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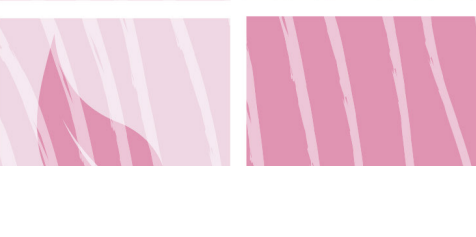


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Climate resilience in coastal tourism destinations: solutions from Nature and Cultural Heritage

THEMATIC PAPER



by Community4Tourism





This document has been developed in the framework of the Thematic Community Project of the Sustainable Tourism Mission of the Interreg Euro-MED Programme 21-27 (Community4Tourism project) and its activity of the Mediterranean Clusters.

The Mediterranean Clusters are the main project's proposal for the support of the transferring of practices and results to other actors and territories, and their integration into local, regional, national and European policies and strategies, covering the 4 main topics that the Sustainable Tourism Mission integrates: innovation, circular economy, climate change and nature & biodiversity.

This document is the Thematic Paper of the MED Cluster on Climate Change Adaptation. It aims to provide an in-depth technical analysis of a specific challenge identified by the Cluster members - namely, "climate resilience in coastal tourism destinations through solutions from nature and cultural heritage"- by highlighting relevant tools, methodologies, and good practices developed by thematic projects, in order to facilitate the transferability of these outputs to other stakeholders and destinations.

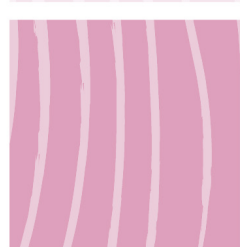
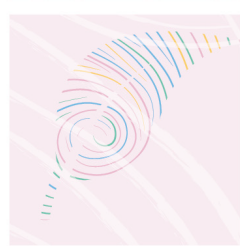
The MED Cluster on Climate Change Adaptation is co-ordinated by NECSTouR and Plan Bleu.





Table of Contents

1. The Mediterranean double challenge: tackling coastal tourism pressure and climate change . . .	4
2. Nature and cultural heritage as key levers for climate resilience	6
3. Policy and governance frameworks supporting climate resilience in tourism destinations	11
4. Transferable solutions from Mediterranean projects	13
Cool Paths : Urban cooling routes to strengthen climate resilience in Mediterranean coastal destinations - COOL NOONS	13
HERIT-ADAPT Sustainable Tourism Model testing methodology for climate-resilient heritage destinations - HERIT ADAPT	15
Climate Action Planning Toolkit for climate-resilient coastal tourism - NaTour4CChange	17
Water Scarcity Living Labs for climate-resilient coastal tourism - AQUAMAN	19
Integrated Governance Model for Regenerative Tourism - Regenera4MED	21
5. Complementary initiatives and solutions supporting climate-resilient coastal tourism	24
6. Key messages from the MED Cluster on Climate Adaptation	27
7. References.	29





1. The Mediterranean double challenge: tackling coastal tourism pressure and climate change

The Mediterranean is the **world's leading tourism region**, welcoming around 400 million international arrivals in 2022 (Plan Bleu, 2022), marking a return to long-term pre-pandemic growth trends.

This dynamic is largely concentrated in **coastal and island destinations**, which play a central role in local and regional economies, with tourism as a major source of income and employment. The attractiveness of these destinations is largely driven by **exceptionally rich natural environments and cultural heritage**, which are both **key tourism assets** and fundamental elements of territorial identity. Yet, these assets are increasingly exposed to **climate-related pressures**, reshaping the conditions under which tourism operates and raising growing challenges for the sustainability of coastal destinations.

The Mediterranean concentrates **high climate exposure** and **intense tourism activity**, which significantly increases the **vulnerability of coastal and island destinations**. Peak tourism periods tend to coincide with periods of highest environmental stress. This convergence intensifies pressure on resources, ecosystems and cultural heritage, reflecting a growing mismatch between climate conditions, resource availability and dominant tourism models in Mediterranean coastal destinations.

Climate change is already altering territorial dynamics in the Mediterranean. The intensification of **heatwaves, prolonged droughts and more frequent extreme events** is affecting the availability of key resources, while coastal erosion is degrading beaches and coastal landscapes that underpin tourism attractiveness. Ecosystems such as dunes, wetlands and marine habitats are increasingly degraded, reducing their ability to provide essential services, including coastal protection and climate regulation. Cultural heritage is similarly exposed to both climate impacts and high visitor pressure, raising significant challenges for its conservation and long-term value.

In territories highly dependent on tourism, these combined effects increase vulnerability and **put local economies at risk**, highlighting the growing importance of **strengthening climate resilience as a condition for the long-term sustainability and competitiveness of Mediterranean coastal tourism destinations**.





At the same time, **dominant tourism models** remain largely organised around growth-oriented, highly seasonal and spatially concentrated dynamics, which are increasingly misaligned with evolving climate conditions, resource constraints and changing demand patterns.

Beyond environmental and economic pressures, **governance frameworks are also often fragmented**, with responsibilities for tourism, climate adaptation, resource management, environmental protection and cultural heritage distributed across sectors and administrative levels. This limits the capacity to design and implement coordinated and effective responses.

Strengthening climate resilience in coastal tourism destinations therefore requires a shift towards more **integrated and adaptive approaches** to address the cascading effects of climate change. In this context, **nature-based and cultural heritage-based solutions** play a central role in this transition, as they contribute to reducing climate impacts, preserving key tourism assets and supporting more diversified and locally grounded tourism models. **These solutions** help address environmental, cultural, social and economic challenges, making them key levers for enhancing the resilience and long-term sustainability of Mediterranean coastal tourism destinations.

Building on knowledge and experiences from **Mediterranean cooperation initiatives**, this paper explores how nature and cultural heritage-based solutions can support climate resilience in coastal tourism destinations.





2. Nature and cultural heritage as key levers for climate resilience

the Mediterranean is a unique region where multiple pressures converge. It is recognised as a **climate hotspot, warming around 20% faster than the global average** (MedECC, 2020), and a major tourism destination, with over **340 million international arrivals in Southern Mediterranean Europe in 2025**, marking a 3% increase compared to 2024 (UNWTO, 2026). It is also one of the world's biodiversity hotspots, hosting exceptional yet highly vulnerable ecosystems.

In this context, **coastal and island destinations are particularly exposed**. The overlap between peak tourism periods and peak environmental stress intensifies pressure on resources, ecosystems and cultural heritage. Climate change impacts, including rising temperatures, water scarcity, coastal erosion and biodiversity loss, are already affecting the quality and accessibility of key tourism assets, challenging the viability of traditional tourism patterns.

Natural ecosystems and cultural heritage: key tourism assets under pressure

Natural ecosystems and cultural heritage are increasingly affected by the combined impacts of climate change and tourism pressures in Mediterranean coastal and island destinations. Climate change is intensifying extreme events such as heatwaves, floods, sea-level rise and water scarcity, with impacts likely to be more severe than previously anticipated (MedECC, 2020).

Projections indicate a **significant increase in the frequency and severity of heatwaves**, with summer maximum temperatures projected to rise up to 7°C by the end of the century and the number of tropical nights increasing by more than 60% (MedECC, 2020). These conditions intensify heat stress on ecosystems and contribute to **marine heatwaves**. Rising sea temperatures are already causing **mass mortality events** among sensitive species, along with the spread of **invasive species and algal blooms** (Plan Bleu, 2022), directly affecting tourism activities that depend on these ecosystems.

Sea-level rise, projected to reach between 37 and 90 cm by 2100 (MedECC, 2020), is accelerating coastal erosion and increasing flooding risks, threatening coastal ecosystems, beaches and infrastructure, including cultural sites central to tourism attractiveness and local economies.





Tourism activities further exacerbate these pressures: recreational boating, particularly anchoring, damages sensitive habitats such as *Posidonia oceanica* meadows, while intensive diving can degrade fragile marine ecosystems.

Cultural heritage faces similar risks. Many Mediterranean sites, including **UNESCO World Heritage sites**, are already exposed to sea-level rise, erosion, temperature variations, humidity changes and flooding. These pressures induce **material degradation, salt crystallisation and thermal stress**, progressively altering their structural integrity. Of 49 UNESCO World Heritage sites located in low-lying coastal areas, 37 are already at risk from coastal flooding and 42 from erosion (MedECC, 2020). High visitor numbers further accelerate their deterioration. These impacts have direct implications for tourism, as they can lead to site closures, restricted access, increased maintenance costs and altered visiting conditions.

Tourism models facing structural constraints

These pressures are amplified by prevailing tourism models, largely structured around **strong seasonality, coastal concentration and continued growth** in visitor numbers. This generates increased demand for water and energy, higher waste production, congestion in transport and public spaces, and pressure on infrastructure and local communities.

Water scarcity is a major and growing challenge, driven by climate change and intensified by tourism demand. Tourism activities both depend on and contribute to the overuse of limited water resources (MedECC, 2020). Seasonal peaks exacerbate pressures, as demand coincides with periods of lowest availability and competes with other uses, particularly agriculture. These challenges are especially pronounced in southern Mediterranean countries and island territories, where water resources are limited and infrastructure is underdeveloped or insufficient to cope with seasonal peaks in demand (Blue Tourism Initiative, 2025).

Climate change is also beginning to affect tourism demand. Increasingly frequent heatwaves reduce visitor comfort, limit outdoor activities and influence travel behaviour, particularly for vulnerable groups. A recent survey indicates that a growing share of Europeans travelers are already adapting their behaviour in response to climate change (European Travel Commission, 2025). In 2023, Mediterranean destinations were the most negatively affected in Europe by the topic of climate





change in terms of reputation, due to heatwaves, droughts and forest fires (European Travel Commission, 2024). Under high warming scenarios, the attractiveness of peak summer months is projected to decline significantly by mid-century. More broadly, projections suggest a potential decline in demand in Mediterranean regions, while higher-latitude destinations may become more attractive (Joint Research Centre, 2023).

Despite these trends, many destinations remain organised around **short peak seasons** and are not equipped to support year-round tourism, due to limitations in infrastructure, services and workforce availability. This creates a growing mismatch between tourism models, resource availability and climate realities.

Governance and implementation challenges

Addressing these challenges requires coordinated and integrated responses. However, **governance frameworks often remain fragmented**. Responsibilities for tourism, climate adaptation, water management, biodiversity and cultural heritage are distributed across sectors and administrative levels, with overlapping mandates and limited coordination hindering effective strategies (NaTour4CChange project, 2024).

Operational constraints further limit implementation. Many destination management organisations face **limited technical capacity, insufficient financial resources, and gaps in tools, data and monitoring systems**, constraining informed decision-making and effective action.

These limitations are reflected in Mediterranean cooperation initiatives. The members of the **MED Cluster Climate Change Adaptation** highlight recurring challenges in moving from planning to implementation. Three cross-cutting challenges emerge: **sustaining stakeholder engagement** throughout project lifecycles, **bridging knowledge gaps** to make complex concepts such as climate resilience accessible and actionable, and **ensuring long-term project legacy** beyond funding periods.

Together, these challenges limit the ability of coastal tourism destinations to move from fragmented initiatives to coordinated and sustained action. This is particularly critical in tourism systems, which operate across multiple levels and require inclusive and adaptive governance.





Opportunities for climate-resilient coastal tourism

Climate resilience can be understood as the **capacity of coastal tourism destinations to anticipate, respond to and recover from climate impacts**, while maintaining attractiveness and long-term sustainability. It should be seen not only as a response to risks, but as an opportunity to rethink tourism systems.

Natural ecosystems and cultural heritage provide essential functions that **support climate resilience**.

Nature-based solutions offer a key entry point for this transition.

Defined as actions to protect, sustainably manage and restore ecosystems, they address societal challenges while delivering benefits for both human well-being and biodiversity. **Nearly 40% of the mitigation needed to meet the 2°C Paris goal could be provided by nature-based solutions** (IUCN, 2019).

They contribute to multiple objectives, including reducing climate risks, restoring ecosystems and enhancing destination attractiveness. For example, restoring dunes and wetlands protects coastlines from erosion, improves water regulation, reduces heat stress and enhances tourism experiences.

Cultural heritage also plays a strategic role in more resilient tourism systems. Beyond conservation, it supports diversification across seasons and territories by offering alternative experiences beyond coastal hotspots. Adapting heritage sites to climate change can directly improve visitor comfort, safety and accessibility, for example through adjusted visiting hours or improved visitor flow management. **Traditional knowledge** embedded in heritage, such as climate-adapted construction or water management practices, can inform **locally grounded adaptation responses** while enriching tourism experiences.

Regenerative tourism approaches are gaining attention as they aim not only to reduce impacts but to actively restore ecosystems, strengthen communities and enhance the resilience of destinations (Regenera4Med project, 2025). By reconnecting tourism with natural and cultural systems, they support a more balanced and long-term relationship between tourism and territories.





These approaches also create opportunities to **rebalance tourism across seasons**. By reducing dependence on peak summer periods and promoting alternative experiences in spring and autumn, they support adaptation to changing climate conditions while improving the use of infrastructure, services and workforce.

Overall, this transition reflects a broader shift towards more adaptive, regenerative and resource-efficient tourism systems, requiring **stronger coordination, stakeholder engagement and long-term planning**. Climate resilience can act as a **driver of innovation**, enhancing destination attractiveness and supporting more sustainable local economies.





3. Policy and governance frameworks supporting climate resilience in tourism destinations

This section outlines the main frameworks relevant to climate resilience in coastal tourism destinations. A more detailed analysis is available in the [Orientation Paper](#) of the MED Cluster Climate Change Adaptation.

Climate resilience in the Mediterranean is shaped by a multi-level system encompassing international commitments, European policies, Mediterranean cooperation initiatives and national, regional and local frameworks.

At the global level, the [Paris Agreement](#) provides the main international framework for climate action, committing countries to limit global warming and strengthen climate adaptation. In parallel, the 2030 Agenda for Sustainable Development and its [Sustainable Development Goals](#) promote integrated action on climate change and sustainable tourism development.

The European Union translates these commitments into policies, strategies and missions guiding the transition towards climate resilience. The [European Green Deal](#) sets the overall direction for a climate-neutral and sustainable economy, while the [EU Adaptation Strategy](#) focuses on integrating climate risks into territorial planning and strengthening resilience to climate impacts. The [EU Mission on Adaptation](#) complements this framework by contributing to the objective of a climate-resilient Europe by 2030.

Environmental policies further support the protection and restoration of natural assets underpinning tourism destinations. The [EU Biodiversity Strategy for 2030](#) strengthens biodiversity conservation, the [EU Nature Restoration Regulation](#) promotes ecosystem restoration. The [Water Framework Directive](#) ensures integrated water management and the [EU Marine Strategy Framework Directive](#) focuses on protecting the marine ecosystem and biodiversity.

Specific policies and initiatives guide the green transition of the tourism sector. The [Glasgow Declaration on Climate Action in Tourism](#), the [Transition Pathway for Tourism](#), the [European Agenda for Tourism 2030](#) and the forthcoming [EU Strategy for Sustainable Tourism](#) support the development of a more sustainable and resilient tourism ecosystem.

Complementary initiatives also contribute to this transition: the [New European Bauhaus](#) promotes climate-responsive regeneration of urban spaces, while the [European Heritage](#)





[Strategy](#) for the 21st Century emphasizes preservation, sustainable use, and community engagement for heritage sites.

Beyond EU policies, regional and sub-regional cooperation frameworks address the specific environmental vulnerabilities of the Mediterranean basin. The [Mediterranean Action Plan](#), under the Barcelona Convention, provides the main regional framework for protecting the Mediterranean marine and coastal environment, notably through the *Integrated Coastal Zone Management Protocol*, which promotes ecosystem-based coastal planning. The [Mediterranean Strategy for Sustainable Development](#) complements this framework by integrating climate action, biodiversity protection and sustainable tourism into a shared regional roadmap. At sub-regional level, macro-regional strategies such as the [EU Strategy for the Adriatic and Ionian Region](#) further support cross-border cooperation on sustainable tourism and coordinated coastal management.

At national level, climate objectives are translated into domestic legislation and sectoral strategies shaping the resilience of coastal tourism destinations. Key national frameworks include [Nationally Determined Contributions](#), defined under the Paris Agreement, and [National Adaptation Plans](#), which aim to reduce vulnerability to climate impacts and integrate adaptation into national policies and development planning. Beyond these frameworks, national policies on climate adaptation, sustainable tourism, coastal protection, biodiversity conservation, natural resource management, water management, and cultural heritage support the implementation of climate resilience across sectors.

At regional and local levels, climate resilience is operationalised through territorial planning and concrete actions, integrating climate adaptation into spatial planning, coastal management and tourism strategies.

While this multi-level framework provides a strong strategic foundation for climate resilience in coastal tourism, implementation remains uneven. Authorities and destination managers often face coordination, capacity and financial constraints when translating policy ambitions into operational measures. This situation is partly due to the limited integration of tourism within climate policy frameworks, which can constrain access to dedicated funding. In this context, European cooperation and funding instruments, such as [Interreg programmes](#), play a key role in supporting collaboration, experimentation and the development of practical solutions for climate-resilient destinations, particularly in coastal and island regions highly dependent on tourism.





4. Transferable solutions from Mediterranean projects

The following factsheets present concrete, field-tested solutions developed by the thematic projects of the Interreg Euro-MED Sustainable Tourism Mission. They illustrate how diverse levers (including nature-based solutions, cultural heritage, and governance) can be mobilised to strengthen climate resilience in coastal tourism destinations, while offering transferable models for other territories.

Cool Paths : Urban cooling routes to strengthen climate resilience in Mediterranean coastal destinations

Project
COOL NOONS

Category: Operational urban solution

Maturity: Tested in 5 Mediterranean cities

Target users: Public Authorities, Destinations Managers, Urban planners, Heritage managers, Local communities

Keywords: Climate adaptation - Heat resilience - Sustainable mobility - Nature-based solutions - Cultural heritage

The solution at a glance

Cool Paths are urban walking routes designed to maintain thermal comfort during peak heat hours, allowing residents and visitors to safely explore Mediterranean coastal cities. They contribute to climate-resilient and healthy urban environments by providing accessible spaces for recreation and well-being during extreme heat events.

Why this solution matters

Mediterranean coastal destinations are experiencing more frequent and intense heatwaves. These conditions disrupt outdoor activities, reduce walkability, and negatively affect visitor experience, public health, and overall destination attractiveness.

Cool Paths support climate resilience by enabling destinations to adapt to rising temperatures while maintaining tourism activity. They help to:

- maintain the usability of public spaces during extreme heat;
- preserve access to cultural heritage sites;
- redistribute visitor flows away from overheated and congested areas;
- support walkable mobility adapted to climate constraints;
- improve accessibility for vulnerable users.





How it works on the ground

Cool Paths are developed through a combination of climate analysis, participatory workshops, and targeted urban interventions.

Local climate data, satellite imagery and urban analysis are used to identify cooler corridors across the city based on shading, wind exposure, vegetation, and urban morphology.

The design process involves collaboration between local authorities, residents, tourism stakeholders, NGOs and universities. This ensures that the routes respond to both climate constraints and user needs.

A combination of interventions is then implemented along the routes, including nature-based solutions, water-based features, behavioural and management measures and urban design elements.

In Marseille, France, two cool paths were designed using wind exposure and shading analysis to connect major heritage landmarks through cooler corridors. Interventions include pergolas, increased vegetation, shaded public spaces, pedestrian-friendly streets, traffic calming measures. Scientific monitoring, combining temperature measurements and perceived comfort assessments, supports continuous improvement and evidence-based scaling.

Key success factors

- Engage a wide range of stakeholders through a bottom-up approach from the early design phase to ensure usability and local support.
- Base cool path design on detailed climate and spatial analysis.
- Prioritise low-cost, high-impact interventions to demonstrate quick benefits.
- Ensure visibility and accessibility through clear communication and mapping tools.

Learn more

- [COOL NOONS Website](#)
- [Catalogue of the solutions](#)
- **Contact:** Lu'u Dauxais - AVITEM (Agency for Sustainable Mediterranean Cities and Territories) - l.dauxais@avitem.org





HERIT-ADAPT Sustainable Tourism Model testing methodology for climate-resilient heritage destinations

Project
HERIT ADAPT

Category: Methodology / governance model

Maturity: Tested in 9 sites across 8 Mediterranean countries

Target users: Public Authorities, Destinations Managers, Heritage managers, Researchers

Keywords: Climate resilience - Cultural heritage - Visitor management Technology

The solution at a glance

The HERIT-ADAPT Sustainable Tourism Model is an evidence-based framework supporting coastal and heritage destinations in strengthening climate resilience of cultural and natural assets, while managing tourism pressures. It combines data-driven diagnosis, stakeholder co-creation, and digital tools to improve risk anticipation, visitor management and preventive conservation.

Why this solution matters

Cultural heritage is a cornerstone of attractiveness for Mediterranean coastal destinations, yet it is increasingly exposed to climate-related risks such as heat stress or erosion and degradation linked to tourism pressure.

The model provides an integrated and participatory approach that enables destinations to:

- identify and assess climate risks and vulnerabilities affecting heritage assets;
- better manage visitor flows and reduce pressure on sensitive sites;
- support informed decision-making through digital twins, AI driven defect detection, and predictive models;
- strengthen coordination between public authorities, heritage managers, tourism stakeholders and local communities.





It also supports the testing of innovative solutions in real conditions, the redistribution of tourism flows towards lesser-known sites, and the alignment of heritage conservation with local socio-economic development.

How it works on the ground

The model follows a structured and iterative process combining assessment, co-design and monitoring:

- climate risk and vulnerability assessment of cultural and natural heritage assets;
- identification and prioritisation of risks and co-design of adaptation measures through Territorial Working Groups (TWGs) involving public authorities, private businesses, researchers, and local communities;
- deployment of technological tools to support conservation and visitor management;
- monitoring through a KPI framework covering outputs, outcomes and long-term resilience impacts.

At the archeological site of the Temple of Apollo Epicurius in Greece, the model is being used to better protect the monument from climate impacts while making it more visible and attractive to visitors. A detailed 3D digital model of the temple has been created, allowing experts to monitor its condition, detect early signs of damage and plan conservation actions more effectively. This also makes it possible to present the site in a more engaging way. Expected outcomes include increased visibility and visitor numbers, a better distribution of visits throughout the year, and stronger local capacities to manage and preserve the site over the long term.

Key success factors

- Strong institutional commitment to integrate the model into planning and tourism strategies.
- Effective stakeholder engagement through TWGs ensuring co-creation, local ownership and continuous feedback loops.
- A solid understanding of local climate risks, tourism dynamics and heritage vulnerabilities allows tailored adaptation measures.





- Combined use of nature-based solutions, technological tools and monitoring indicators supports effective implementation and long-term evaluation.

Learn more

- [HERIT ADAPT Website](#)
- [Feasibility study](#) of the HERIT-ADAPT Sustainable Tourism Model - [Technological Tools for Destination Management](#)
- **Contact:** Angelika Sauermost - Occitanie Region - angelika.sauermost@crtoccitanie.fr & Athanasios Kalogeras - ATHENA Research Center - kalogeras@isi.gr

Climate Action Planning Toolkit for climate-resilient coastal tourism

Project NaTour4CChange

Category: Toolkit

Maturity: Tested in 7 Mediterranean coastal destinations

Target users: Public Authorities, Destination Management Organisations, Protected Areas managers

Keywords: Climate adaptation - Coastal resilience -Tourism governance - Nature-based solutions

The solution at a glance

This toolkit is a strategic planning instrument designed to support Mediterranean coastal destinations in strengthening their resilience to climate change. It provides structured guidance to help public authorities and tourism stakeholders develop and implement *Tourism Climate Action Plans*, tailored to the specific vulnerabilities of coastal areas.

Why this solution matters

Mediterranean coastal destinations are increasingly exposed to climate-related risks, including coastal erosion, biodiversity loss, water stress and rising temperatures. These pressures directly affect tourism assets, visitor experience and the long-term sustainability of local economies.





The toolkit helps regions and destinations transition from fragmented initiatives to integrated, resilience-oriented tourism planning. It enables them to:

- establish coordinated governance structures at regional and destination levels;
- define priorities for climate adaptation and mitigation in coastal tourism;
- integrate nature-based solutions to enhance ecosystem resilience and reduce exposure to hazards;
- translate climate commitments into operational and place based Tourism Climate Action Plans.

The toolkit is complemented by a practical manual supporting the integration of nature-based solutions into tourism strategies.

How it works on the ground

The toolkit guides regions and destinations through a structured process to develop a Tourism Climate Action Plan, ensuring that climate objectives are translated into concrete and implementable measures. The process is organised into four main steps: Establish enabling conditions - Define objectives and priorities - Select actions and indicators - Develop the Climate Action Plan. Each step is supported by planning tools, templates and methodological guidance, facilitating decision-making.

In Dugi Otok, Croatia, the toolkit was implemented through a participatory process involving the Municipality of Sali, Telašćica Nature Park, tourism boards and a local business. This resulted in a 10-year Tourism Climate Action Plan comprising 11 strategic objectives and around 30 actions. One concrete measure focuses on the protection of Posidonia oceanica banquettes, which play a key role in reducing coastal erosion and supporting marine biodiversity. To balance conservation and visitor access, an elevated wooden walkway is being developed, allowing access to the beach while minimising ecosystem disturbance. This approach contributes directly to strengthening coastal resilience while maintaining tourism attractiveness.





Key success factors

- Strong institutional leadership is essential to ensure coordination across tourism, environment and spatial planning sectors.
- Broad stakeholder engagement, including public authorities, tourism businesses, civil society, academia and local communities, fosters ownership and supports long-term behavioural change.
- Clear objectives, measurable indicators and transparent monitoring frameworks are critical to guide implementation and track progress.
- Climate action planning should be embedded in a long-term perspective, with regular reviews to adapt to evolving climate risks and local conditions.

Learn more

- [Natour4CChange Website](#)
- [Climate action planning toolkit - Nature-based solutions for Coastal Destinations Climate Action manual - Methodological frameworks for assessing the main coastal tourism-related issues concerning Climate Change](#)
- **Contact:** Izidora Marković Vukadin - Institute for Tourism in Croatia - izidora.markovic@iztztg.hr

Water Scarcity Living Labs for climate-resilient coastal tourism

Project AQUAMAN

Category: Collaborative governance and planning framework

Maturity: Currently tested in 4 Mediterranean Living Labs

Target users: Public Authorities, Destination Managers, Water Authorities, Local communities

Keywords: Climate resilience - Water scarcity - Living Labs - Nature-based solutions

The solution at a glance

Water Scarcity Living Labs are collaborative platforms bringing together key stakeholders to co-develop solutions addressing water scarcity and strengthening the climate resilience of coastal and island tourism destinations. They promote integrated, place-based water management approaches that help balance resource use, tourism activity and ecosystem protection.





Why this solution matters

Mediterranean coastal and island destinations are increasingly exposed to water stress due to climate change, seasonal tourism peaks and growing pressure on freshwater resources. This growing pressure threatens water availability but also the long-term viability of tourism, potentially leading to conflicts between users, degradation of ecosystems and reduced destination attractiveness.

Water Scarcity Living Labs help address these challenges by:

- strengthening cooperation between public authorities, tourism stakeholders, water agencies, researchers and communities;
- promoting nature-based, hybrid and circular solutions to reduce water demand and enhance reuse;
- supporting the development of integrated and adaptive water management strategies.

How it works on the ground

Living Labs rely on structured participatory processes bringing together local stakeholders through workshops and co-creation activities. Participants jointly assess local vulnerabilities, identify priority challenges and explore tailored responses using the AQUAMAN catalogue of solutions, which compiles transferable practices for sustainable water management in tourism contexts. This process is supported by NEXUSHARE, a digital platform currently being tested, facilitating stakeholder engagement, knowledge exchange and collaborative planning among stakeholders involved in Water - Energy - Food - Ecosystem resource management. Together, these tools enable stakeholders to evaluate the feasibility of different solutions, prioritise actions and design site-specific strategies to strengthen water resilience at destination level.

In Greece, the AQUAMAN Living Lab focused on Halki, a small island facing acute water scarcity during peak seasons. It brought together local and regional authorities, water agencies, experts and community representatives to co-develop locally adapted solutions. Based on participatory workshops, stakeholders assessed solutions from the AQUAMAN catalogue and defined priority actions. These include solar-powered desalination, smart water management technologies (e.g. telemetry systems and digital water meters), and the reactivation of wells combined with water resource mapping. These combined measures have improved water availability, diversified supply, and enhanced monitoring and system efficiency, while strengthening local governance and stakeholder cooperation.





Key success factors

- Strong political commitment is essential to ensure that co-developed solutions are translated into policies and concrete actions.
- Continuous stakeholder engagement fosters trust, ownership and long-term collaboration.
- Access to reliable local data is critical to support evidence-based decision-making.

Learn more

- [AQUAMAN Website](#)
- [Innovative water solutions for tourism and climate resilient regions](#)
- **Contact:** Prof. Eng. Fernando Nardi - University of Rome Tor Vergata

Integrated Governance Model for Regenerative Tourism

Project Regenera4MED

Project: Regenera4MED

Category: Strategic and governance framework

Maturity: Currently tested in 6 Mediterranean regions

Target users: Public Authorities, Destination Management Organisations, Local businesses, Communities, Civil Society Organisations

Keywords: Climate resilience - Regenerative tourism – Nature based solutions – Governance - Community engagement

The solution at a glance

The Integrated Governance Model for Regenerative Tourism provides a strategic and governance approach to help Mediterranean destinations strengthen climate resilience through regenerative tourism. It supports the development of community-led governance models aimed at actively restoring ecosystems, enhancing biodiversity, regenerating cultural heritage, and improving community wellbeing.





Why this solution matters

Mediterranean coastal destinations are increasingly exposed to climate-related pressures and mass tourism. Regenerative tourism repositions tourism as a driver of environmental restoration, cultural heritage regeneration and socio-economic resilience. The governance model helps destinations to:

- recognise and integrate the knowledge of local communities;
- support the regeneration of ecosystems, communities and local economies;
- align tourism development with territorial needs;
- strengthen adaptive capacity through inclusive and participatory governance.

How it works on the ground

The model is based on a participatory governance approach involving a wide range of stakeholders through the 8-Helix model (public authorities, businesses, civil society, researchers, residents, visitors, environmental organisations and nature).

The process combines:

- Socio-environmental vulnerability assessment to identify climate, ecological and socio-economic challenges
- Multi-actor governance processes to ensure inclusive decision-making
- Facilitated workshops and co-creation processes to define a shared vision, priorities and regenerative actions

This approach supports the development of Local Strategic Plans and the design of tourism experiences aligned with ecosystem restoration, cultural heritage and local identity.

In L'Escala, Spain, the model was applied through a first group of key stakeholders ("critical yeast") engaged in collective reflection on the identity and evolution of tourism in the territory. This process helped build a shared understanding of local values. In parallel, a vulnerability assessment was conducted. Through successive sessions, various regenerative tourism experiences emerged, to benefit the territory while addressing its vulnerabilities. The process progressively expanded, with additional stakeholders joining, strengthening collaboration and building a broader and more inclusive governance structure.





Key success factors

- Strong commitment from local and regional authorities to support the transition towards regenerative and climate-resilient tourism.
- Inclusive stakeholder engagement to support locally emerging and context-specific solutions.
- Skilled facilitation to translate regenerative principles into practical actions.
- A solid understanding of environmental vulnerabilities and tourism dynamics to support informed decision-making.

Learn more

- [Regenera4MED Website](#)
- [Introducing Regenerative Tourism: Principles and Practices - Integrated Governance Model](#)
- **Contact:** for Introducing Regenerative Tourism : Janja Berložnik - Research Center of the Slovenian Academy of Sciences and Arts - janja.berloznik@zrc-sazu.si & for Integrated Governance Model: Cristina Bajet Mestre - Catalan Tourist Board - cristinabajet@gencat.cat





5. Complementary initiatives and solutions supporting climate-resilient coastal tourism

Beyond the thematic projects showcased in this paper, additional initiatives highlight practical approaches to strengthening climate resilience in coastal tourism destinations. These examples show how combining nature-based and cultural heritage approaches with technological innovation, circular resource management and decision-support tools can support more resilient tourism systems, while offering valuable inspiration for Mediterranean destinations adapting to climate change and preserving the environmental and cultural assets that underpin their tourism economies.

Smart nature-based visitor management in Spain

The [Relleu Smart Walkway](#), Spain, illustrates how climate resilience in coastal tourism destinations can be strengthened through territorial integration between coastal areas and their hinterland (Turisme Comunitat Valenciana, 2023). Located near major mass tourism hubs, the initiative develops a nature and culture-based visitor experience around the Relleu dam and surrounding landscapes, helping to redistribute tourism flows and reduce seasonal and spatial pressure on coastal zones. By promoting inland visitation, it contributes to lowering exposure to climate-related pressures, including heat stress and ecosystem degradation, while supporting local economic diversification. A distinctive feature is the use of smart monitoring technologies, enabling real-time visitor management, improved safety and better control of carrying capacity. With over 45,000 visitors in 2022, the initiative demonstrates strong uptake and positive local economic impacts. It offers a replicable model combining nature-based solutions, cultural heritage valorisation and smart governance to transform underutilised natural and historical assets into resilient, year-round economic drivers for rural communities adjacent to coastal tourism centres.

Drinking water systems in Tunisia

“No More Plastic” in Kerkennah, Tunisia, is a project that illustrates how climate resilience in coastal and island tourism contexts can be strengthened through decentralised and low-impact drinking water solutions (AQUAMAN project, [Blue Horizons](#), 2025). Implemented on the Kerkennah Islands, the initiative addresses the heavy reliance on bottled water in areas disconnected from mainland supply systems, a challenge





exacerbated by tourism and water scarcity. The solution combines traditional rainwater harvesting systems with reverse osmosis technology, enabling the production of safe drinking water from locally collected resources. By reducing dependence on transported bottled water, it helps limit plastic waste, marine pollution and logistical pressures on island systems. The system promotes behavioural change through the distribution of reusable bottles and awareness-raising activities. Its modular and decentralised design makes it particularly suitable for tourism facilities such as hotels and guesthouses. By reconnecting traditional practices with modern treatment technologies, the initiative offers a replicable model for strengthening water resilience while reducing environmental impacts in Mediterranean coastal destinations.

A collaborative new approach to climate adaptation in the Heritage Tourism Industry in Scotland

The [Climate Change Adaptation Manual for Heritage Tourism](#) is a toolkit that provides practical guidance for heritage tourism businesses and organisations to assess climate risks and plan adaptation strategies to support operational business climate resilience (Historic Environment Scotland & Visit Scotland, 2025). The manual proposes a structured methodology for evaluating vulnerabilities, identifying priority risks, and developing adaptation measures tailored to heritage tourism specific assets. The manual is also designed to cater to the broader heritage tourism supply chain, enabling additional businesses that might not identify as heritage tourism to benefit as well – thus supporting overall heritage tourism resilience. As cultural heritage plays a central role in the attractiveness of many tourism destinations, such tools help ensure that heritage tourism and its historic sites remain resilient and accessible under changing climate conditions.

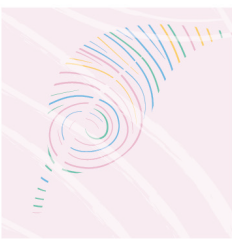
Supporting Regions to Integrate Climate Action into Tourism Policies

The NECSTouR network brings together more than 300 tourism professionals through its [Climate Hub](#), supporting regional authorities and Destination Management Organisations (DMOs) in accelerating their climate action journey. Drawing on the network's pool of experts and partners, the Climate Hub provides a dedicated platform for knowledge exchange, capacity building, and policy alignment through tools such as the [Blueprint for Tourism Climate Action Plans](#), online training, and





workshops. As a partner of the European Climate Pact, NECSTouR highlights the key role of European regions in bridging EU-level objectives with local territories. The Climate Hub equips regions with practical tools and expertise to strengthen governance models and integrate climate strategies into tourism policy and decision-making, driving coordinated climate action at destination level.





6. Key messages from the MED Cluster on Climate Adaptation

Based on the experiences developed by its thematic projects and associated partners, the **MED Cluster on Climate Change Adaptation** identifies the following key messages to support the transition towards more climate-resilient tourism destinations in the Mediterranean.

Participatory governance is essential for effective and locally adapted solutions in Mediterranean coastal and island destinations

Strengthening climate resilience in Mediterranean coastal and island destinations depends on the **active involvement of key actors** including public authorities, tourism stakeholders, researchers, civil society and local communities. **Participatory approaches**, such as **Living Labs and Territorial Working Groups**, are particularly relevant in the Mediterranean context, as they support the **co-design of solutions** adapted to diverse territorial realities, including coastal areas and small islands particularly exposed to climate change pressures. These approaches strengthen **ownership**, facilitate implementation and support the long-term effectiveness of adaptation strategies in territories facing complex socio-environmental pressures.

Climate resilience requires integrated, cross-sectoral and multi-level approaches

In the Mediterranean, increasing climate stress (heatwaves, droughts, sea-level rise and extreme events), combined with the concentration of tourism activity along coastal and island areas, intensifies pressures on ecosystems, cultural heritage and natural resources. Addressing these challenges cannot rely on fragmented approaches. It requires **integrated strategies** linking tourism with key policy areas such as climate adaptation, water management, coastal planning, biodiversity conservation and cultural heritage, while ensuring stronger coordination across **sectors, governance levels and policy frameworks**.

Nature-based and cultural heritage-based solutions are key levers for Mediterranean destinations

As climate change increasingly affects Mediterranean ecosystems and cultural heritage through water scarcity, heat stress and extreme events, **nature-based and cultural**





heritage-based solutions provide particularly relevant and context-adapted responses. These approaches help restore ecosystem functions, reduce climate risks and preserve cultural assets, while maintaining destination attractiveness and supporting more sustainable tourism models. In the Mediterranean context, they constitute **strategic tools for strengthening climate resilience** while safeguarding the natural and cultural assets on which Mediterranean tourism economies depend.

Scaling up solutions requires enabling frameworks, targeted funding and stronger local capacities

While many solutions have already been tested across Mediterranean territories, their impact remains limited without supportive frameworks and sufficient resources for implementation. Scaling up solutions requires **policy frameworks adapted to Mediterranean realities and vulnerabilities**, as well as **targeted funding mechanisms** supporting the concrete deployment and long-term implementation of solutions. Strengthening the **capacities** of local actors and facilitating **replication, knowledge transfer and long-term cooperation** across territories are also critical conditions for broader territorial impact.

Strategic foresight is essential to address increasing climate uncertainty

Mediterranean coastal and island destinations are increasingly exposed to multiple and interconnected climate-related pressures. These evolving conditions create complex and uncertain situations that require moving beyond short-term responses and reactive adaptation. Strengthening climate resilience therefore requires stronger **strategic foresight capacities**, including scenario planning, climate risk anticipation and adaptive governance mechanisms. Such forward-looking approaches can help destinations better prepare for future climate conditions, manage competing pressures on resources and support more resilient and adaptive tourism models.

The solutions presented in this paper illustrate the diversity of approaches already being developed across Mediterranean territories to address climate change impacts on tourism destinations. They also highlight the importance of **context-adapted, place-based approaches** that take into account the environmental, cultural and socio-economic specificities of coastal and island areas.





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This document has been developed in the framework of the Thematic Community Project of the Sustainable Tourism Mission of the Interreg Euro-MED Programme 21-27 (Community4Tourism project) and its activity of the Mediterranean Clusters.

The Mediterranean Clusters are the main project's proposal for the support of the transferring of practices and results to other actors and territories, and their integration into local, regional, national and European policies and strategies, covering the 4 main topics that the Sustainable Tourism Mission integrates: innovation, circular economy, climate change and nature & biodiversity.

This document is the Thematic Paper of the MED Cluster on Climate Change Adaptation. It aims to provide an in-depth technical analysis of a specific challenge identified by the Cluster members - namely, "climate resilience in coastal tourism destinations through solutions from nature and cultural heritage"- by highlighting relevant tools, methodologies, and good practices developed by thematic projects, in order to facilitate the transferability of these outputs to other stakeholders and destinations.

The MED Cluster on Climate Change Adaptation is co-coordinated by NECSTouR and Plan Bleu.

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