourism, cultural tourism, gastronomic tourism) to de-seasonalize demand and reduce pressure on coastal hotspots.
- Be fully aligned with national strategies and EU policies (European Green Deal, EU Tourism Agenda 2030).

Effective Coordination and Institutional Framework: A clear governance model is essential.

- Establish a Permanent Multi-Stakeholder Platform: A formal body that ensures continuous dialogue and coordination between the Regional Authority, municipalities, national government agencies, hotel associations, tour operators, agricultural cooperatives, environmental NGOs, and cultural heritage organizations.
- Clarify Roles and Responsibilities: Avoid duplication of efforts. It must be clear which entity is responsible for monitoring, enforcement, marketing, and quality certification.



Robust Regulatory Enforcement and Simplification:

- **Effective Enforcement of Existing Laws:** Strict enforcement of building codes, environmental regulations (e.g., wastewater treatment, protection of Natura 2000 areas), and zoning laws is non-negotiable.
- **Streamlined Licensing for Sustainable Projects:** Create a "fast-track" or simplified licensing process for businesses that invest in recognized sustainable practices (e.g., solar panel installation, water recycling systems, eco-certifications).

Integrated Data Collection and Monitoring System:

- Develop a regional tourism observatory to collect and analyze data not just on arrivals and revenue, but also on environmental footprint (water/energy use, waste generation), social impact (overtourism metrics, quality of life for residents), and economic leakage.
- This data is crucial for evidence-based policy making and measuring progress.

Environmental & Infrastructural Enabling Conditions

These conditions address the physical capacity and environmental limits of the island.

Integrated Water Resource Management (WRM):

Address Water Scarcity: Crete faces significant water stress, especially in summer. Enabling conditions include:

- Investing in modernizing irrigation for agriculture (the largest water user).
- Mandating and incentivizing greywater recycling and rainwater harvesting for large hotels and new developments.
- Public awareness campaigns for both residents and tourists on water conservation.



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Sustainable Waste Management System:

Move beyond landfilling to a circular economy model.

Conditions include: Island-wide implementation of modern recycling and composting facilities, support for programs that reduce single-use plastics in the hospitality sector, and infrastructure for handling hazardous waste (e.g., from hotels and boats).

Sustainable Mobility and Transport Network:

Reduce congestion and pollution caused by rental cars.

Conditions include: Developing and promoting a reliable, affordable, and clean (electric/hydrogen) public transportation network that connects major tourist hubs, airports, and ports with key attractions. This also involves creating and signposting infrastructure for cycling and hiking paths.

Protection and Management of Natural & Cultural Assets:

The core attractions of Crete are its nature and culture. They must be actively managed.

Conditions include: Formalized management plans for protected areas (e.g., Samaria Gorge, Natura 2000 sites), a clear plan for the sustainable management of archaeological sites to prevent degradation, and strict regulation of coastal development to ensure public access and preserve landscapes.

Socio-Economic & Cultural Enabling Conditions

Sustainable tourism must benefit local communities.

Strengthening Local Supply Chains:

Create mechanisms that connect tourism demand with local production.

Conditions include: Promoting "Cretan Quality Agreement" labels for restaurants and hotels that source a significant percentage of



their food and beverages locally, and supporting the development of tourism cooperatives for local producers.

Skills Development and Quality Employment:

Shift tourism jobs from low-skill, seasonal positions to quality, year-round careers.

Conditions include: Establishing specialized training programs (in partnership with vocational schools and the University of Crete) on sustainable tourism management, eco-guiding, agritourism, and digital skills for tourism professionals.

Community Engagement and Benefits Sharing:

Gain the support of local residents, who are the ultimate stewards of the destination.

Conditions include: Implementing transparent mechanisms for using tourism-related revenues (e.g., accommodation taxes) to fund local community projects (e.g., infrastructure, cultural events). Actively involving communities in tourism planning through the multi-stakeholder platform (see 1.2).

Preservation and Promotion of Cultural Heritage:

Go beyond the Minoan palaces to showcase living culture.

Conditions include: Funding and incentives for the restoration of traditional villages and monuments, and support for festivals, workshops, and experiences that showcase traditional Cretan music, dance, crafts, and gastronomy.

Digital & Innovation Enabling Conditions

Leveraging technology is key to managing tourism flows and enhancing the visitor experience.

A Destination Management Platform (Digital Twin):

Develop an integrated digital platform that provides real-time data on key indicators: visitor flows, traffic congestion, beach occupancy, water and energy consumption, and waste production.



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This platform would be an essential tool for authorities to manage overtourism and for businesses to optimize their operations.

Digital Tools for Enhanced Visitor Experience and Dispersion:

Create official apps and digital services that help visitors explore beyond the crowded resorts.

Features include: Interactive maps for hiking and cycling trails, information on lesser-known archaeological sites and traditional villages, and platforms for booking authentic local experiences.



Conclusion

Next steps

- Confirm baseline and finalise KPI definitions and data sources.
- Validate action rankings and sites with municipalities and stakeholders.
- Prepare financing plan (mix of regional/national/EU/private) per action sheet.
- Launch phase-1 pilots (cycling network segments; sensor nodes; 1–2 NbS beach sites).
- Publish the monitoring dashboard and first progress note.

The development of the Regional Strategy for Mitigation and Adaptation to Climate Change in the Region of Crete under the framework of the **NaTour4CChange** project marks a crucial step toward climate-resilient tourism governance in the Mediterranean. The study confirms that Crete's tourism system is facing increasing pressures from rising temperatures, water scarcity, and coastal erosion, risks that directly threaten its natural assets, infrastructure, and long-term competitiveness.

Through a structured, evidence-based process aligned with the project's **Climate Action Planning Toolkit** and the **Regional Plan for Adaptation to Climate Change (2022)**, the Region of Crete has identified a clear roadmap for climate action in tourism. The established Regional Coordination Unit (RCU) has played a central role in aligning sectoral priorities, collecting evidence, and designing actionable, measurable interventions based on both local realities and NaTour4CChange's common Mediterranean methodology.

Key findings highlight the need for:

- Strengthened **adaptation measures**—notably the use of **Nature-based Solutions (NbS)** for coastal protection, water-saving and reuse systems, and bioclimatic infrastructure in tourist areas.



- Targeted **mitigation actions**, focusing on energy efficiency, renewable energy uptake, and sustainable mobility, in line with Greece's National Climate Law (4936/2022) and the European Green Deal.
- Enhanced **monitoring and data systems**, ensuring continuous observation of climate indicators and effective risk management.
- Active **stakeholder engagement**, enabling cooperation between local authorities, the private sector, and communities for joint climate action.
- Promotion of **seasonal diversification** and **low-impact mobility**, reducing peak-season pressures while improving visitor comfort and sustainability.

The prioritization exercise within this study identified the following as priorities:

1. Developing a regional cycling network for sustainable mobility;
2. Establishing a climate monitoring network with sensor nodes;
3. Implementing soft-engineering and NbS approaches to reduce coastal erosion;
4. Advancing water conservation infrastructure; and
5. Promoting alternative tourism periods to counteract seasonality.

These interventions form the foundation for a Regional Strategy for mitigation and adaptation to climate change in the Region of Crete which integrates adaptation, mitigation, and governance measures on tourism sector. Once baseline data collection and stakeholder



validation are finalized, targets and KPIs will be set to 2027 and 2030 milestones, ensuring measurable progress toward climate neutrality and resilience.

Overall, this study demonstrates how the NaTour4CChange project provides an effective, replicable framework for integrating ecosystem-based approaches into tourism climate governance.

Methodology

This chapter explains **how** the action plan was produced so that every step is traceable and repeatable. It follows the project's common approach, keeps the **in-region** scope (impacts within the Region of Crete), and preserves the existing Regional Plan's for Adaptation in Climate Change scenarios, classes and evidence base for tourism sector.

The methodology used to create this action plan is based on the results of the existing Regional Plan for Adaptation in Climate Change for Crete and the Climate Action Planning Toolkit proposed by the program.

Specifically, a climate risk assessment was conducted for the Region of Crete, where sensitivity, exposure, and vulnerability to key climate hazards such as high temperatures, heatwaves, drought, floods and erosion were evaluated.

A Regional Coordination Unit (RCU) was established, involving:

1. Directorate of Development Regional Unity of Lasithi
2. Department of Tourism Regional Unity of Lasithi
3. Department of Environment & Water Economics of Regional Unity of Lasithi
4. Department of Civil Protection of Regional Unity of Lasithi

The Climate Action Planning Toolkit is used only to structure data, scoring and action sheets—without changing the Regional Plan's findings.



Data were collected through the RCU, external expert and the existing Regional Plan.

C1) Process at a glance (what we did, in order)

1. **Evidence compilation:** extracted tourism-relevant findings, maps and indicators from the Regional Plan; collected existing admin data (tourism, mobility, water/energy where available).
2. **System boundaries:** confirmed **in-region** scope (excludes travel to/from Crete).
3. **Risk screening & mapping:** used the Regional Plan's scenarios/horizons and vulnerability classes (Blue→Red) to identify exposed tourism areas.
4. **Goals & targets linkage:** aligned the six goals with the mapped pressures and the Plan's trends (e.g., >35 °C days, sea-level rise).
5. **Action long-list:** listed measures directly from the Regional Plan's Actions 1–2 plus operational enablers (governance, data, finance).
6. **Scoring setup:** configured the seven criteria (0–10 each), with **Economic cost** inverted (higher score = lower cost).
7. **Prioritisation & ranking:** applied equal weights; noted tie-breakers (Adaptation → Tourism → Readiness).
8. **Action sheets drafting:** converted the top items into concise sheets (objective, milestones, dependencies, KPIs).
9. **Validation path:** prepared for review with the **RCU** and municipalities (light stakeholder pass).
10. **MEL setup:** defined indicators, reporting cadence and update triggers for the plan.



C2) Scoring model (kept exactly as in your plan)

- **Urgency** (↑ score = ↑ urgency)
- **Internal capacity** (↑ score = ↑ capacity)
- **Economic cost** (↑ score = **lower** cost)
- **External enabling conditions** (↑ score = ↑ enabling)
- **Mitigation impact** (↑ score = ↑ mitigation)
- **Adaptation impact** (↑ score = ↑ adaptation)
- **Tourism impact** (↑ score = ↑ tourism value)

C3) Roles and responsibilities (who did what)

- **RCU (lead):** owns process, approves scope/boundaries, convenes validation.
- **Regional departments:** transport (active mobility), environment (NbS/coast), tourism (seasonality & comms), civil protection (alerts/protocols).
- **Technical partners:** support with data structuring, scoring sheet, action-sheet formatting.

C4) Data & tools (how we organised inputs)

- **Primary sources:** Regional Plan maps/tables; existing admin stats for tourism/mobility/water/energy (where available).
- **Toolkit elements used:** evidence register (what/where), scoring sheet (7 criteria), action-sheet template, KPI register (definitions, units, baselines/targets fields).
- **Traceability:** every score/action links back to a Plan map/table or an admin dataset (reference noted in the sheet).

C5) Assumptions & limitations (to be transparent)



- **Data gaps** for some KPIs are expected; baselines/targets are explicitly marked **TBD after baseline**.
- **No re-modelling** of hazards was performed; we use the Regional Plan's scenarios/outputs as given.
- **Equal weights** applied in this version; can be revisited after RCU validation.

C6) Versioning & updates (how this evolves)

- **Version 1.0** = current draft (post-Toolkit structuring).
- **Next steps:** rapid baseline; RCU/municipal validation; update of scores/targets; finalisation for endorsement.
- **MEL cadence:** semi-annual progress checks; annual KPI review; formal mid-term update.



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