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NaTour4CChange

Survey Report on Best Practices

on climate action in coastal tourism destinations in the Mediterranean

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

The following document underlines the key findings and broad trends accumulated from each deliverable for the project scope of Activity 1.3 as a part of Plan Bleu's EU-funded Interreg Euro-MED project: NaTour4CChange. Under the NaTour4CChange project aims of increasing resilience in coastal Mediterranean destinations, deliverables in Activity 1.3 aspired to understand the current climate response and actions being taken by destinations[1].

To assess the similarities and differences in climate action between Mediterranean destinations and their geographical basins, the following sections in this report provide a condensed overview of previous project deliverables 1-5, complete with analyses on the main gaps, barriers and opportunities deemed capable of advancing climate action.

Deliverable 1, which outlined the main takeaways from our desktop research and literature review, provides a review of existing initiatives, publications, and project outcomes relevant to the Mediterranean tourism sector and efforts to forward mitigation and adaptation efforts. This initial deliverable constituted a baseline understanding of the current climate and tourism impacts on destinations in each geographical basin, underlining the ways in which climate change is shaping tourism patterns. From this, Deliverable 2 used the information accumulated to develop a strategic questionnaire aimed at bridging data gaps, understanding additional contexts and obtaining stakeholder sentiment around the destinations' climate response and recommended best practices.

Deliverable 3 initiated 1-1 consultations, engaging key stakeholders to share more information about their responses, culminating into a comprehensive report that analyzed individual questionnaire and consultation responses, drawing out common trends and identifying notable gaps. Deliverable 4 then expanded on these gaps in the form of a gap analysis, combining qualitative responses from the questionnaire and 1-1 consultations with gaps identified in the research phase visualized in a matrix.

Deliverable 5 used a pre-set selection of criteria to identify best practices based on the examples provided by questionnaire respondents and identified through desktop research. Those that were selected presented exemplary projects with a quantifiable impact, capable of inspiring replication in other destinations through the Mediterranean.

In sum, this Deliverable 6 compiles the main points from each of the aforementioned deliverables, with additional analysis provided on the Mediterranean basins, comparing stakeholder perceptions through an inter-basin analysis. The analyses and the trends

[1] The term "Destination" was interpreted by stakeholders to be country, city, and/or region and used interchangeably in their questionnaire responses. This has been noted in the respondents list. The team's interpretation of destination is the national level, which is reflected in this report and used interchangeably with "destination".

elaborated on in this report tie together project activities to generate a snapshot of the existing stakeholder perceptions, climate action efforts and ambitions throughout the Mediterranean. This report aspires to provide a baseline understanding from which further activities will draw from and build on in their subsequent project outcomes.

1. STATE OF PLAY: ASSESSING THE IMPACT OF CLIMATE CHANGE ON COASTAL TOURISM DESTINATIONS

The research team reviewed existing initiatives, publications, and project outcomes related to assessing and combating climate change impacts on the Mediterranean tourism sector. This included examining documents that were provided by Plan Bleu and other partners to understand past initiatives, projects, and recommendations. The review covered environmental vulnerabilities, climate resilience, mitigation and adaptation strategies, monitoring tools, transferability, and stakeholder intervention areas. These findings have been compiled into a report summarizing key takeaways along with criteria for sustainable tourism and climate change, which can be found in the full report titled: Deliverable 1: Desktop Research and Literature Review.

A few of key takeaways from the Deliverable 1 report have been highlighted below:

Background

The Mediterranean basin, rich in biodiversity and cultural heritage, spans three continents and 21 countries, housing over 500 million people. The region is facing multiple pressures from climate change and tourism, exacerbated by the Mediterranean being a renowned tourist destination known primarily for its sun, sand and sea tourism.[2] As a result, the regions' tourism products and services have traditionally been concentrated around the coastline and other population centers. This has led to unique overlaps between tourism and climate challenges including resource scarcity, rising temperatures and an increased frequency of extreme weather events.

Socio-Economic Context

The region, representing 7% of the global population and 10% of global GDP, shows significant disparities between Northern Mediterranean Countries (NMCs) and Southern and Eastern Mediterranean Countries (SEMCs). Urbanization and population growth, especially in SEMCs, place increasing pressure on natural resources (Plan Bleu, 2020)[3]. Tourism is a major economic driver but is unsustainable under current models (Fosse, 2021)[4]. Agriculture and the blue economy are also vital, yet climate change threatens their viability.

[2] United Nations Environment Programme/Mediterranean Action Plan and Plan Bleu (2020). State of the Environment and Development in the Mediterranean: Summary for Decision Makers. EU Document. Available online

[3] Plan Bleu (2020). Demographic Trends and Outlook in the Mediterranean. EU Document. Available online

[4] Fosse, J., 2021, The future of Mediterranean tourism in a (post) covid world. Available online.

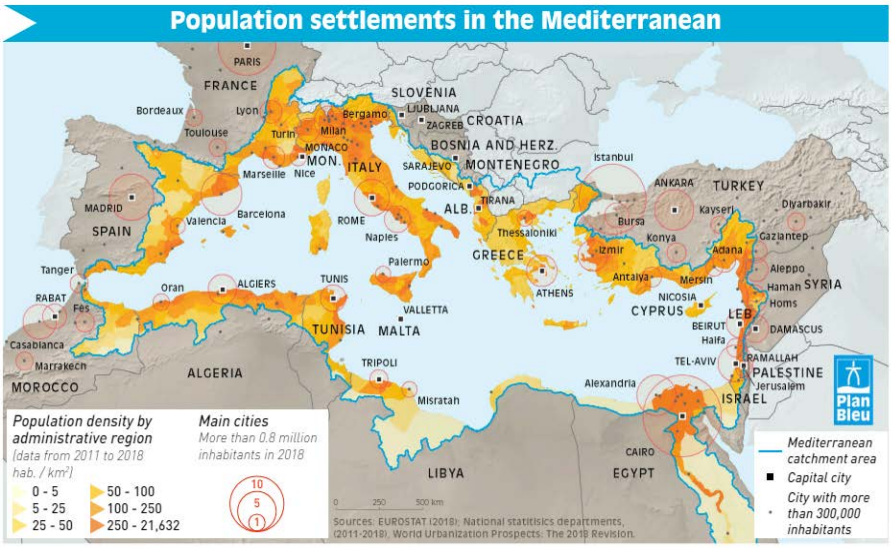

Figure 1

Population density by administrative region and main cities in the Mediterranean catchment area. (Source: EUROSTAT, 2018; National statistics departments, 2011-2018; UNDESA, World Urbanization Prospects: The 2018 Revision)

Figure 1. (United Nations Environment Programme/Mediterranean Action Plan and Plan Bleu (2020))[5]

Environment

The region is a biological hotspot with 481 marine protected areas, including Natura 2000 sites. It is also considered a region of high conservation concern by the IUCN. The sea itself is incredibly rich in biodiversity, making up less than 1% of the world's oceans, but containing 18% of known marine species. It has the highest rate of endemism in the world with 20-30% of marine species endemic (SOED, 2020).[6]

Multiple anthropogenic pressures are having a detrimental impact on the health of ecological systems. In the Mediterranean region at large, 25% of species are classified as threatened, of which 69% are animals, and 31% plants. Due to a combination of over-exploitation, pollution and climate change nearly half of all wetlands have disappeared and nearly 80% of fish stocks are considered overexploited, meanwhile there has been a 41% drop in ocean predators and 78 marine species and 138 coastal species are assessed as endangered SOED, 2020[7].

[5] United Nations Environment Programme/Mediterranean Action Plan and Plan Bleu (2020). State of the Environment and Development in the Mediterranean: Summary for Decision Makers. EU Document. Available online

[6] United Nations Environment Programme/Mediterranean Action Plan and Plan Bleu (2020). State of the Environment and Development in the Mediterranean. EU Document. Available online

[7] *Ibid.*

Literature Review

Climate Change Mitigation and Adaptation Challenges Facing the Mediterranean

The Mediterranean region is considered a "climate hotspot" due to its vulnerability to climate change, as noted by Giorgi, 2006[8], Cramer *et al.*, 2023[9]). It is projected to experience warming exceeding the global average by 20% annually and by 50% during summer months (MAR, 2022)[10]. The region has already seen a 1.5°C increase in atmospheric temperatures and a 0.4°C rise in sea temperatures. Under high greenhouse gas (GHG) emissions scenarios, atmospheric temperatures could increase between 3.7°C to 5.6°C by the end of the 21st century (MAR, 2022).[11]

Key risk factors include rising temperatures and increased droughts, which are unprecedented in the last 10,000 years. Heatwaves and temperature extremes have intensified, increased in number, and lengthened, particularly in summer, with projections indicating further increases. Sea surface temperatures could rise by up to 3.8°C in worst-case scenarios, and sea water salinity is also expected to increase. Sea level rise in the Mediterranean is accelerating and could reach between 0.43 meters to 2.5 meters by 2100 (IPCC, 2023[12]).

Precipitation patterns are expected to become more complex, with decreases projected year-round in the central and southern basin, and during summer in the northern region. Droughts are anticipated to become more frequent and severe, with flash flooding incidents expected to rise in the northern region. Severe droughts have already impacted southern Italy, southern Spain, Malta, Morocco, Tunisia, and Algeria. Under a 2°C warming scenario, freshwater availability in the Middle East and North Africa (MENA) regions could decline by 15-45% by 2050, affecting food security, food prices, and potentially leading to social unrest (World Bank, 2022)[13].

Secondary impacts include land degradation and desertification. High coastal urbanization and the over-exploitation of natural resources exacerbate the effects of climate change. Coastal areas with narrow dune belts and dense urbanization are particularly vulnerable to warming and sea level rise. Additionally, extreme summer

[8] Filippo Giorgi, Piero Lionello (2008). Climate Change Projections for the Mediterranean Region. Scientific Article. Available online

[9] Cramer et al. (2022). Mediterranean Region. Scientific Report. Available online

[10] MedECC (2020). Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future. Scientific Article. Available online

[11] *Ibid.*

[12] IPCC, 2023: Sections. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 35-115, doi: 10.59327/IPCC/AR6-9789291691647

[13] The World Bank Group (2022). Middle East and North Africa climate roadmap (2021-2025). Scientific Report. Available online

temperatures could diminish the region's attractiveness as a tourist destination (Cramer *et al.*, 2022[14]; The World Bank Group, 2022[15]).

Global warming is expected to shift climatic conditions northward, exposing ecoregions to potentially unsuitable conditions. Marine ecosystems are already changing, with acidification occurring faster than in the global ocean, the spread of non-native tropical species, and mass mortality events of native species. Marine habitats, such as seagrass meadows, are declining, and endemic species that cannot migrate north are especially threatened. Increased temperatures and droughts also heighten the risk of wildfires, affecting wildlife and forest health (Cramer *et al.*, 2022[16]).

Rising temperatures, prolonged heat waves, and decreasing rainfall will strain crucial sectors like agriculture and tourism, which are vital for the cultural, economic, and heritage aspects of Mediterranean societies.

Mitigation Challenges

All Mediterranean countries, with the exception of Libya, are signatories to the Paris Agreement (2015) and have submitted their Nationally Determined Contributions to the UNFCCC (UN Treaties Collection[17], SoED, 2020)[18].

Renewable Energy/Energy Efficiency

Energy consumption is rising, especially in SEMCs, highlighting the need for renewable energy integration. While NMCs progress in diversifying their energy mix, SEMCs lag despite high potential for renewables(Escribano et al, 2023, MAR, 2022[19]). Capturing Marine Renewable Energy in the Mediterranean[20] is another means to diversify and decarbonise regional and global energy sources. However, it is vital that appropriate considerations are made for spatial planning and, in particular for environmental impacts in the sensitive environment. Interreg Med is also working to integrate renewable energies into rural and island areas of the Mediterranean with the Ecosystemic Transition Unit[21].

[14] Cramer et al. (2022). Mediterranean Region. Scientific Report. Available online

[15] The World Bank Group (2022). Middle East and North Africa climate roadmap (2021-2025). Scientific Report. Available online

[16] Cramer et al. (2022). Mediterranean Region. Scientific Report. Available online

[17] United Nations Treaty Collection, Paris Climate Agreement 12 December 2015. Available online Accessed 30 April 2024

[18] United Nations Environment Programme/Mediterranean Action Plan and Plan Bleu (2020). State of the Environment and Development in the Mediterranean. Governmental Document. Available online

[19] MedECC (2020). Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future. Scientific Report. Available online

[20] Plan Bleu (n.d.). Using Ecological Sensitivity to guide Marine Renewable Energy Potentials in the Mediterranean region. EU Document. Available online

[21] Euromed Economists (n.d.). Interreg Med Renewable Energy. Website. Available online

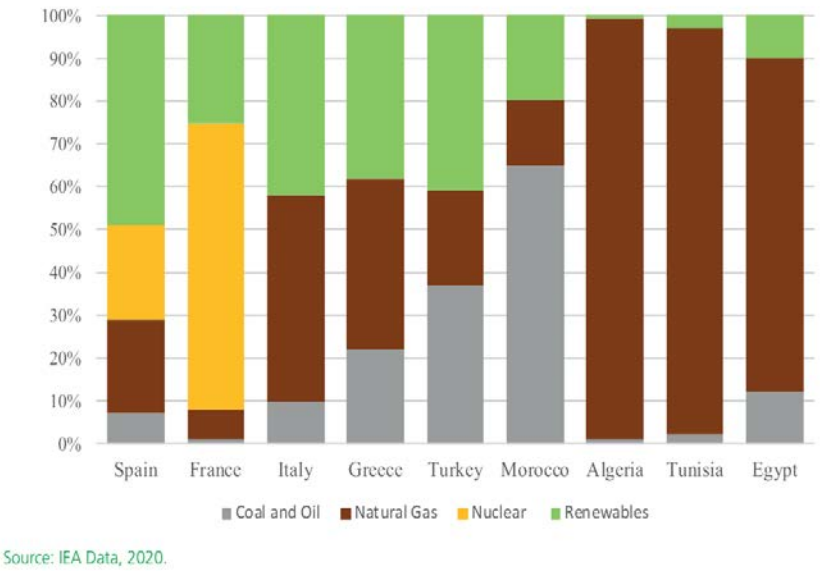

Figure 2. Electrical generation mix of selected Mediterranean countries in 2020 (Escribano et al., (2023)[22]

Nature-Based Solutions

Natural systems such as seagrass meadows, wetlands and forests offer significant carbon sequestration benefits. However, these ecosystems are often under threat, and restoration efforts are inconsistent. In the Mediterranean seagrass meadows have been found to be particularly effective for carbon sequestration and storage in marine and coastal areas. The slow growing *Posidonia oceanica* meadows have exceptional carbon storage capacity, having accumulated between 11-42% of CO2 from Mediterranean countries since the Industrial Revolution (Plan Bleu, 2022[23], Pergent et al., 2014[24]).

Total forest cover of the Mediterranean has been increasing since 1990 currently representing about 10% of Mediterranean terrestrial area. While forests are strongly associated with carbon sinks, terrestrial Mediterranean forests are highly multifunctional in terms of ecosystem services and cultural and recreational value, rendering management for climate mitigation sometimes complex and a source of dispute (Nocentini, 2022)[25] However, the Restoring Mediterranean Forests Initiative[26] has already restored 2m hectares of forest in Morocco, Tunisia, Lebanon and Jordan, and plans to restore a further 8m hectares by 2030, representing NbS with multiple benefits including enhanced carbon sequestration and storage as well as wildfire prevention.

[22] Real Instituto Elcano (2023). Revamping the Euro-Mediterranean Energy and Climate Space. Scientific Report. Available online

[23] Plan Bleu (2022). Nature-Based Solutions (NbS) in Mediterranean Coastal Zones. EU Document. Available online

[24] Pergent et al. (2014). Climate change and Mediterranean seagrass meadows: A synopsis for environmental managers. Scientific Article. Available online

[25] Nocentini et al. (2022). Managing Mediterranean Forests for Multiple Ecosystem Services: Research Progress and Knowledge Gaps. Scientific Article. Available online

[26] Food and Agriculture Organization of the European Union (n.d.). Committee on Mediterranean Forestry Questions - Silva Mediterranea. EU Website. Available online

Adaptation Progress and Challenges

Adaptation requires multi-level governance and cooperation. Frameworks like the Regional Climate Change Adaptation Framework for the Mediterranean Marine and Coastal Areas, 2017[27] and the EU Strategy on Adaptation to Climate Change 2013[28] guide policy but show varied implementation across the region. Comprehensive adaptation plans are lacking, especially in SEMCs, which are more vulnerable to climate impacts. Structural limitations in the MENA region to adapting to climate change include limited access to accurate climate risk data, lack of institutional and coordination and capacity, lack of financial support and lack of holistic planning. Addressing these issues collaboratively and systematically would facilitate better preparation for the impacts of climate change (Osman, 2024)[29].

Climate change is exacerbating environmental and social justice inequalities; however, adaptation measures can also negatively impact some social groups and localities by increasing poverty, vulnerability and inequality. Adaptation strategies, therefore need to consider an integrated approach that encompasses broader societal goals inline with the Mediterranean Strategy for Sustainable Development (Pietrapatosa, 2023[30] King et al., 2014[31]; Clément et al., 2015[32]; Anguelovski et al., 2016[33]).

1.1. Impacts of climate change on the tourism sector in the Mediterranean

As one of the regions most vulnerable to climate change, the Mediterranean is facing unprecedented environmental challenges such as heat waves, floods, droughts and water shortages[34] with far reaching impacts on health, wellbeing and the economy including sectors such as tourism. As an industry that generates significant GDP and economic revenue streams for destinations throughout the region, mitigating and adapting to climate change is vital to sustaining Mediterranean tourism. Beachfront losses and erosion from sea level rise, water and resource scarcity, wildfires, health and safety risks are only a few of the direct climate-related consequences disturbing tourism activities. The evacuations, flight cancellations and resource strain associated with scarcity and climate-linked reductions in agricultural outputs, further risk reducing the

[27] United Nations Environment Programme / Mediterranean Action Plan (UN Environment/MAP) (2017). Regional Climate Change Adaptation Framework for the Mediterranean Marine and Coastal Areas. Scientific Report. Available online

[28] European Commission (n.d.). EU Adaptation Strategy. EU Website. Available online

[29] Osman (2024). Assessing Climate Adaptation Plans in the Middle East and North Africa

[30] Pietrapotasa et al. (2023). Adaptation to climate change in cities of Mediterranean Europe. Scientific Article. Available online

[31] King et al. (2014). Voluntary relocation as an adaptation strategy to extreme weather events. Scientific Article. Available online

[32] Clement et al. (2015). Perceptions on equity and responsibility in coastal zone policies. Scientific Article. Available online

[33] Anguelovski et al. (2016). Equity impacts of urban land use planning for climate adaptation: critical perspectives from the global North and South. Available online

[34] Romano (2022). Mediterranean region seeking to decarbonise its tourism industry. News Article. Available online

competitiveness of the region's tourism industry with impacts reverberating across the value chain. As a result, climate change risks changing tourism perceptions, booking patterns with consequences for accommodations, tourism operators, the food and beverage sector and those that rely on tourism for their livelihoods.

Water-based tourism is particularly vulnerable with activities currently making up a large part of the Mediterranean's tourism attractiveness. Coastal areas that host activities such as diving, snorkeling, sea bathing and fishing, are experiencing the effects of warming, acidification and biodiversity loss[35]. Heat waves, induced by climate change, have led to losses of up to 80-90% of coral reef biomass[36] in the Mediterranean, losses which directly correlate to economic consequences for marine tourism. As conditions continue to worsen, diving and other water-based activities that are centered on the health of biodiversity may become increasingly less viable or sought after by tourists, influencing water sport tourists to look elsewhere.

While tourists are continuing to flock to coastal Mediterranean destinations in record numbers[37] for sun and sea, climate change threatens the industry's prospective growth and competitiveness. There was already an estimated 10% decrease[38] in the number of tourists planning on visiting the Mediterranean region from June-November 2023, with tourists opting instead for other non-Mediterranean destinations to the north, notably, the Czech Republic, Denmark, Ireland and Bulgaria according to the European Travel Commission. The same study found that tourists are increasingly choosing to travel during the spring and autumn seasons to avoid vacationing in overcrowded destinations, with preferences shifting towards destinations[39] with cooler temperatures during the peak summer season. As a result of more frequent climate-induced weather events coupled with overtourism, the Mediterranean is predicted to become less lucrative[40], causing destinations and businesses to cope with the consequences of less predictable tourism seasons and fluctuating demand.

Climate impacts will also continue to challenge the sustainability of the industry in its current form. However by choosing to adapt to changing circumstances[41], new opportunities may arise for destinations. By mitigating seasonality, reducing resource scarcity and enhancing the uptake of renewable energy technologies, destinations and

35 MEDECC (2020). 2020 Summary for Policymakers. In: Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future. First Mediterranean Assessment Report. Scientific Report. Available online

36 Institut de Ciencies del Mar (2022). Climate crisis drives Mediterranean coral populations to collapse. News Article. Available online

37 Tovima (2024). Mediterranean Tourism Set for New Record in 2024. News Article. Available online

38 WeForum (2023). How rising global temperatures are already affecting the tourism industry - here's how. News Article. Available online

39 *Ibid.*

40 MEDECC (2020). 2020 Summary for Policymakers. In: Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future. First Mediterranean Assessment Report. Scientific Report. Available online

41 *Ibid.*

businesses may be able to recuperate from climate change-induced losses and ease social tensions. Tourism arrivals are currently the highest during the summer season, leading to high demands for water, a challenge that will only be made worse by climate change. By spreading tourism arrivals over peak and off-peak seasons, there is an opportunity to diversify economic benefits and alleviate tensions[42] over resources. In the same vein, energy demands are anticipated to increase as the need for air conditioning, desalination and other energy intensive processes will only continue to grow in order to meet resource demands. Hence, the need for a timely and effective green energy transition is becoming more palpable[43] within the Mediterranean tourism sector.

Moving forward, this pivot to renewable energy and environmental sustainability will hinge on the ability to accelerate efforts that are in line with plans and targets being championed by governments and policymakers. Efforts to facilitate stakeholder cooperation, knowledge-sharing, and monitoring and evaluation structures combined with concrete efforts to support tourism businesses and destinations will be crucial to simultaneously mitigating and adapting[44] to climate impacts. Apart from this, a bottom-up approach will also be necessary to generate buy-in from communities[45] through measures and initiatives that balance inequalities, alleviate poverty, support vulnerable communities and fall in line with cultural contexts for inclusive outcomes throughout the Mediterranean.

More information on the impacts per basin have been included in the section titled, “Takeaways on the Northern, Eastern, and Southern Basins” in Deliverable 3.

1.2 Snapshot of initiatives, policies, cross-sector collaborations and strategies

The following table outlines international agreements, initiatives, schemes, strategies and guidelines, among additional support structures, that are capable of being leveraged by the Mediterranean tourism industry to forward ambitions to combat climate change. The snapshot of existing efforts provided below, underline the multifaceted approaches that could be employed on a national or regional level to raise the level of standards, boost implementation capacity, increase preparedness and enhance the resilience of tourism stakeholders.

42 *Ibid.*

43 *Ibid.*

44 *Ibid.*

45 *Ibid.*

This outline matrix provides an internal mapping of climate action to be elaborated on in the questionnaire[46], stakeholder consultations and in best practice selection. The outline has additionally informed the selection of criteria and the lens for which best practice case studies will be determined. Criteria account for the ability of existing structures and other innovative methods, some of which are included here, to provide support for tourism-specific climate action in the Mediterranean.

Table 1. Internal mapping of climate action

Name	Purpose	Potential for support tourism-specific climate action in the Mediterranean basins	Type of support
Paris Agreement	"The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius."	Guide economic transformation, including within the tourism sector to further climate action and help the sector reach climate goals.	Instill sense of responsibility through Nationally Determined Contribution Reports (NDCs)
Glasgow Declaration	"The Glasgow Declaration is a catalyst for increased urgency about the need to accelerate climate action in tourism and to secure strong commitments to support the global goals to halve emissions over the next decade and reach Net Zero emissions as soon as possible before 2050." UNWTO[47]	"Tourism has a huge potential to drive a more inclusive and resilient sustainable development, especially in the Mediterranean, which is the world's leading tourism destination and one of the most vulnerable regions to climate change, biodiversity loss and pollution and waste. We believe that the "Glasgow Declaration on climate action in Tourism" is a powerful tool to tackle this triple crisis and that it deserves further and wider support." Union for the Mediterranean[48].	Decision-making, policy, guidance for monitoring and evaluation of climate action

[46] *The questionnaire asked respondents to rank the perceived level of support provided by each of the following initiatives, strategies, policies etc. More on this can be found in Deliverable 3 individual question analysis and in this Deliverable 3 in the section titled, "Takeaways on the Northern, Eastern, and Southern Basins".*

[47] UNWTO (n.d.). The Glasgow Declaration on Climate Action in Tourism. Governmental Website. Available online

[48] Interreg MED Programme and UNIMED (2022). Tourism Climate action plans in the Mediterranean: A vision for the Future. Website. Available online

European Green Deal (EGD)	"Climate change and environmental degradation are an existential threat to Europe and the world. To overcome these challenges, the European Green Deal will transform the EU into a modern, resource-efficient and competitive economy, ensuring: • no net emissions of greenhouse gasses by 2050 • economic growth decoupled from resource use • no person and no place left behind." European Commission[49]	It has goals extending to many different sectors, including construction, biodiversity, energy, transport and food. Hence, the aims of the EGD overlap with the cross-industry ties to tourism, enabling impact.	Policy-driven macro sustainability transition geared towards growth-modernization and innovation within the tourism sector. Can help the sector define actions that support green transition by 2050. Green partnerships with neighboring EU countries for supplementary technical and financial support
EU Transition Pathway for Tourism	"The transition pathway identifies 27 areas of measure for the green and digital transition, and for improving the resilience of EU tourism." European Commission[50]	Provides a transition pathway, "guided by various steps that were co-created and co-implemented with contributions by public and private stakeholders across sectors and levels in the tourism ecosystem." European Commission[51] Can be used as a guide for Mediterranean stakeholders, enhance knowledge sharing and support the implementation of green action.	"EU tourism stakeholders to submit their concrete pledge for action. We will publish the pledges, recognising stakeholders' contribution to and leadership in the transition of EU tourism" European Commission[52]
EU Blue Economy report	The purpose is "to analyze the scope and size of the Blue Economy in the European Union" Commission Directorate General for Maritime Affairs and Fisheries[53]	Reports can be used to inspire investors to support climate-resilient investments in Mediterranean tourism businesses, products and services, backed up by evidence presented.	The report's main objective remains to provide support to policymakers and stakeholders in the quest for a sustainable development of oceans, coastal resources

[49] European Commission (n.d.). The European Green Deal. EU Website. Available online

[50] European Commission (2022). Transition pathway for tourism published today. EU Website. Available online

[51] *Ibid*

[52] *Ibid*

[53] European Commission (2023). The EU Blue Economy Report. EU Report. Available online

			and, most notably, to the development and implementation of policies and initiatives under the European Green Deal" Commission Directorate General for Maritime Affairs and Fisheries[54]
Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention)	"The main aim of the convention and the protocols is to protect the marine environment and the coastal region of the Mediterranean Sea." Source[55]	"The Mediterranean Action Plan (MAP)—Barcelona Convention (BC) works with Contracting Parties and partners to fulfill the vision of a healthy Mediterranean Sea and Coast." MedWaves[56] The BC can support Mediterranean signatories to adopt the MAP governance framework.	"Barcelona Convention is guided by a six-year Medium-Term Strategy (MTS) and implemented through two-year Programmes of Work and budgets adopted by the meetings of the Contracting Parties" MedWaves[57]
Mediterranean Strategy for Sustainable Development 2016-25 (MSSD)	"The Mediterranean Strategy for Sustainable Development (MSSD) 2016-2025 provides an integrative policy framework for all stakeholders, including MAP partners, to translate the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs) at the regional, sub-regional, national and local levels." UNEP[58]	Aligns with helping Mediterranean countries address and prioritize climate action, applicable to many sectors, including the tourism industry through supporting goals that transition to a green and blue economy model.	As a strategic document, the MSSD serves to: • adapt international commitments to regional conditions; • guide national strategies and stimulate regional cooperation in the achievement of sustainable development objectives. UNEP[59]
Regional Action Plan on Sustainable Consumption and Production in the Mediterranean (SCP AP)	"The SCP Action Plan for the Mediterranean is aimed at supporting the implementation of sustainable consumption and production actions at the regional level to support sustainable consumption and	"Operational Objective 3.1. Develop and promote practices and solutions to ensure efficient use of natural resources and reduce environmental impacts of tourism, respecting spatial, ecological, and socio-cultural carrying capacities of the destination." UNEP[61]	Guiding vision, objectives and actions in addition to implementation support including on sustainable consumption and production measures (as a part of the MAP reporting system)

[54] *Ibid*
[55] EUR-Lex (n.d.). Barcelona Convention for the protection of the Mediterranean. EU Website. Available online
[56] MedWaves (n.d.). The Barcelona Convention. Governmental Website. Available online
[57] *Ibid*
[58] UN Environment Programme (n.d.). Mediterranean Strategy for Sustainable Development (MSSD). Governmental Website. Available online
[59] *Ibid*
[61] *Ibid*

	production common objectives. It addresses key human activities which have a particular impact on the marine and coastal environment and related transversal and cross-cutting issues". UNEP[60]	Objectives can guide Mediterranean tourism stakeholders in their green transition and in their adoption of practices that uphold environmental integrity and resource efficiency.	
Protocol on Integrated Coastal Zone Management in the Mediterranean (ICZM Protocol) and its Conceptual Framework for Marine Spatial Planning in the Mediterranean	"The ultimate objective of the Protocol on Integrated Coastal Zone Management in the Mediterranean (ICZM Protocol) is to contribute to the vision for the Mediterranean Sea and coast as: "A healthy Mediterranean with marine and coastal ecosystems that are productive and biologically diverse, contributing to sustainable development for the benefit of present and future generations". (UNEP/MAP Mid-Term Strategy 2016-2021)" UNEP[62]	"ICZM is also an essential tool to fulfill the purposes of the Barcelona Convention within the Mediterranean Sea Area as it provides a commonly shared context with specific recommendations focusing on: (a) coherence of policies/strategic documents and orientation of actions; and (b) ways to strengthen integration and regional/sub-regional cooperation, taking also into consideration the land-sea interactions and the transboundary aspects." UNEP[63]	Common Regional Framework (CRF) is to be considered as the strategic instrument meant to facilitate the implementation of the ICZM Protocol. Can support implementation through recommendations and measures for: • Processes: to accelerate achievement of results agreed and outcomes/outputs set out; • Indicators: essential tools for tracking progress, supporting policy evaluation and informing the public and decision makers; • Methods and practices: to achieve objectives and the general principles of the ICZM Protocol. UNEP[64]
Blue Med Initiative	"The Blue Med Initiative fosters integration of knowledge and efforts to develop Blue Growth in the Mediterranean and promotes joint	Is relevant to both the western and eastern Mediterranean basins, covering the countries of: Croatia, Cyprus, France, Greece, Italy, Malta, Portugal,	Research and reports guide the application of the MSP for: • Developing tools to assess the

[60] United Nations Environment Programme / Mediterranean Action Plan (UN Environment/MAP) (n.d.). Regional Action Plan on Sustainable Consumption and Production in the Mediterranean. Scientific Report. Available online

[62] UNP/MED (n.d.). Common Regional Framework for Integrated Coastal Zone Management. Governmental Document. Available online

[63] *Ibid*

[64] *Ibid*

	actions on relevant research and innovation priorities." Blue Med Initiative[65]	Slovenia, Spain and others. Research, reports and collaborations can forward the tourism's industry's green transition, while providing information that can be used to prevent unsustainable actions from taking place i.e. introducing energy infrastructure in environmentally-sensitive areas.	cumulative impacts of human activities, to ensure that exploitation of marine resources is ecologically sustainable, or • Use integrated decision tools to select appropriate sites for offshore installations, to ensure that they meet energy and environmental requirements. Blue Med Initiative[66]
Interreg Euro-MED	"The Interreg Euro-MED Programme supports cooperation across Mediterranean borders. We provide funds for projects developed and managed by public administrations, universities, private and civil society organizations. The Programme brings together partners from 69 regions of 14 countries from the Northern shore of the Mediterranean with a common objective: a climate neutral and resilient society for the benefit of its citizens." Interreg Euro Med[67]	Focus area is in the European Mediterranean, where funding is provided to projects that strengthen innovative and sustainable economies, promote green living areas (incl. Integrated energy transition) in view of minimizing climate impact. Funded projects also hone in on sustainable tourism, circular economy, and employing technologies for the sustainability of ecosystem services.	Works work to make the region smarter, greener and improve the governance between its stakeholders.
European Neighbourhood Policy (ENP)	"Climate action has become a key objective of the European Neighbourhood Policy (ENP), which aims at supporting and fostering stability, security and prosperity. Many of the EU's cooperation activities on climate and sustainable energy in the	ENP projects can help stimulate climate action in the eastern and southern Mediterranean basins, while also incorporating the tourism industry.	Build institutional capacity for strategic planning towards low carbon development and climate resilience.

[65] European MSP Platform (n.d.). Bluemed Initiative. EU Website. Available online
[66] *Ibid*
[67] Interreg Euro-MED (2022). Description. EU Website. Available online

	Mediterranean have a regional scale." European Commission[68]		
EU Tourism Dashboard	The EU Tourism Dashboard is an online knowledge tool developed by the European Commission, aimed at promoting and monitoring the (1) green and digital transitions and (2) socio-economic resilience factors of the European tourism ecosystem." EU Tourism Dashboard[69]	Northern basin Mediterranean stakeholders can use the dashboard to assess how their climate action is progressing and then use this information to determine how tourism policies and practices should be adapted to further impact.	Overview of indicators per policy pillar Data overviews per destination and/or region Is an example of GHG emissions' integration into tourism assessments via sustainable tourism indicators.

[68] European Commission / ClimaSouth project (2018). The future of climate action in the South Mediterranean region: Lessons learned since the Paris Agreement. EU Report. Available online

[69] European Commission (n.d.). EU Tourism Dashboard. EU Website. Available online

2. SURVEY AND MAPPING OF MEDITERRANEAN TOURISM STAKEHOLDERS

This deliverable focuses on identifying and engaging key stakeholders in the Mediterranean tourism sector to assess and enhance their resilience to climate change. It outlines the methodology for stakeholder mapping, questionnaire development, and dissemination to gather valuable insights on the sector's challenges and opportunities related to climate resilience.

Stakeholder Mapping

The stakeholder mapping process was conducted in collaboration with NaTour4CChange partners and experts. Stakeholders were categorized based on their geographic location (northern and southern shores of the Mediterranean) and their sector (institutional bodies, researchers, local authorities, private sector, etc.). This comprehensive mapping ensures that all relevant parties are included in the analysis.

Questionnaire Development

The questionnaire was designed to gather information on the main challenges and barriers hindering resilience and growth in the tourism sector due to climate change. It also aimed to gauge stakeholder sentiment on past and current initiatives and identify opportunities for innovation. The questionnaire included a mix of closed and open-ended questions, focusing on various aspects such as environmental, community, and economic impacts of climate initiatives. which can be found here.

Questionnaire Dissemination and Data Collection

The questionnaires were disseminated via email to the identified stakeholders. Responses were collected to form the basis of the subsequent analysis. The output of this stage included a comprehensive stakeholder mapping and a detailed questionnaire.

Criteria for Case Study Selection and Assessment

The criteria for selecting and assessing case studies were developed to ensure a structured and objective evaluation of initiatives addressing climate change in the tourism sector. The criteria include:

1. Effectiveness/Relevance: Initiatives must address specific climate challenges effectively.
2. Implemented Action: Actions taken should be described, excluding mere assessments.

3. Monitoring and Evaluation: Mechanisms should be in place to track performance and impact.
4. Participation and Collaboration: Evidence of stakeholder engagement and inclusivity in decision-making processes.
5. Geographical Scope: Case studies should represent various regions of the Mediterranean Basin.
6. Replicability and Knowledge Sharing: Initiatives should facilitate peer-to-peer learning and be replicable in different contexts.
7. Integration: Best practices should align with wider frameworks and policies.
8. Multi-sectoral: Initiatives involving multiple sectors are favored.
9. Innovation: Innovative approaches to climate challenges are highlighted.
10. Stakeholder Satisfaction and Perception of Effectiveness: Monitoring stakeholders' satisfaction and perceptions provides insights into the success of initiatives.

Quantitative Scoring System

The scoring system for the questionnaire responses was designed to quantitatively assess the climate resilience efforts in different destinations. Scores were divided into categories reflecting the extent of climate action, with specific score brackets indicating levels of response effectiveness.

The comprehensive stakeholder mapping and questionnaire development process provided valuable insights into the challenges and opportunities for enhancing climate resilience in the Mediterranean tourism sector. The collected data will hopefully inform the development of targeted strategies and interventions to support sustainable tourism practices and climate adaptation in the region, as well as informing the next deliverables 3 (Stakeholder responses), 4 (Gap Analysis), and 5 (Best Practice Identification).

2.1 Analysis of survey results on assessing the resilience of tourism players in the Mediterranean region

Building on prior research, this project phase involved creating and disseminating a questionnaire to assess climate change impacts and responses among Mediterranean tourism destinations across three geographical basins: Northern Europe, Eastern Mediterranean, and North Africa. The primary aim was to identify common opportunities for climate action, validate research findings, and understand stakeholder perceptions regarding climate challenges, barriers, and actions. This deliverable expands upon the work from Deliverable 2, focusing on summarizing key findings from the questionnaire and one-on-one stakeholder consultations. The consultations aimed to understand stakeholder perspectives on climate change impacts on tourism, allowing for the identification of recurring themes and informing best practice identification.

The Deliverable 3 report includes in-depth analyses of the responses provided for each question featured in the questionnaire. Analyses within the report outlined trends found within collective responses from Mediterranean stakeholders, complete with charts, graphs, and figures visualizing respondents' perceptions and capturing the intricacies shared within their qualitative answers. Insights from this have been included in the following scoring section and basin-specific analyses, in addition to the Gap Analysis and Best Practice selection.

Methodology

Questionnaire Development[70]

A questionnaire, consisting of 25 questions, was developed to capture stakeholder sentiments on climate actions and ambitions within the Mediterranean tourism industry. Organized into four sections—*Profile, Climate Change and Tourism-related Impacts, Best Practices Identification* (including a subsection on nature-based solutions), and *Barriers and Solutions*—the questionnaire included both mandatory quantitative and optional qualitative questions. The questions included in the questionnaire were strategically developed to fill any existing data gaps and provide insights for future project deliverables, such as the Gap Analysis and Best Practice report.

Dissemination and Representation of Respondents

Approximately 700 stakeholders from various sectors, including national governments, tourism ministries, local authorities, and private businesses, were targeted. The questionnaire, disseminated via email over May and June, received 49 responses from diverse destinations across 12 countries. The representation aimed to balance responses among the basins, although some regions were underrepresented. The results highlighted disparities in representation, with a larger number of responses from the northern basin. The scoring analysis does not rank destinations but offers a snapshot of stakeholder perceptions on climate responses.

Table 2 in the annex lists the destinations[71] represented by questionnaire respondents. While **Table 3** lists the stakeholders per country.

[70] *A full list of questions can be found in Annex A.*

[71] *The term "Destination" was interpreted by stakeholders to be country, city, and/or region and used interchangeably in their responses. This has been noted in the respondents list. The term's interchangeable usage by respondents should be taken into account in the section on Main Findings (from the questionnaire). The team's interpretation of destination is the national level, which is reflected in this report.*

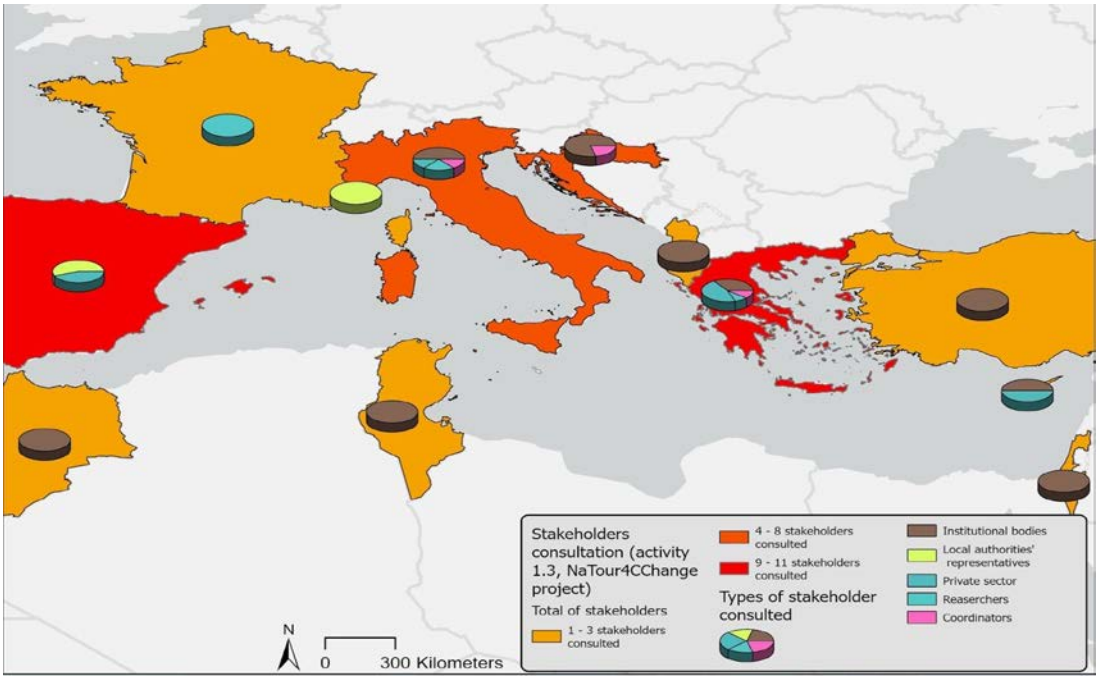

Figure 3. Destinations represented in respondent questionnaire.

Scoring Per Country and Inter-Basin Comparisons

Scores were calculated for each destination (figure 4) and basin (figure 5), revealing the Eastern basin as having the best-perceived climate response, followed by the Southern and Northern basins. The analysis indicated a general positive perception of climate actions, though often not specific to tourism.

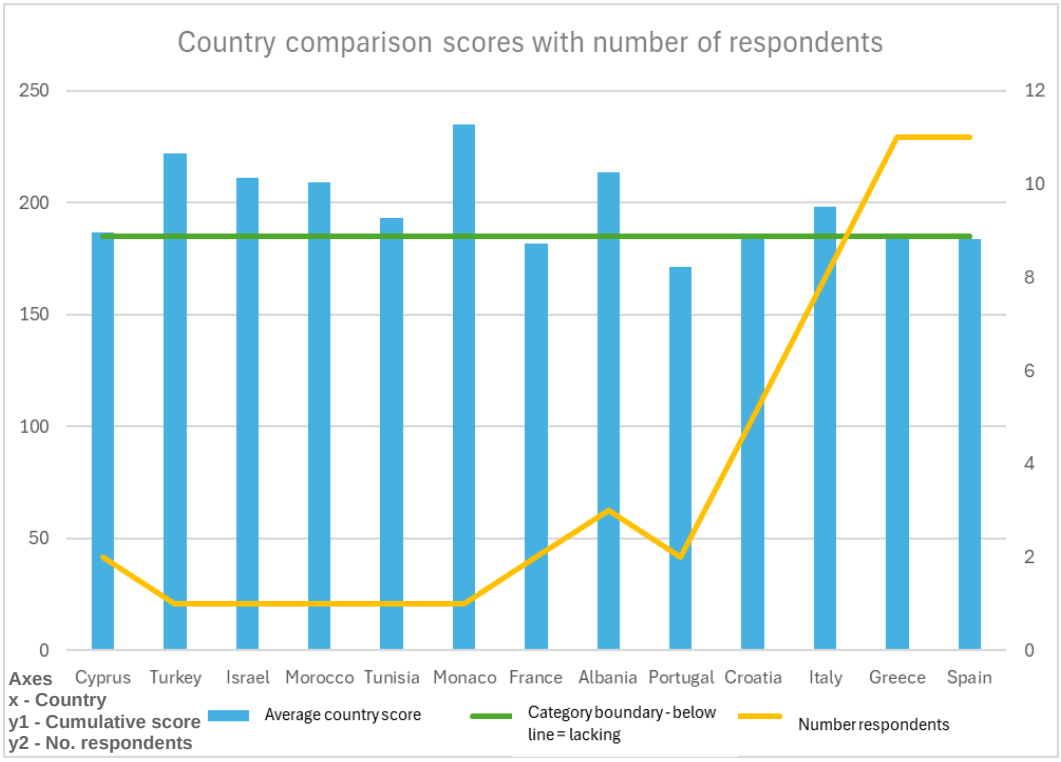

Figure 4. Scoring per country (destination)

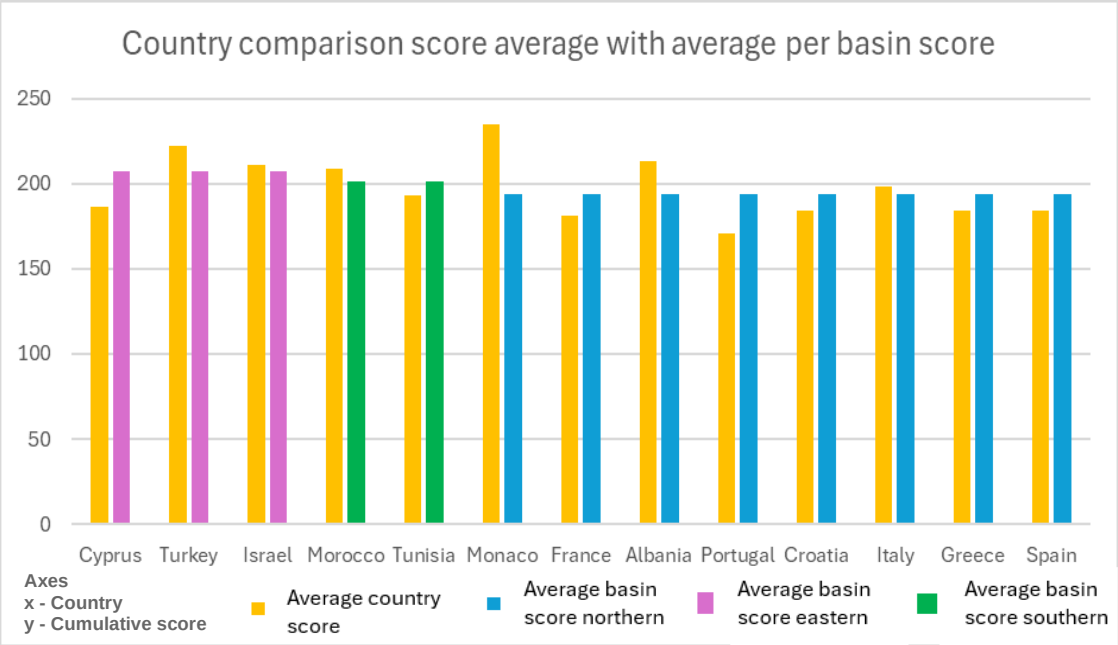

Figure 5. Scoring for inter-basin comparison in descending order

Takeaways on the Northern, Eastern, and Southern Basins[72]

Northern Basin (represented countries: Portugal, France, Spain, Italy, Monaco, Greece, Croatia and Albania)

The northern basin, including eight European countries, received the lowest average score of 194, an outcome that was unexpected given the region's access to funding, technical skills, and a variety of climate projects. However, perception-based scores varied significantly among destinations. Western European countries including Portugal, France, and Spain interestingly scored lower compared with other areas of the northern basins, despite their capacity and support for environmental action. Conversely, Central and Eastern European destinations like Croatia, Greece, and Italy scored higher, with Albania achieving the highest northern basin score: 213.3. Although, Albania's qualitative responses were sparse, limiting the understanding and context behind their high score.

Impacts

Northern basin respondents, who were asked to select all relevant climate challenges, rated **extreme weather events** (39.53%) and **water shortages** (39.53%) as the biggest impacts facing their destinations. Previous findings found that approximately only 7.6%[73]

[72] "Desktop research", as referred to in this section, can be found in project Activity 1.3, Deliverable 1. Specific research takeaways (per basin) are found on pages 12-18.

[73] Reuters, "Europe's Sweltering Summer Could Send Tourists to Cooler Climes," 2023, online article available.

of tourists currently see extreme weather as a deterrent between June and November, however, this is expected to increase, echoing respondents' concerns. The respondent from Croatia cited floods as the most damaging impact witnessed thus far; a Greek respondent additionally shared that wildfires, on top of floods, "*have been devastating (the destination) every year for the past few years*". Desktop research previously showed that the outbreak of wildfires has been one of the most apparent climate-related impacts in the northern basin, causing evacuations and travel cancellations[74] in countries such as Greece which are reliant on tourism from 15% of GDP. Hence, responses largely backed up these findings.

Some respondents also referred to other impacts stemming from the **tropicalization** facing the Mediterranean. Though only selected by 11.63% of respondents, a Greek and Croatian representative stressed the tourism threat coming from the increased appearance of **invasive species** including: lionfish, "silver-cheeked toadfish (*Lagocephalus sceleratus*), stone fish (*Synanceia verrucosa*), silver pomfret (*Pampus Argenteus*), bluespotted cornetfish (*Fistularia commersoni*), dusky spinefoot (*Siganus luridus*) and the blue crab (*Callinectes sapidus*)". A respondent from Italy played down the perception of fear around invasive species being an immediate threat, however stating that invasive species will instead likely "become a serious problem in the long run". Changes to the quantity and quality of biodiversity have direct consequences on the tourism sector[75], according to our research, especially in industries like diving and snorkeling which rely on the health of species; therefore respondents' concern correctly accounted for these future impacts.

When asked the same questions about tourism-specific challenges, 37.21% of respondents indicated **water consumption and waste management** (32.56%) as being the most impactful. **Land use changes** and **marine disturbances** were also rated as major challenges, having been selected by 20.93% of respondents. Reasoning behind these rankings were not provided, although one respondent from Croatia shared that their lack of knowledge and available information about the intersections between tourism and climate challenges influenced their response.

In terms of barriers to action, **lack of capacity and technical skills** (25.58%) were cited as the largest. This was backed up by a respondent from Greece who mentioned that the lack of the ability to model and forecast the impacts of climate change on specific locations and sectors made it one of the biggest shortcomings. Another representative from Spain noted **mismatched expertise and general lack of competencies within tourism departments and local entities**, hindering their destinations' ability to take responsibility for climate action. Interestingly, 23.26% of respondents ranked **lack of political willingness** as the second largest barrier. A Spanish respondent specified that

[74] The World Economic Forum, 2023. Rising global temperatures are already affecting the tourism industry - here's how. Online Article. Available online.

[75] ScienceDirect, "Europe's Sweltering Summer Could Send Tourists to Cooler Climes," July 18, 2023, https://www.sciencedirect.com/science/article/pii/S0964569122004124.

the economic lobby and lack of political support for tourism de-growth were their main challenges. Whereas another respondent from Croatia noted that climate change was simply not at the top of the political agenda in the country, hence making it a particularly difficult barrier to overcome.

Solutions

Nearly all respondents cited **Nature-based Solutions as a supportive best practice** for destination-wide climate action. Knowledge sharing along with training and capacity building were also identified by respondents as suitable practices. The types of Nature-based Solutions recommended by respondents included: dune restoration, natural and protected areas sustainable management, coastal areas re-greening, revived traditional agricultural practices, forest restoration initiatives, beach cleaning, *Posidonia* bed protection and eco-labels, among others. While many examples were given, few were additionally provided with insights tying in their value to the tourism sector: a challenge which was mentioned by one respondent from Spain. A respondent from Croatia expressed that success of these projects moving forward would likely require enhanced engagement with the local community on top of knowledge sharing and capacity building among local tourism stakeholders.

Knowledge sharing methods were suggested by respondents to be in the form of face-to-face networks (44.19%) followed by **peer to peer learning** (30.23%). The lowest ranked methods were those using online platforms or dissemination streams such as: electronic information/newsletters (2.3%), published information/newsletters (4.65%) and online networks (4.65%). These results likely reflected the habits of local stakeholders, as many respondents suggested that many local accommodation owners are not accustomed to online communication methods. Respondents elaborated, mentioning the potential for insteading using in person targeted events, workshops, focus groups and trainings including specific sustainability trainings for tourism stakeholders to facilitate knowledge sharing.

Barriers and levers

According to respondents, the **European Green Deal (30.23%) was the most supportive initiative** that forwarded their personal impact in their respective destinations. Other high-ranking initiatives were **Interreg Med (23.26%), Paris Agreement (20.93%) and EU Transition Pathway for Tourism (16.28%).** At least four respondents found that they were either unaware of the provided examples nor their impact on tourism policies. A respondent based in Spain, explained that the lack of their relevance was particularly felt in the private sector, where initiatives, policies, strategies and other large-scale projects had little to no bearing on the work being done in the sector. Another respondent from Spain also shared that tourism-led initiatives had very little impact at all on climate action.

The most significant barrier to replicating projects or climate action was **overwhelmingly bureaucracy (41.86%)** along with associated costs (30.23%). Community engagement was the lowest ranked barrier (13.95%), which was reiterated in the qualitative responses, particularly that the know-how, community engagement and interest already exists. Although obtaining funding, and above all, strategic and continuous funding, for climate-related projects was preventing actions from coming to fruition. This was also magnified in respondents' answers to the following question on gaps, where **financial support (46.51%)** was determined to be the largest, followed by **local support for climate action and strategies (41.86%)**. **Capacity building and incentivization** were also both ranked as major gaps (32.56%). Respondents explained that financing is the key to ensuring the stabilization of technical and human capacity to implement projects and initiatives, making financial support paramount to unlocking destinations' full potential for a strong climate response.

**Note:* *Due to the lack of responses and destination representation in the eastern and southern basins, insights into rankings out of 5 have been included on top of response percentages (where suitable) to mitigate discrepancies in the form of inflated percentages. This additionally allows for the elaboration of destination-specific contexts, considering the small data sample size that represents both basins. It is also important to note that very few qualitative responses were provided by respondents from the eastern and southern basins, therefore, a heavier emphasis was placed on their rankings rather than elaborated responses compared with the analysis for the northern basin.*

Eastern Basin (represented countries: Türkiye, Cyprus and Israel)

The eastern basin received the highest perceived climate response score, averaging 206.5 from four respondents representing Cyprus, Türkiye, and Israel. Respondents noted a variety of significant climate challenges but generally felt these had not yet critically impacted tourism in their destination, particularly in Israel where other factors were impacting tourism arrivals. Adaptation efforts were also apparent in the destinations, but often lacked direct relevance to tourism. For instance, Cypriot respondents focused on environmental issues such as litter and pollution affecting turtle conservation efforts, but also lamented the absence of large-scale climate actions by the Ministry of Tourism. The limited qualitative feedback from Türkiye prevented comprehensive contextualized understanding of their answers, hence limiting our understanding to the ranking provided. Throughout the eastern basin, qualitative responses showed an apparent lack of awareness about the intersection of tourism and climate change, indicating that the high scores might reflect a positive perception of general climate actions rather than tourism-specific initiatives.

Impacts

The Turkish respondent did not find any climate challenges to be extreme, whereas the Israeli respondent cited **temperatures and weather events** as on the extreme side of the scale with a ranking of 5/5[76]. One respondent from Cyprus attributed the highest ranking to **sea temperature rise, invasive alien species, and loss of native species,** while the other Cypriot respondent did not rank any challenges beyond the ranking of 1 or 2/5. The lack of consistency in these responses may be due to differences in understanding of climate impacts and the prioritization of challenges, however other contextual factors over this selection is unknown.

In terms of tourism-specific challenges, the Turkish respondent ranked **energy** (5/5)[77] the largest challenge followed by **water consumption** (4/5), and **land use changes** (4/5) as the most extreme challenges facing the destination. According to the Israeli respondent, current tourism challenges are considered to be **moderate**, having given a neutral ranking "3/5" maximum for impacts including land use changes, resource scarcity, biodiversity loss and marine disturbances. Rankings from Cyprus varied, with one respondent scoring **water pollution** as "5" and another as "1". The only challenge that was generally agreed upon between the two Cypriot respondents was **waste management,** which was ranked as "4/5 and 5/5". One additionally provided a score of "5/5" for **marine disturbances**, elaborating that this high rating was based on their personal experience witnessing changes in species behavior as a result of interactions.

While responses on the biggest barriers to climate action varied between respondents, the highest ranked barriers included: **lack of public-private sector coordination** (25%), **information gaps** (25%), l**ack of political support** (25%) **and lack of innovation and entrepreneurial mindset for tackling challenges** (25%). In comparison between destinations, the representatives from Cyprus ranked barriers as being the most extreme (with more 4s and 5s) without indicating the context behind their selection, followed by Türkiye and then Israel, who provided the lowest ranking for climate action barriers.

Solutions

Sustainable tourism experiences were recommended[78] by all respondents (4/4) and **nature-based solutions** by 3/4, (all but the Turkish representative) as best practices that could support each destinations' climate ambitions. **Knowledge sharing** was also commonly selected by respondents along with **sustainability measures to lower energy, water and waste consumption** by 3/4 of respondents, (all but the Israeli respondent).

[76] 5 indicates that the challenge is extreme and 1 indicates that the challenge is non-existent.
[77] 5 indicates that the challenge is extreme and 1 indicates that the challenge is non-existent.
[78] "Select all that apply"

Face to face networks were chosen by the highest percentage of respondents as the most suitable solution for knowledge-sharing, totalling 50% of those who selected "5"[79]. On the other end, the choice of published information/ newsletters was the lowest ranked (out of 5), given a ranking of 1/5 by the Israeli respondent and 2/5 by the Turkish respondent. Responses were not expanded on; however, the choice selection may reflect the cross-basin perspectives on knowledge-sharing, which overwhelmingly advocated for **in-person events and learning opportunities** over online publications and communication dissemination.

In looking at respondents' awareness on the use of nature-based solutions in their destination[80], the highest score (of 4/5) was given by the Israeli respondent, a ranking which likely reflects a remark from the respondent validating Israel's expanding focus on adaptation efforts and methods. Two respondents from Türkiye and Cyprus gave the ranking of "3" without explanation, therefore the context around their perception is unknown. However, it can be assumed that nature-based solutions were perceived neutrally or respondents were unaware of the practices being used in their respective destinations.

Barriers and levers

The **Paris Agreement (25%) and Glasgow Declaration (25%)** were scored as the most impactful and supportive initiatives, policies, cross-sector collaborations and strategies forwarding climate action in the eastern basin. However, respondents from Türkiye and Israel also gave a high ranking (4/5)[81] to **ICZM Protocol and Conceptual Framework for Marine Spatial Planning**. One of the respondents from Cyprus caveated their rankings on this question, stating that they were unaware of the initiatives listed and could not adequately assess their value and contribution to the destination's climate action.

According to respondents, the most significant barriers[82] to replicating climate action projects or initiatives were the **associated costs (25%)**, **lack of community engagement (25%) and bureaucracy (25%)** tied to obtaining the funding and support needed for replication. Reflecting this ranking, respondents ranked[83] the following gaps the highest: **funding** (25%), **incentivization** (25%) and **local support for climate action, policies and strategies** (25%). These findings confirmed many of the gaps identified in the desktop research phase, particularly the lack of national, regional and destination-wide policies, strategic plans or academic literature on the intersection of tourism and climate change and how climate inaction could lead to further destabilization and other social and

[79] 5 is most suitable, 1 is least suitable.
[80] 5: "I know of multiple nature-based solutions being used" and 1: "I'm not aware of nature-based solutions being used"
[81] 5 indicates that the following has a very large impact and 1 indicates that impact is non-existent.
[82] 5 indicates that the barrier is very significant and 1 indicates that the barrier is non-existent.
[83] 5 indicates the gaps need to be addressed as a priority and 1 indicates the gaps do not need addressing.

economic challenges[84]. Research suggested that further growth in the tourism industry will hinge on tourists' perception of health and safety in the region[85], and destinations' ability to adapt and develop resilience frameworks that account for limiting the impacts of climate change on their respective tourism industries. Therefore, moving forward, addressing these gaps will be vital to enhancing the competitiveness of eastern basin destinations.

Southern Basin (represented countries: Tunisia and Morocco)

The southern basin received the second highest ranking with an average score of 201, based on responses provided from respondents representing **Tunisia and Morocco**. Challenges such as **water resource strain** and **reliance on imported energy** were heavily underscored by respondents. The respondent from Morocco elaborated on this and the country's ambitious renewable energy goals including reducing natural gas use and achieving 52% renewable electricity by 2030. The respondent also highlighted Morocco's National Adaptation Plan and other regional climate initiatives. Despite broad climate action, there was a notable gap in tourism-specific climate studies and initiatives, **possibly skewing the perception scores** to reflect general environmental actions rather than targeted tourism strategies.

Impacts

Coastal erosion was selected by both respondents from Tunisia and Morocco as the biggest climate-related challenge with the score of "5/5"[86], although other commonalities in challenges were observed. All of the challenges provided (**Extreme temperatures, Extreme weather events** etc) were given a score of either 4 or 5/5 with the exception of sea temperature rise, which was rated "3/5" by the respondent from Tunisia. **Water and energy consumption were the biggest tourism-related challenges in both destinations.** The challenges around water and energy consumption were elaborated on by the Moroccan respondent, particularly regarding the **water stress induced by climate change and exacerbated by tourism**, which according to the respondent, risks impacting the local economy the most. Research on the southern basin, conducted in earlier project phases, found that the resource-intensive nature of tourism[87] was being exacerbated by the climate crisis, threatening tourism-led economic growth. Challenges related to water scarcity and large-scale coastal development, were also found to have not been prioritized[88] thus far in the

[84] MedECC, "Summary for Policymakers: Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future," May 2021, https://www.medecc.org/wp-content/uploads/2021/05/MedECC_MAR1_SPM_ENG.pdf.

[85] ISPI (Italian Institute for International Political Studies), "Climate Change and Cities in the Eastern Mediterranean," 2022, https://www.ispionline.it/en/publication/climate-change-and-cities-eastern-mediterranean-36608

[86] 5 indicates that the challenge is extreme and 1 indicates that the challenge is non-existent.

[87] Director of National Intelligence, "Implications for US National Security of Anticipated Climate Change," 2009, https://www.dni.gov/files/documents/climate2030_north_africa.pdf.

[88] ISPI (Italian Institute for International Political Studies), "Up in the Air: A Call for Climate Collaboration in North Africa," 2023, https://www.ispionline.it/en/publication/up-in-the-air-a-call-for-climate-collaboration-in-north-africa-132036.

southern basin backed up by research and reflected in the questionnaire responses by the Tunisian and Moroccan respondents.

The lack of **alternative tourism business models** was cited by Tunisian respondent as the highest rated barrier to the tourism industry's efforts to combat climate change with the ranking of a "5/5"[89]. Other barriers, which received a ranking of "4/5" included lack of funding/incentives, lack of political support, lack of capacity/technical skills and lack of innovation. The respondent from Morocco provided a moderate rating of 2 or 3/5 to all of the barriers, indicating that climate barriers related to tourism were perceived as minimal.

Solutions

The Tunisian respondent selected all but **micro-loans and tourism campaigns** as best practices capable of supporting the destination's climate ambitions, whereas the Moroccan respondent chose all options apart from **developing ecotourism products and diverting tourism flows.** The southern basin ranked **peer to peer learning** as the preferred method to knowledge sharing with the ranking of 4 and 5/5[90]. Other methods including online networks, face to face networking (events and conferences) and electronic information/newsletters, were also highly ranked with a ranking of "4" by both destination respondents. In terms of the perceptions on the use of nature-based solutions, the Tunisian and Moroccan respondents were somewhat aware of their use in the destination through their respective scores of 4/5 and 3/5[91]. These scores were not explained and there were no other mentions of nature-based solutions in other responses.

Barriers and levers

The **Barcelona Convention** (Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean) was the highest scoring and "most supportive" initiative forwarding respondents' work in their destination. However, five additional supportive methods were given a high ranking of "⅘"[92] by both respondents, these included: the European Green Deal, EU Blue Economy Report, Mediterranean Strategy for Sustainable Development 2016-25 (MSSD), Regional Action Plan on Sustainable Consumption and Production in the Mediterranean (SCP AP) and European Neighbourhood Policy (ENP).

Bureaucracy was the most significant barrier to project replication, followed by access to technical skills and capacity related to funding, skilled experts and human resources. Important gaps, agreed upon between both destination respondents, were the **lack of incentives** (Financial, tax credits or other) followed by the **lack of knowledge sharing**

[89] 5 indicates that the barrier is extreme and 1 indicates that the barrier is non-existent.

[90] 5 being most suitable, 1 being the least suitable.

[91] 5: "I know of multiple nature-based solutions being used" and 1: "I'm not aware of nature-based solutions being used"

[92] 5 indicates that the following has a very large impact and 1 indicates that impact is non-existent.

and capacity building. Research has shown that southern basin countries including Morocco and Tunisia have worked around these gaps through funding support provided by UNFCCC's and UNDP contingent on frequent reporting[93] and the development of National Adaptation Plans. While these plans remain in the development phase[94], addressing the aforementioned gaps would help overcome barriers on both the destination and basin-wide level. In doing so, this would increase the potential for integrating tourism-specific measures into tourism strategies to enable a larger and cohesive basin-wide climate response and increase resilience to tourism-specific climate impacts.

2.2 Comparing the basins (Northern, Eastern and Southern)

Impacts

Many common trends were found between the three basins, underscoring the similarities that Mediterranean destinations are coping with in the face of climate change. The perception of the **frequency of extreme weather events** (39.53% in NB and 25% in EB versus 0% in the SB) and **recurring extreme temperatures** (27.9% in NB and 25% in EB) was found in the northern and eastern basins as the biggest climate-specific challenges. Differing from the other basins, on top of extreme weather (50%) **coastal erosion** was cited (100%) as the largest climate threat in the southern basin. Regardless of the specific climate challenges, the impacts have reverberated throughout the different destinations, particularly resources such as **water**, which are already **under pressure** as a result of climate change. Consequently, many challenges mentioned by respondents revolve around **managing resource scarcity**. The northern, eastern and southern basins all cited **meeting energy and/or water demands** (51% in NB, 25% in EB and 100% in the SB)[95] as their largest tourism-related challenges.

Solutions

Nature-based solutions (NbS) were the most popular best practice identified by respondents (85.7%) across the basins, although responses indicated that implementation and uses of NbS were lacking in terms of their relation to their relevance to the tourism sector. Approximately 22.5% of respondents thought that nature-based solutions were already very effective, 40.8% were neutral or were unsure, and 36.7% found them to be ineffective. Cognizant of these findings, interest in the application of nature-based solutions across the basins proved to be high, however **requiring more implementation, monitoring and awareness-raising support** to be perceived as effective. **Sustainable tourism experiences, micro-loans and tourism campaigns** were also recommended by the eastern and southern basins and knowledge sharing and

[93] Carnegie Endowment for International Peace, "Assessing Climate Adaptation Plans in Middle East and North Africa," 2024, https://carnegieendowment.org/2024/04/15/assessing-climate-adaptation-plans-in-middle-east-and-north-africa-pub-92171.

[94] *Ibid*

[95] These percentages account for combined water and energy rankings respective to each basin.

training and capacity building in the northern basin. Preferred **knowledge-sharing methods**[96] were similar throughout the basins with face-to-face networks (41/49 respondents) and **peer to peer learning** (34/49 respondents) deemed as the most effective approaches as opposed to online communication methods (20/49 respondents) and electronic information dissemination (11/49 respondents).

Barriers and levers

The Paris Agreement was specified by both northern and eastern basin respondents as a supporting initiative to their work in their destinations, potentially correlating to the fact that it is well-known amongst those forwarding sustainability in the sector. Other strategies, initiatives, projects and methods varied per destination. However, as expected **EU projects** and initiatives were perceived as best supporting northern basin destinations and other regional Mediterranean or **EU neighborhood policies** being the most supportive of eastern and southern basins. In terms of common barriers, **bureaucracy** was commonly said (36/49 respondents)[97] to be one of the most significant barriers preventing successful climate responses, projects replication and initiatives that advance climate action. Other common barriers were obtaining **funding** (34/49 respondents), **building** and **maintaining technical and human capacity** (27/49 respondents). Reflecting these barriers, the most pressing gaps[98] were related to obtaining **financial support** (44/49 respondents), **capacity building** (36/49 respondents) and **generating local support** for climate action and strategies (36/49 respondents). One gap that was also highly ranked by all three basins was **incentivization** (financial, tax credits or other) (39/49 respondents). Qualitative responses further underlined this, reiterating that regardless of geographical location, those that could take up climate action simply are not incentivized enough to do so.

In looking at these gaps and other comparative insights, it is clear that while each destination is coping with their unique contexts, many of the challenges and barriers that they are facing are similar. Hence, generating a cohesive and concerted climate effort throughout the Mediterranean, albeit adapted to each destinations' local contexts, could yield the best results since in the context of climate change, all destinations are combating climate change as a common and existential challenge.

The scoring results (shown below) indicate a potential disconnect between stakeholder perceptions and the actual climate responses of destinations. This underscores the **need for improved communication and awareness about climate action opportunities within the Mediterranean tourism sector.** A follow-up study comparing destinations'

[96] Rankings account for ratings of 4 or 5 with 5 being the most suitable and 1 being the least suitable.

[97] This accounts for those who gave a ranking of 4 or 5. 5 indicates that the barrier is very significant and 1 indicates that the barrier is non-existent.

[98] Rankings accounted for responses of 4 or 5, 5 indicates the gaps need to be addressed as a priority and 1 indicates the gaps do not need addressing.

climate action plans and reports is recommended to better understand and validate the current efforts in mitigating climate change impacts on tourism. This study should assess how national and regional plans address climate resilience in the tourism industry and support efforts to reduce carbon footprints and other negative impacts.

Table 4. Basin Average Scores

Basin	Average Score	Basins Score Category
Eastern Basin* no respondents from Lebanon, Syria, and the Palestinian territories represented	206.50	Basins perceived as showing sufficient climate change response in the tourism sector
Southern Basin* no respondents from Egypt, Libya, and Algeria represented	201	Basins perceived as showing sufficient climate change response in the tourism sector
Northern Basin *no respondents from Montenegro represented	193.96	Basins perceived as showing sufficient climate change response in the tourism sector

2.3 Summary of 1-1 Stakeholder Consultations

Table 5. Representing profiles of 1-1 stakeholders interviewed

Country	Institutional Bodies	Local authorities' representatives	Private Sector	Researchers
Bosnia and Herzegovina	1			
Croatia	1			
Greece	3	1		
Italy				
Spain	2			1
Total:	**7**	**1**		**1**

Figure 6. Word Cloud from Consultation Summaries

The word cloud in the figure above illustrates the most frequently used terms from the 1-1 consultation summaries, based on a full text analysis. Predictably, “climate change” stands out as by far the most frequently used word. Following this, “tourism sector", “local communities” and “climate action”, feature prominently. Other terms that were used frequently in the consultation were “lack of long-term planning” and “awareness of climate change” and “climate action plans”. “Mitigation and adaptation”, and “protected areas” were discussed less frequently and references to “businesses” and “policies” are more on the periphery.

One of the limitations to the word cloud is that words are given emphasis according to the frequency of use rather than importance. In general terms, the most frequently used 3-4 words are the most important, beyond this alignment between frequency and importance becomes more subjective. A second limitation is that different words or phrases used for the same, or similar concept are presented without any connection and therefore we see examples such as “private sector” and “business” as different entities despite being closely connected. However, despite these limitations, the word cloud does give a powerful indication of the nature of the consultations and the issues of most concern to our respondents.

Key Findings per Country represented by 1-1 Stakeholder

These summaries provide a structured overview of the key findings from the nine one-on-one consultations, highlighting the specific issues, barriers, and strategies discussed for each country. Please see the full report titled: “Deliverable 3: Report on questionnaire responses and stakeholder consultations” for more details.

Table 6. Northern Basin (Only represented basin in 1-1 Stakeholder interviews)

Country	Climate Change and Tourism-Related Impacts	Barriers and Gaps	Strategies
Spain	Rising tourist numbers are observed despite extreme summer temperatures, with climate change extending the tourist season. Differing views on shoulder season tourism: some believe it helps generate income during off-season, while others argue it increases overall tourism, leading to higher resource consumption and negative impacts on local communities. Overtourism is a significant concern, exacerbated by climate change. One stakeholder suggested that this could lead to future social conflict due to competition for limited resources.	Tourism departments are frustrated by their limited ability to mandate sustainable practices in private businesses, relying mainly on information dissemination and certification. Political instability and short political cycles hinder long-term investment in climate adaptation strategies, leading to reactive rather than preventive measures. Public awareness of climate change effects is low, hindering political engagement and action.	Existing climate action plans include sector-specific indicators for economic adaptation to climate change in Andalusia and a comprehensive climate plan in Barcelona encompassing spatial planning and mobility strategy. Nature-based solutions such as sand dune restoration, *Posidonia* ecosystem restoration, wetlands restoration, and enhancing green spaces are being implemented.
Greece	Extreme summer temperatures are anticipated to affect tourism, although no decline in tourist numbers is reported. Differing views on shoulder season tourism: some see it as beneficial for generating off-season income, while others argue it increases resource consumption and pressure on destinations. Overtourism is a concern, with climate change exacerbating its impacts.	Sustainability is being imposed on a sector that does not fully comprehend it. Strained public-private sector relations can lead to reluctance in adopting initiatives. Public awareness of climate change effects is low, hindering political engagement and action. Challenges in implementing changes and encouraging investment in the tourism sector due to the prevalence of SMEs, which lack the financial and technical capacity.	Focus on electrification of transport and expansion of green energy production. Efforts to reduce emissions through improved mobility schemes. Restoration of urban parks in Heraklion to lower urban temperatures. Increase in the use of solar panels and heat pumps.

	Water shortages have necessitated water rationing. Rising tourist numbers are observed, with climate change extending the tourist season. Current resentment among locals is not high but has potential to increase.	Successful promotion of solar panels and heat pumps as cost-saving measures has increased their adoption. Perceptions of excessive bureaucracy and mistrust of authorities hinder participation in sustainability initiatives.	
Bosnia and Herzegovina	Not explicitly mentioned.	Low prioritization of climate challenges at the national level. Lack of long-term investment strategies. Public awareness of climate change effects is low, hindering political engagement and action.	Not explicitly mentioned.
Croatia	Not explicitly mentioned.	Lack of continuous funding for smaller NGOs and community groups delays project implementation and may curtail effective programs. Public awareness of climate change effects is low, hindering political engagement and action.	Not explicitly mentioned.
General Observation for all Destinations	Not explicitly mentioned.	Small and medium-sized enterprises face higher economic risks and lack financial and technical capacity. Lack of human and financial capacity is a barrier to climate action. Tourism departments and public sector workers have limited jurisdiction to effect meaningful change, with decision-making authority often too remote or undesired at the local level.	Enhancing long-term planning, implementing sustainability certification programs, mainstreaming green issues into existing policies, exchanging best practices in sustainability, and increasing enforcement of existing environmental laws are recommended approaches to foster a more sustainable and

			climate-resilient tourism industry.

2.4 Key points from the survey

The research from earlier project phases highlights that many significant threats to Mediterranean tourism are directly linked to climate change. Key impacts include rising temperatures, drought-induced wildfires, sea level rise, erosion, resource scarcity, and biodiversity loss, which have begun to transform the landscape of Mediterranean tourism. These changes have led to repercussions such as evacuations, flight cancellations, natural disasters, and resource strain, altering seasonality patterns and permeating various levels of the tourism industry.

Additionally, biodiversity loss, invasive species, and rising temperatures currently affecting the Mediterranean region are expected to have far-reaching effects, particularly on diving and snorkeling, which are significant competitive advantages for the region. Without intervention to combat these impacts and enhance mitigation and adaptation responses, climate change will increasingly threaten the continuity of Mediterranean tourism.

This report presents a broad range of stakeholder opinions and perceptions about the future of their tourism industries and the barriers and challenges they face in taking climate action. The findings aim to inform strategies, methods, and interventions supporting climate responses by capturing current sentiments to provide context to earlier research findings.

Key barriers to climate action identified from the questionnaire include:

- Lack of coordination.
- Shortcomings in capacity and technical skills.
- Mismatched competencies in tourism departments.
- Unstable political support.

These barriers prevent many destinations from generating impactful climate responses. Additional constraints include the lack of continuous and strategic financial support, fluctuations in human capacity, and complex bureaucracy around obtaining funding. Stakeholders also emphasized the importance of developing and enforcing policies and regulations.

Respondents shared various best practices and recommendations, such as:

- Use of Nature-based Solutions.
- Ecosystem restoration.
- Sustainable tourism development.

- Good practices for accommodations and operators.

These suggestions and best practice examples will be examined and used to inform subsequent chapters: Deliverable 4: Gap Analysis and Deliverable 5: Best Practice Report.

3. GAP ANALYSIS OF CLIMATE ACTION BY STAKEHOLDERS IN THE MEDITERRANEAN TOURISM SECTOR

Methodology (Compiling Desk Research, Questionnaire and Stakeholder Consultations)

The following Gap Analysis combines insights from desktop research, literature review, questionnaire responses and 1-1 consultations, previously compiled into comprehensive reports for project Deliverables 1, 2, and 3 as a part of Activity 1.3. The gaps underlined in this analysis represent the various shortcomings of the Mediterranean target destinations' climate action, as identified by stakeholders and the expert team. These gaps reflect the barriers, challenges and other factors that, according to respondents, are preventing climate action in the tourism industry, and particularly climate change mitigation and adaptation.

3.1 Gap Overview (Condensed)

Table 7. Gap Overview

	Initial gaps (identified through desktop research and literature review)	Gaps and areas for further support (from questionnaire responses and 1-1 consultations)
Differing Gaps	• Prioritization of CC adaptation over mitigation (especially in Eastern and Southern basins) • Awareness of the impact of climate change on tourism • Lack of development (for tourism accommodations etc) away from the coast • Strain on infrastructure, resources and services • Lack of opportunities and support for climate action financing	• Efforts to enhance community-wide resilience and combat resource fluctuations and insecurity • Capacity building for CC policy and project implementation (plus tools for data gathering, monitoring and evaluation) • Adaptations for tourism seasons/arrivals (to alleviate added pressures from climate change)
Similar Gaps	• Capacity gaps for gathering, monitoring and evaluating data on climate change to inform decision-making • Lack of support for a timely and effective green energy transition (in the tourism sector)	• Bridging data gaps on inter-section of CC and the tourism industry (with studies and additional data) • Support for green energy and green transport transition • Diversified tourism offerings • Prioritization, implementation and enforcement of climate change

	• Lack of diversified tourism offerings that go beyond "sand, sun and sea" • Efforts being championed by governments and policymakers (CC is often not the main priority) • Lengthy process from mitigation/adaptation planning to implementation/action	mitigation and adaptation actions (by governments) • Short-term planning and implementation cycles

Recommendations to forward climate action (based on examples of successful actions being taken and best practices provided from questionnaire and stakeholder consultations)

- Community-led projects (for awareness raising about climate change)
- Funding opportunities for eco-friendly actions and technologies
- Nature-based solutions
- Knowledge-sharing
- Integrated policy creation and implementation
- Sustainable tourism promotion in the tourism sector (including certification)
- Ecotourism and community-based tourism development
- Rolling out of tourism sector specific climate action plans and strategies (improving long-term planning)

3.2 Gaps and areas for further support

Prioritization, implementation and enforcement of climate change mitigation and adaptation actions (by governments)

Climate change policy has undoubtedly made strides in many destinations, particularly in the northern basin, where the breadth of climate response is being championed by national governments, policymakers and overarching EU programs. However, climate response within the southern, eastern and in parts of the northern basin, is largely unbalanced and at-risk of de-prioritization due to shifting political climates and shortfalls in prioritizing, implementing and enforcing policies. An overall lack of climate prioritization was a common theme found in our research, particularly in the eastern and southern basins, where adaptation is often the chosen pathway due to financial and capacity constraints. This is causing southern and eastern destinations, among others facing similar constraints, to make a choice between mitigation and adaptation, resulting in the prioritization of protective measures for coastlines and other vulnerable areas, habitats and species over long-term mitigation strategies. Due to the long process and time, financial and capacity efforts needed to plan for and eventually take action, mitigation is seen as more time-consuming and challenging compared with adaptation

planning and project implementation, which yields immediate and direct impacts. However, questionnaire respondents shared that adaptation alone is not enough to prevent recurring damage to tourism assets. Impacts such as extreme weather events have not been effectively tackled, demonstrating that wide-spread mitigation efforts are also needed to avoid the intensity and frequency of such events. The high economic and social costs of locals losing their homes and livelihoods from forest fires, floods and other such natural disasters have stretched far beyond impacting destinations' tourism industries, but also local well-being. The answer to this is, according to respondents, to take additional measures to lower the carbon footprint of the tourism and transport sectors through mitigation measures and improved communication about said efforts.

The mitigation efforts currently being made are considered by questionnaire respondents as limited, weak, vague, lacking implementation and enforcement (on both the national and provincial level) causing ambitions to exist “mostly on paper”. Stakeholders engaged in the study praised the ambition of climate policies, especially the alignment with international goals and strategies, but shared frustrations over implementation, suggesting a more practical and tangible approach that engages, incentivizes and supports communities and tourism stakeholders. Community-based initiatives were specifically recommended to be provided along with stable financing that enhances buy-in with climate policy goals, builds social awareness and translates policies from theoretical to practical. In terms of replication of existing projects, associated costs, human capacity, bureaucracy were the highest ranked barriers to scaling initiatives, projects or other climate actions, hence requiring additional support to enhance their replicability.

Biggest gaps: Prioritization of climate policies (especially mitigation), steady and strategic financial support for tourism-related climate action, incentivization and local support for climate action.

Support for green energy and green transport transition

Critical to the climate action efforts of the tourism industry, the support for green energy transition appears to be unevenly taking place in the target destinations. Some destinations are far ahead of competitors, offering free bus transportation to all citizens to reduce carbon emissions in urban centers, supported with the introduction of electric buses, new metro lines, year-on-year increase of renewable energy sources, LED lights and pedestrianization. Whereas in other destinations with less government support, investment in green infrastructure and transition is at the initiative of individual tourism businesses. In destinations where this is the case, respondents shared that investment feels uneven. This echoes the general perception found in the questionnaire that government investment and support aimed at stimulating a timely and green energy transition in the tourism sector is lacking and insignificant.

Biggest gaps: Lack of balanced support (between the government and individual businesses) for climate action financing, lack of prioritization of green energy transition, green transportation and "green" urban planning

Efforts to enhance community-wide resilience and combat resource fluctuations and insecurity

The current and potential impacts of climate change on communities are vast. Energy costs, resource scarcity, social conflicts, and biophysical changes will highly affect destinations' ability to welcome tourists as they have done thus far, according to respondents. Even though these impacts are recognized, a respondent shared that when climate-related natural disasters occur, restrictions are often not put on tourism accommodations or attractions such as amusement parks. This inaction was said to breed resentment from local communities, causing social conflicts as a result. Tourism development and planning was also described as being misaligned with destinations' resource consumption and growth intentions further complicating destinations' green agenda. Challenges from increased arrivals, lack of tourism degrowth and fluctuations in the cost and availability of raw materials and energy sources were also suggested to be tackled on both a destination-wide and business level.

Biggest gaps: Resource restrictions that apply to tourism establishments, tourism development and planning that is adjusted to resource availability and climate ambitions, efforts to reduce tourism-related social conflicts.

Capacity building for climate action policy and project implementation (plus tools for data gathering, monitoring and evaluation)

Questionnaire respondents cited capacity gaps for gathering, monitoring and evaluating data on climate change. Considering that these capacities are vital to data-driven decision-making, addressing these gaps are fundamental in order to mount a larger climate response and contribute to global goals such as the UNSDGs. As many as 28/49 respondents (who chose 4 or 5/5) stated that there is inadequate selection of supporting tools for implementation, monitoring and compliance, and 22/49 said that information is not accessible or falls short of what is needed.

Respondents stated that strengthened capacity and human resources are needed within tourism departments and local entities along with transparent allocation and centralization of tourism-related climate responsibilities. Respondents mentioned that the discussion around climate action was more serious than ever before, which has helped stimulate adaptation efforts at the state-level. However, efforts have lacked a specific focus on minimizing the impact of tourism and subsequent climate challenges. In addition to the lack of a tourism-specific climate response, another stakeholder stated that there were many multi-level incoherences in tourism development (port and airport

infrastructure), due to government changes and disruptions from the COVID-19 pandemic which have led to contradicting carbon degrowth pathways. This demonstrates that efforts are needed to form cohesive tourism-specific climate strategies, build capacity to adequately evaluate and act on tourism-related climate impacts.

Where capacity in know-how and technical skill is sufficient, the main challenge is obtaining continuous financing over the course of different project phases. Respondents reiterated that this is necessary to keep experts and technical staff on payroll and avoid outsourcing talent and fluctuations in human resources. Respondents also shared that this issue is most common once projects have initially elapsed, or where projects need to pass through bureaucratic processes to receive funding. The money and time needed to get projects funded and retain staff, were expressed as not being "worth it". In this case, projects remain bottlenecked and those that are funded often need to outsource talent due to the lack of retention.

Biggest gaps: Data gathering, monitoring and evaluation, supporting tools for climate action, human resources, strategic and continuous financing, bureaucratic processes, responsibility allocation (within tourism departments).

Bottom-up support for climate action

A common theme from the questionnaire was the need to spread awareness, increase community-wide engagement, and communicate about how climate change will impact destinations from both a local and tourism perspective. Suggested efforts from respondents included: funding programs to help local entities fight climate change and supporting local action and other grassroots projects through regional/national program funding. Grassroots organizations, respondents shared, are delivering impactful projects, but are constrained to a limited scope due to funding and other underlying systemic issues. Although, supporting these types of organizations and the uptake of citizen-based platforms will forward the participative process: a process that is currently not straightforward enough. Knowledge dissemination was also stated as lacking, particularly around destinations' role in generating a climate response. Climate communication was additionally recommended to be conducted through educational programs to increase the uptake of sustainability. The suggested actions included: recycling methods, counting the carbon footprint of the facilities and trying to reduce it, educational visits to universities that implement programmes related to climate change, etc. These kinds of efforts could be replicated to tourism operators.

Biggest gaps: awareness and communications on local climate impacts and challenges, community engagement, strategic funding, replication of projects and initiatives forwarding climate action.

Adaptations for tourism seasons/arrivals (to alleviate added pressures from climate change)

According to research and insights from respondents, climate change has already started to impact the seasonality of Mediterranean tourism. Though the effects have been uneven on tourism seasons, some destinations, including those in the northern basin, have seen seasons become longer, stretching into the shoulder seasons of spring and fall. The unpredictability of summer weather conditions is anticipated to affect tourism demand, infrastructure and biodiversity conservation. Destinations are concerned about losing tourists to competitors, which is especially a concern for destinations who are now experiencing hotter and more unpredictable seasons. There is also the concern that maintaining a high number of tourism arrivals in the face of increasing climate challenges will generate disharmony amongst locals and tourists. The strain on infrastructure, resources and services during high seasons poses challenges for destinations already economically or politically unstable. Therefore, it was suggested by respondents that destinations take advantage of the longer season by balancing their tourism season out over longer periods. Seasonality has already broken in some destinations, however in others, tourism could instead diversify beyond "sun, sand and sea" tourism while moving other infrastructure (or accommodations) away from the coastline.

Biggest gaps: adjustments to tourism strategies and seasonal planning, need for tourism product diversification, lack of tourism development away from coastline, lack of prioritization for tourism de-growth and re-allocation.

Recommendations to forward climate action (Based on examples of successful actions being taken and best practices provided from questionnaire and stakeholder consultations)

- **Community-led projects (for awareness raising about climate change)**

Respondents suggested allocating additional support towards community and NGO-led projects to increase citizen engagement and facilitate awareness raising on combating climate change. Projects that target climate change mitigation and enhancing the uptake of environmentally friendly habits and practices were additionally named as impactful priority areas. Support was recommended to be made available in the form of technical support, investments and infrastructure consisting of a participatory budget, online platforms, and streamlined funding processes for citizen-led initiatives. Such projects were suggested to be promoted as a part of integral destination management according to a respondent who had experience managing tourism-related projects focusing on mitigation and adaptation measures. Two projects, Dialogue4Nature and ThinkNature were specifically named by respondents as examples of integrated management. The first aims to foster cooperation on governance to promote a

participatory climate policy process including at the sub-national and civil society level. The second, addresses societal challenges, including energy poverty and climate impacts by providing policy and regulatory tools and facilitating stakeholder interaction.

- **Nature-based Solutions**

Various Nature-based Solutions were shared by respondents as best practices. There were multiple mentions of *Posidonia oceanica* meadow protection and management of banquettes on Sakarun beach as a part of the POSBEMED2 Project. Others shared recommendations including the integration of "green walls" for water collection and reuse, renaturalization strategies for protected areas and wider biodiversity strategies for urban parks and buildings. To ensure successful implementation and understanding of the link between tourism and nature-based solutions, one respondent shared that local community support is paramount as is knowledge-sharing and capacity building amongst local tourism-related stakeholders.

- **Knowledge-sharing**

Knowledge sharing was a commonly identified gap by respondents, who suggested additional efforts geared towards in person events and inter-destination knowledge-transfer. Respondents shared that peer-to-peer learning and face to face networks would be the most impactful method of knowledge sharing. Online communication methods were said to be less likely to reach and resonate with the target audience of private accommodation owners and other tourism stakeholders. Instead, targeted events, workshops, focus groups and training (including sustainable tourism training for tourism stakeholders) were named as alternative methods.

- **Sustainable tourism promotion in the tourism sector (including certification)**

Sustainable tourism was at the forefront of respondents' recommendations for advancing climate action in the tourism industry. Respondents shared their sustainability efforts, which included soft policy measures (fiscal policies to promote renewable energy), environmental conservation practices (application of environmental cultural nudges and technology integration), urban planning development, capacity building and staff training for hotels, and methods to mitigate waste and lower resource (energy, water etc) consumption. A few respondents mentioned their use of eco certifications to support sustainability efforts, enhance their climate response and set KPIs to set and meet targets during the initial certification process and as a part of obtaining recertification. Grants and sustainable tourism communities (as a part of the Interreg Euro-MED programme) were mentioned as methods that could increase resource efficiency, waste management, and circular economy practices in addition to the creation and transfer of tools that support climate transition in Mediterranean destinations. Other practices, such as using eco moorings, having recycling receptacles and potable water refill stations, were additionally listed as means of enabling sustainable water-based tourism activities, particularly sailing.

The Gap Analysis features the main overarching challenges and gaps identified by the expert consulting team. These insights derived largely from the desktop research and literature review scope combined with the broad trends identified from stakeholder questionnaires and consultations. The matrix was additionally developed based on the Activity 1.3 teams' extensive knowledge on the intersection between tourism and climate change, and tourism and environmental, social and economic sustainability in both the public and private sectors in the Mediterranean and around the world. Citations have been made in the form of hyperlinked sources, particularly where sources or scientific studies have contributed to the analysis. Please see Table 7 in the annex for the Gap Analysis matrix.

The recommendations presented in the matrix represent examples of ways that could advance the uptake of climate action in the sector. This Gap Analysis only accounts for a small number of methods that were present in research, literature, stakeholder questionnaire responses and 1-1 consultations. Therefore, the team acknowledges that methods or strategies that have not been provided in the matrix could additionally amplify climate impacts, address gaps and enhance resilience. The analysis assesses the Mediterranean region as a whole, therefore does not account for the contexts of the different northern, eastern and southern basins, which due to time constraints, were omitted from this scope and instead were expanded upon in the Deliverable 6 section, "Takeaways on the Northern, Eastern, and Southern Basins".

4. REPORT SHEET ON BEST PRACTICES ON CLIMATE ACTION IN COASTAL TOURISM DESTINATIONS IN THE MEDITERRANEAN

As the field of climate adaptation evolves and as regions and destinations in the Mediterranean are increasingly feeling the socio-economic and environmental impacts of climate change, new techniques will be continuously required to meet these challenges. Here we showcase examples of good practices among tourism destinations in their efforts to adapt to and mitigate climate change within the tourism industry. Highlighting such examples is valuable in exploring the co-benefits and potential trade-offs of these adaptation measures. Identifying obstacles overcome and highlighting remaining challenges are as informative as successes. These examples demonstrate the need for monitoring and evaluation and above all, in sharing lessons learnt, in order to assess the effectiveness of the actions, and encourage their replication where appropriate and prevent adaptation failures.

The examples presented herein were gathered through desktop research, literature review, stakeholder surveys, and one-on-one consultations conducted as part of this study. These case studies display a range of initiatives from around the Mediterranean basin, many of which are focused on Nature based Solutions (NbS). NbS are emerging as a vital component in the quest for climate resilience as they provide numerous co-benefits, such as enhanced biodiversity, improved air and water quality, and increased recreational spaces. The case studies presented in this report demonstrate how authorities and communities are integrating these solutions into their urban, rural and marine landscapes, creating more sustainable and resilient environments. They have been selected according to criteria developed in Deliverable 2: Mapping of Mediterranean tourism stakeholders, questionnaire development and dissemination, and listed here. The assessment of each example against the criteria is displayed at the end of each case study.

Insights gained from these good practices can inform policymaking, guide investment decisions, and inspire other destinations to adopt similar approaches, ultimately contributing to a more sustainable and resilient global tourism industry.

4. 1 Case study 1: Barcelona City: Integrated urban sustainability transformation

Objective

Barcelona city has an ambitious long-term strategy to create a sustainable future for its inhabitants and visitors:

- a multi-sector sustainable transformation of urban life,
- promote the natural and cultural values of the destination while boosting economic returns,
- reduce the impact of tourism on local inhabitants and ensure benefits and costs are distributed equitably.

Context and challenges addressed

The severe impacts of climate change, already experienced in much of Spain, are likely to be amplified in Barcelona due to its large urban infrastructure and high population density[99]. The heat island effect will exacerbate extreme temperatures, and climate change will lead to increased accumulation of atmospheric pollution and increased risk of coastal flooding, affecting coastal premises and eroding beaches. Water supply during drought periods and increased incidence of wildfires will be of major concern [100].

Climate impacts are heavily exacerbated by tourism. Since the 1992 Olympics the city has been transformed into a tourist hotspot, boosted by local government efforts and a booming cruise industry. This influx congests popular areas and offers limited economic benefits as spending is often confined to main tourist zones[101]. Successive mayors have highlighted the negative impact of tourism on residents' quality of life, citing overcrowding, a severe rental crisis, loss of identity, and antisocial behaviors. Frustrated residents have expressed their discontent by protesting and challenging the lack of regulations that has made their city increasingly unlivable[102].

What was achieved and how?

Since 2015 a wide range of innovative measures have been introduced to relieve these social, environmental and economic pressures in a community focussed and inclusive manner[103]. Numerous projects reduce pollution, enhance neighborhood cohesion, boost economic diversity, and improve well-being. These include:

- The 'Superblocks' Initiative: developments of 400m x 400m residential units which focus on accessibility, green space, reducing cars, waste management, renewable energy and community integration.
- Cycle lanes: the city has become bike-friendly, with 240 km of cycle lanes and 60 km more planned. The Bicing program offers 7000 bikes across 519 stations.

[99] Barcelona for Climate, Ajuntament de Barcelona. Accessed 5 July 2024. Available online.
[100] *Ibid.*
[101] Overtourism in Barcelona, Responsible Travel website. Accessed 5 July 2024. Available online.
[102] *Ibid.*
[103] For example, the Barcelona Climate Plan was co-produced with its citizens and over a thousand local organizations: Satorras et al. (2020) *Co-production of Urban Climate Planning:* Available online.

- Public transportation: extensive metro lines, bus routes, suburban rail network and expanding tramlines. There is a pilot program (NIMBUS) to convert sewage into biofuel for buses, which aims to reduce its carbon footprint by 85%[104].
- Green spaces: notable increase in green cover has been driven by the Trees for Living: Barcelona Tree Master Plan 2017-37 and recently updated to form part of the Barcelona Nature Plan 2030.[105] These initiatives focus on expanding green areas and enhancing connectivity between them, increasing greenery in the densest parts of the city.

Successes and limiting factors

Mayor Jaume Collboni, elected in 2023, has pledged to maintain the city's focus on sustainability, as ongoing drought in Catalonia underscores the imperative for climate resilient initiatives.

Residents still feel the strain of over tourism, as evidenced by recent protests[106]. In the 'perception of tourism report, 2023' rates of those who feel tourism is harmful for the city are up, from 17.3% in 2022 to 23%. However, 70.9% of people felt that tourism benefits the city - a rise of 4% compared to 2022[107].

The city's strategies position it as a leader in global sustainability efforts, but continued action and innovation are essential to successfully balance climate resilience, tourism revenue and quality of life. Replicating Barcelona's sustainable transformation requires a multifaceted approach centered around strong political leadership, innovative policies, public engagement, investment in infrastructure, economic incentives and collaboration. Each city must tailor these strategies to its unique context to achieve sustainable urban development.

Table 9. Case Study 1 Criteria

Criteria	
Effectiveness/ relevance	Many direct impacts of CC and tourism pressure are addressed.
Implemented action	Many projects have transformed the city, and more are planned.
M and E	Annual monitoring report on the Barcelona 2030 Agenda
Participation collaboration	Public consultation and participation integral to urban renewal scheme.
Geog scope	Spain, northern basin.
Replicability shared lessons	Policies and resources available online[108]. Host World Conference on CC and Sustainability in 2024.
Integration	Comprehensive approach aligned with regional climate and national climate adaptation plans.
Multi-sectoral	Health, agriculture, water, energy, transport, health, social cohesion.
Innovation	Many e.g's of innovation: superblocks sewage biofuels for buses.
Stakeholder Satisfaction	Mainly positive, but also negative perception of tourism remains[109].

[104] Sandstrom, E., (2023), *Is Barcelona emerging as one of the world's most sustainable cities?* Available online.
[105] Barcelona Nature Plan, 2021, Area of Urban Ecology Barcelona City Council. Available online.
[106] The Guardian, 6 July 2024. *Hundreds.* Available online.
[107] Perception of Tourism Report, 2023, Ajuntament de Barcelona. Available online.
[108] Barcelona Climate Plan 2018-2030. Barcelona Nature Plan, 2021. Superblocks. Urban mobility.
[109] Perception of Tourism Report, 2023, Ajuntament de Barcelona. Available online.

4.2 Case study 2: Sakarun beach, Dugi Otok, Croatia: *Posidonia* Management

Objective

- Increase the resilience of Sakarun Beach and the coastal area to erosion and climate change,
- integrate effective *Posidonia* management into the protected area, including Sakarun Beach,
- maintain the tourism attraction of the beach.[110]

Context and challenges addressed

The Dalmatian island of Dugi Otok spans 45 km in length and 1 to 4 km in width. The island boasts a rich cultural and historical heritage, while the northwestern part, a protected area since 1967, is valued for its scenic bays, underwater reefs, and popular Sakarun Beach, which is known for its fine white sand, vivid blue-green waters, and unique flora and fauna[111].

Posidonia oceanica meadows are crucial to the environment of Dugi Otok, playing significant roles in CO_2 absorption and oxygen production, reducing wave intensity to prevent coastal erosion, support biodiversity, and nutrient cycling. They also support the formation of coastal deposits and gravel berms. However, they face threats from tourism-related activities such as anchoring, diving and fishing, as well as pollution from plastic waste, and sea temperature changes[112].

In addition, *Posidonia* deposits on the beach, which build up over time to form 'banquettes', are removed by the local authorities in Dugi Otok in the bathing season. Research shows it is important to retain deposits on the beach until May and allow banquettes to establish to reduce erosion[113]. However, Sakarun beach has been branded by tourist boards and local businesses as pristine white sands - the "Croatian Bahamas". When the *Posidonia* removal was stopped in 2020[114] the move was strongly opposed by local people, beach business owners and other stakeholders[115].

What was achieved and how?

Engaging local stakeholders in alternative approaches was challenging, but public outreach and consultation was initiated to seek consensus on a way forward[116].

Two participatory workshops were held in 2021 in order to:

- build a network of stakeholders,
- educate participants on the role and benefits of *Posidonia*,
- identify the main issues of contention,
- discuss ideas and suggestions for interventions.

110 Uzelac Obradović *et al.* 2021. The Action Plan for Management of Beaches with *Posidonia* Banquettes, Dugi Otok. Natura-Jadera. Available online.
111 *Ibid.*
112 *Ibid.*
113 *Ibid.*
114 Pikelj et al, 2022, Sedimentological consequences of *Posidonia oceanica* banquette removal: Sakarun beach case study. Available online.
115 Uzelac Obradović *et al.* 2021. The Action Plan for Management of Beaches with *Posidonia* Banquettes, Dugi Otok. Natura-Jadera. Available online.
116 POSBEMED2 Governance and management of *Posidonia* beach-dune systems across the Mediterranean. Accessed 5 July 2024. Available online.

Agreed interventions included:

- moving the banquettes away from the tidal area and returning them to their original locations after the tourism season,
- removal of seagrass litter from some areas of the beach,
- zones of management intervention and zones of non-intervention,
- providing education materials - online and information boards,
- rebranding of Sakarun beach.

A trial period was agreed in which one third of the beach remained a zone of non-intervention, on the other two thirds the banquettes would be removed from May and returned to their original location in September. A monitoring process has been established, in which beach morphology and accumulated deposits are monitored 4 times annually and ecosystem assessments are carried out twice per year. *Posidonia* beds are monitored every 3 years[117].

Successes and limiting factors

The impact of the management change, as with most NbS, will take several years to measure. However, the use of a participatory approach and the willingness to accommodate the concerns of stakeholders into management plans led to a novel and pragmatic compromise and demonstrates that NbS can combat multiple issues while promoting sustainable tourism. Although some skepticism may remain among beach concession owners, awareness has been raised and educational material development in order to increase understanding of the role of *Posidonia* meadows in marine and coastal ecosystems[118].

Sustainable beach management with *Posidonia* banquettes relies on establishing good communication channels to build trust, enabling a culture in which management practices can be regularly reviewed and adjusted, and where meetings are collaborative and accepting of divergent viewpoints.

Table 10. Case Study 2 Criteria

Criteria	
Effectiveness/ relevance	*Posidonia* conservation is critical for carbon storage capacity.
Implemented action	Management plan developed and processes implemented.
Monitoring/ evaluation	Monitoring schedule in place.
Participation/ collaboration	Collaborative management planning process
Geog scope	Croatian coast, northern basin.
Replicability/ shared lessons	Replicable and scalable.
Integration	National CC adaptation strategy prioritizes NbS.
Multi-sectoral	Integrated tourism, beach operators and local community.
Innovation	Pragmatic novel solutions found through compromise.
Stakeholder Satisfaction	Local community is satisfied with the compromise outcome.

[117] *Ibid.*

[118] Ibid. and pers comm, 2024.

4.3 Case study 3: Cyprus: Marine invasive species control through stakeholder engagement

"Until recently the Mediterranean was not warm enough for them, but lionfish are increasingly colonizing these waters bringing with them a serious threat of habitat destruction and species extinction. Unless we act now, there could be lasting environmental and economic damage."[119] Prof. Jason Hall-Spencer, Univ of Plymouth.

Objective

Reduce the population of invasive lionfish off the coastal waters of Cyprus through:

- monitoring and surveillance,
- increased awareness within the local community,
- creation of a market for lionfish sale and consumption.

Context and challenges addressed

Warming of the Mediterranean Sea is changing the underwater environment and facilitating the spread of the invasive lionfish (*Pterois miles*). A voracious predator native to the Indian Ocean, the rapid spread of lionfish in the Mediterranean is devastating the biodiversity of the eastern basin. With further sea temperature rises inevitable, the lionfish could threaten almost the entire Mediterranean Sea by the end of this century.[120] The invasion poses a threat to marine ecosystems and biodiversity, weakening resilience to climate change. It has the potential to heavily impact the commercial fishing industry and presents health risks for humans due to its venomous spines. On an island like Cyprus, heavily dependent on tourism, the abundance of the invasive fish around the coastlines could be a threat to tourism and diving sites in popular destinations.

What was achieved and how?

The project aimed to position Cyprus as the 'first line of defense' against the lionfish invasion in the Mediterranean due to its strategic location[121]. First stage actions involved:

- Engaging the public and local stakeholders to test strategies for controlling lionfish spread.
- Analyzing lionfish biology and distribution, developing online early detection systems, recruiting and training divers.
- Holding lionfish removal competitions to remove fish and raise awareness. Competitions were promoted on TV, radio, social media, and the internet.
- Other communications included workshops and food festivals, exhibitions and information boards, training videos and pamphlets[122].

The second stage involved creating a market for lionfish, incentivising

[119] Williams, 2019, Lionfish culls aim to preserve marine species and habitats in the Mediterranean Sea, Univ. of Portsmouth, Available online.

[120] Williams, 2021, Scientists develop a plan to manage lionfish populations in the Mediterranean. Univ. of Portsmouth. Available online.

[121] Executive Agency for Small and Medium-sized Enterprises, NEWSLETTER, 3 August 2020. Preventing a lionfish invasion in the Mediterranean. Available online.

[122] European Commission Newsletter. Preventing a lionfish invasion in the Mediterranean, 2020. Available online.

commercial and recreational fishers to target the species.

- The fish was promoted to local restaurants, local chefs were trained in its preparation and cooking and recipes were made available online.
- After the competitions people were shown how to handle and cook lionfish. Attendees and bystanders were encouraged to sample dishes such as lionfish ceviche and sushi rolls[123].
- local artisans were encouraged to experiment with jewelry from the spines and fins of the fish.

There was a 64% decrease in lionfish numbers in removal areas[124]. A market was successfully created for lionfish, which is now regularly seen in Cypriot fishmongers, restaurants and hotels. Lionfish is regularly caught for personal consumption while commercial fisheries are selling to the nascent supply chain[125]. However, the rapid reproduction of the species means that despite effective removal actions, ongoing efforts are needed, as are legislative changes, and coordinated strategies for long-term control[126].

Successes and limiting factors

Targeting removal by scuba divers in conjunction with removal by commercial fisheries was found to be the most effective means of control[127]. Promoting lionfish hunting tourism could be an effective way to support dive tourism and reduce lionfish populations[128], but legislative changes are required to allow hunting with spears. Additionally, developing a specialized fishery for lionfish would ensure a reliable supply to restaurants and increase demand as consumers become more familiar with the product.

Findings and lessons from the project are disseminated with local authorities and scientific communities. Coordinated action across the Mediterranean is required to minimize the lionfish population and reduce the impact on marine ecosystems. Rapid scaling up of this strategy would vastly increase effectiveness[129].

Table 11. Case Study 3 Criteria

Criteria	
Effectiveness/ relevance	Addresses a secondary but important climate impact.
Implemented action	The project was implemented but has now finished.
Monitoring/ evaluation	Population and lionfish removal strategies monitored.
Participation/ collaboration	Community participation and awareness. Citizen science.
Geog scope	Cyprus, eastern basin.
Replicability/ shared lessons	Similar actions in Greece. Findings and Management Guide shared.
Integration	Cyprus National Plan 2017[130] to control invasive species.
Multi-sectoral	Diving communities/fisheries/

123 Ibid and pers comm, 2024
124 Hall Spencer, Kleitou, 2022, Guide to lionfish management in the Mediterranean. Available online.
125 *Ibid.*
126 *Ibid.*
127 *Ibid. and pers. comm, 2024*
128 *Ibid.*
129 *Ibid.*
130 Katsanevakis, S. 2017. National Action Plan on species introductions and invasive species in Cyprus. UNEP Mediterranean Action Plan. Available online.

	restaurateurs/ tourism industry.
Innovation	Communication techniques. Supply chains at scale for long term control.
Stakeholder Satisfaction	No negative impacts. Perceived as successful

4.4 Case study 4: Reconstructing coastal dunes against erosion in Tuscany, Italy

Objective

To increase the resistance and resilience of coastal ecosystems, by:

- implementing measures to counteract coastal erosion,
- improving tourism management, particularly during the summer months,
- restoring degraded ecosystems,
- improving the sustainability of the beach/dune/coastal plain system of Sterpaia Park, in the Municipality of Piombino.

Context and challenges addressed

Sterpaia Park is a coastal protected area managed by the Municipality of Piombino. The Park includes relict coastal dune vegetation, and plant and animal species of conservation concern[131]. It experiences high tourism, particularly in the summer months, and pressures such as storm damage, coastal erosion, and artificialization of the coast. A narrow belt of shrubby dune vegetation and relict pine forest provides protection for a low-lying wetland area and agricultural lands behind the dunes of the coastal plain.

The restoration project, carried out between 2012-2014, and 2020-2021, aimed to increase the resistance to coastal erosion and to buffer freshwater aquifers and productive agricultural lands from sea water intrusion. Improved management of sand dunes was required through better directing tourist flows and restoring degraded areas by removing invasive plant species. More sustainable management of beach concessions and beach cleaning activities were also required to enhance the numerous ecosystem services provided by the coastal ecosystems of Sterpaia.

What was achieved and how?

The protection of the coastal dune system was implemented through an integrated strategy of structural re-engineering of the sand dunes using NbS, controlled accessibility, information and environmental education:

- Sand dunes were innovatively engineered to meet the specific conditions of the site using natural, and largely local, materials.
- Materials and structure were designed to be permeable and yet to decrease incoming wave energy.
- 600 trees and 16,000 herbaceous and shrub plants were planted.
- 130 dune paths were closed to reduce erosion from trampling,

[131] Mediterranean ecosystem Restoration sites, 2023, Annex-6, Sterpaia Park. Accessed on 4 July 2024. Available online.

- 50 new paths were opened providing improved, environmentally sustainable access.
- 20 information panels were created and placed at walking paths entrances, explaining the value of the coastal ecosystem, the purpose of the project and appropriate behaviors for tourists on the sand dunes[132].

Stakeholder groups were heavily involved from the outset and included:

- local community members,
- Government representatives (local, national, park authorities),
- cooperatives,
- representatives from the private sector and
- interest groups such as youth organizations and women's groups.

Public meetings were organized, and training was provided for beach operators. Guidelines were updated for the sustainable cleaning of the beaches. Tourists using the area were interviewed to gather information on tourist perceptions.

Successes and limiting factors.

Post-intervention monitoring has shown the positive effects on beach/dune ecosystems, biodiversity and dune morphology. The dune system was able to withstand the increased intensity and frequency of storm surges from 2012 until October 2018. When exceptional meteorological events heavily damaged the engineering works, they were rebuilt in the following years.

The interventions were highly appreciated by tourists and the local community, particularly the network of wooden walkways that allowed tourism development compatible with the protection of the beach/dune system. Among the most significant results are high rates of survival of the planted shrub and tree species and the complete removal of the alien plant species *Carpobrotus acinaciformis*[133].

The project was funded as part of the Master Plan for coastal protection and restoration by the Region of Tuscany. These interventions, using NbS, are considered successful and can be replicated elsewhere, where similar conditions occur.

Lessons learned during the project include the importance of carrying out a good preliminary analysis of the ecosystem and geo-morphological aspects of the project area and ensuring ecological conditions are suitable. Involve local actors from the early stages, ensuring local people benefit from and make decisions about the restoration. Make roles and responsibilities are clearly defined.

Table 12. Case Study 4 Criteria

Criteria	
Effectiveness/ relevance	Coastal protection is vital against sea level rise and inundation risk.

[132] *Ibid.*

[133] Lazzaro et al., 2019, *The eradication of Carpobrotus spp. in the sand-dune ecosystem at Sterpaia (Italy, Tuscany): indications from a successful experience* Available online.

Implemented	Project complete
Monitoring and evaluation	Monitoring carried out in 2 years post-intervention
Participation/ collaboration	Collaborative across multiple sectors.
Geog scope	Italy, northern shore
Replicability shared lessons	Where ecological conditions are appropriate.
Integration	Region of Tuscany's Master Plan for coastal protection and restoration
Multi-sector	Collaboration multisectoral
Innovation	Engineering design using sustainable and local materials
Stakeholder Satisfaction	Monitoring indicates tourists and the community are happy.

4.5 Case Study 5: Ghar El Melh, Tunisia, Wetland restoration and eco-tourism development.

"The sea level has risen in recent years in an unusual way. This is noticeable through the waters that submerge, from time to time, the crops".[134] Ali Garsi, a retired school teacher and farmer.

Objective

- Restore Ghar El Melh wetland to increase resilience to climate change impacts of sea level rise, flooding, drought, and extreme temperatures.
- Improve the economic and socio-cultural development of the area through promoting eco-tourism.

Context and challenges addressed

The area of Ghar El Melh, in the north of Tunisia is home to one of the country's most precious wetlands[135]. The Ghar El Melh lagoon was designated as a wetland of international importance under the Ramsar Convention in 2018 and is a Key Biodiversity Area (KBA)[136]. The city of Ghar El Melh is one of Tunisia's cultural hotspots. Tourism, farming and fishing are the most important economic activities.

The fishing, farming and tourism industries in Ghar El Melh have developed with little regulation and several years of drought have led to severe stress on the wetland ecosystem. Fish populations have diminished, land has become degraded, coastal erosion is threatening the beach and unsustainable coastal development is creating excessive strain on natural resources and exacerbating coastal erosion[137].

What was achieved and how?

In search of strategies to improve the flow and quality of the water and to prevent the disappearance of the salt lake, the local authorities of Ghar el Melh sought help. A partnership of local and international organizations established

[134] Khlif, 2023, La lagune de Ghar El Melh, un fragile écosystème menacé, Photo reportage. Accessed on 5 July. Available online.

[135] Numa & Saura Drago, The Water Guardian. Coastal Wetlands: the Case of Ghar el Melh. IUCN Centre for Mediterranean Cooperation. Accessed on 4 July 2024. Available online.

[136] Key Biodiversity Areas Partnership (2024) *Key Biodiversity Areas factsheet: Jbel Nadhour et Lagune de Ghar El Melh*.Available online.

[137] Ghar El Melh Tunisia, Wetland Based Solutions, website. Accessed on 4 July 2024. Available online.

the GEMWET[138] project to improve management of the area and to restore its ecological health. The project integrated into the local government system and worked to:

- strengthen the capacity of local governance to enable effective monitoring and management,
- raise awareness and engage the community in environmental education[139],
- engage with MEET, a group dedicated to developing ecotourism for conservation and local communities.

The Lagoon has opportunities for establishing ecotourism markets. It is a haven for birdwatchers and nature photographers. The area is renowned for long sandy beaches and has a rich history, influenced by Phoenician, Roman, and Ottoman civilizations[140].

Successes and limiting factors

The restoration activities have replenished water flows and now support the operation of traditional farming systems, benefiting small-scale local fisheries. Since the Covid crisis and the severe water stress the country is experiencing, there has been a greater focus nationally on promoting sustainable tourism and attracting eco tourists, rather than traditional resource intensive tourism. Contacts have been established with tour operators in Tunisia and Europe and Ghar El Melh is already on the itinerary of eco tours to northern Tunisia, through companies such as Wonderful Tunisia and Tunisia Ecotourism. "Les Amis Des Oiseaux" (l'AAO) is soon to publish a mini-guide to the birds of the lagoon, hoping to increase the appreciation of the incredible birdlife of the lagoon. New, locally founded businesses have also been established, such as Ghar El Melh Outdoors Camping, which opened in 2023 and is low impact, sustainable and rooted in a close connection with nature. Training information and promotion of the eco-Circuit is regularly organized by the AAO and in partnership with the Maison de la Culture de Ghar El Melh, the Municipality of Ghar El Melh, the Local Union of Agriculture and Fisheries of the region and the Tunisian Ecotourism Agency.

However, major problems persist[141]. Strengthening the enforcement of wetland protection laws are required to limit urban development on the wetland and pollution remains an extensive issue. Mobilizing the local population is difficult due to the urgent socio-economic needs of the people, therefore it is necessary to demonstrate the economic benefits that can accrue from good management and local participation.

Table 13. Case Study 5 Criteria

Criteria	
Effectiveness/	Restoring fresh water stores and wetlands critical for cc resilience.

138 GEMWET: An ambitious project for green youth employment and smart agriculture in Ghar El Melh, Tunisia, 2021. Accessed on 4 July 2024. Available online.

139 Ibid.

140 Ghar El Melh, MEET Website. Accessed on 4 July 2024. Available online.

141 Dridi, S., 5 July 2022, Ghar el Melh: un joyau à sauvegarder. La Presse.tn. News website. Available online.

relevance	
Implemented action	Awareness raised, farmers trained, ecotourism markets established.
Monitoring/ evaluation	Historical monitoring by WWF NA, but not post implementation.
Participation/ collaboration	With local authorities and the local community.
Geog scope	Tunisia. Southern basin
Replicability/ lessons shared	Implementation of the case studied shared in documentation on wetlands restoration[142] [143].
Integration	National Strategy and Action Plan for Biodiversity 2018-2030.[144]
Multi-sectoral	Municipality, cultural center, fishing/agricultural industry etc.
Innovation	Participatory approach to implement wetland restoration.
Stakeholder Satisfaction	Improved water flow and water quality improves local livelihoods.

4.6 Case study 6: Elafonisos, Greece: Raising awareness on sustainable tourism

Objective

To preserve the unique ecology of Elafonisos by:

- highlighting the importance of ecological strategies in fostering sustainability, and
- bringing together people from diverse backgrounds to discuss ideas and share solutions.

Context and challenges addressed

The small Mediterranean island of Elafonisos, is known for its unique biodiversity and delicate ecosystems. Although small, a large part of Elafonisos is a NATURA 2000 protected habitat. The island hosts several unique plant and animal species, including birds, turtles, and various fish. The island serves as a crucial stop for migratory birds[145].

It has developed a low-key tourism, primarily based around rooms to let and camp sites. Despite this low development tourism, the island still faces issues such as the impact of tourism in the high season and climate related challenges such as the invasive lionfish. These issues threaten the local flora and fauna, including endangered species like the loggerhead sea turtle and the seahorse and the critically endangered sand dune dwelling plant, *Saponaria jagelii*.

What was achieved and how?

Recognizing these threats, Elafonisos Eco, a local organization of dedicated, passionate residents, was founded in 2013. This ecological association aims to protect Elafonisos as an ecologically unique and sustainable island, ensuring its natural environment is protected, while also improving the quality of life for locals, visitors and future generations. One of its

[142] Satta et al. *Policy Paper*. Restoring Mediterranean Wetlands. Available online.
[143] Shipman and Rajković, 2019. The Governance of Coastal Wetlands in the Mediterranean. Available online.
[144] Boussaid & Kraiem, 2017. Stratégie et plan d'action nationaux pour la biodiversité 2018-2030. Available online.
[145] Elafonisos - Natura 2000. Panorama. Website. Accessed 7 July 2024. Available online.

main achievements is the annual Elafonisos Eco Week[146].

- Running in 2024 for its 7th consecutive year the event is a platform for engaging local and national stakeholders and attracts international voices in the pursuit of sustainability and ecological awareness.
- Around 100 participants attend the symposium, comprising 12 nationalities, of whom 30 are speakers at the event.
- The themes of the symposium vary annually but include issues such as waste and water management, sustainable tourism, lionfish, blue opportunities, health and wellness, local culture and gastronomy and a plastic-free future.
- Activities are organized throughout the week including teaching local chefs to cook and serve lionfish, helping to mitigate the impact of this invasive species on marine ecosystems and opportunities for studying birdlife and *Posidonia* meadows[147].

By advocating for proper waste management, water conservation, and eco-friendly accommodations, Elafonisos Eco Week demonstrates practical, sustainable solutions for tourism management. [148].

The week-long event unites diverse participants, including local community members, local authorities, academics, artists, entrepreneurs, and environmental enthusiasts, to discuss and implement ecological strategies. The participation of local mayors and government officials underscores the event's importance and impact, promoting sustainable tourism and environmental stewardship across Greece, while the support of prominent figures, such as Albert II, Prince of Monaco, and Greek Minister Dimitris Papastergiou, highlights the significance of the event[149].

Successes and limitations

The tiny island of Elafonisos has managed to maintain low-impact, sustainable tourism and conserve its ecological riches, despite having some astounding tourism assets that increase summer visitor rates tenfold in the summer months. The protection of this island has, in no small part, been aided by the establishment of the energetic and innovative association Eco Elafonisos. The Eco-week is becoming increasingly well-known and further cements the branding of this island as sustainable, allowing its further protection and spreading of the sustainability message.

In terms of sharing knowledge and experience, face-to-face networks, such as symposia, fora and conferences, are a preferred means of sharing knowledge and experience. Local and regional symposia such as this ensure the topics covered are highly relevant to

[146] Elafonisos Eco-Week. Website. Accessed 7 July 2024. Available online.
[147] *Ibid.*
[148] Unveiling the Emerald Isle: Sustainable Tourism in Elafonisos, Eco-tourism Greece. Website. Accessed 7 July 2024. Available online.
[149] GTP editing team, 2024, *Elafonisos Eco Week' Ecological Symposium is Back for 7th Year*. Accessed 7 July 2024. Available online.

participants with shared challenges and opportunities, increasing the probability of meaningful connections and lessons learnt. By fostering collaboration and knowledge-sharing, the event strengthens the island's resilience to climate change and sets a precedent for sustainable practices in the Mediterranean region.

Table 14. Case Study 6 Criteria

Criteria	
Effectiveness relevance	Islands are heavily impacted by CC
Implemented	Eco-week running for 7 years
Monitoring/ evaluation	Eco-elafonisos monitors local biodiversity. No monitoring of eco-week impact.
Participation/ collaboration	Wide collaboration- non-profit, public and private sectors.
Geog scope	Greece, northern basin.
Replicability lessons shared	Purpose of eco-week is knowledge sharing and peer-to-peer interaction.
Integration	"GR-Eco Islands" Initiative to promote the green and digital transformation of Greek islands.
Multi-sectoral	Multi-sectoral topics addressed
Innovation	Small, active NGO with innovative ideas and wide reach
Stakeholder Satisfaction	Positive for residents and visitors and the symposium community.

4.7 Case Study 7: Port Cros National Park, France: managing water tourism to protect seagrass meadows.

Objectives

This case study focuses on marine spatial planning in Port Cros National Parc (PNPC), specifically new regulations on water tourism applied in 2020. The aim of the new regulations is to:

- preserve marine plant habitat and promote their restoration (in particular *Posidonia* seagrass beds) and,
- preserve the natural character of the heart of the park, including landscape considerations.
- improve the visitor experience by establishing a peaceful atmosphere and allowing the discovery of a healthier seabed[150].

Context and challenges addressed

As the oldest marine park in Europe, Port Cros covers 1700 hectares of dry land and 2900 hectares of the sea's surface[151]. The islands of Porquerolles and Port-Cros are a magnet for tourists looking for sea, beaches and nature[152]. Water tourism, including sailing, recreational fishing and diving tourism, are extremely popular.

In the high summer months up to 15,000 people per day would visit the islands, while 1000 boats could be anchored on the coast of Porquerolles. This visitor pressure led to damage to the marine environment, placed strain on water

[150] MPA Success Story, National Park of Port Cros, 2024. Medpan website. Accessed 9 July 2024. Available online

[151] A recognized territory, Port Cros website. Accessed 9 July 2024. Available Online

[152] Tourism Review, Mass Tourism in France, French Nature Reserves Introduce Quotas. Accessed 9 July 2024. Available Online

resources and increased the risks of wildfires[153].

The sea surrounding the island displays high biodiversity rates resulting in 774 marine species distributed on diverse ecological facies such as *Posidonia* meadows, endemic coralligenous, shallow rocky and sandy benthos, etc. What's more, it contains extensive *Posidonia* beds, which are vital marine habitats and offer an enormous capacity for carbon sequestration and storage. PNPC surveys showed uncontrolled anchoring of recreational boats were causing extensive damage to the seagrass meadows[154] and that recovery is severely compromised by continuous disturbance from anchors[155].

What was achieved and how?

To address these issues PNPC introduced a spatial planning policy. This included the creation of a Mooring and Light Equipment Zone (ZMEL) in which anchoring is prohibited. Alongside this, other provisions and regulations include:

- Eco-mooring sites (to prevent the disturbance of seagrass meadows) available between 15th April-15th October each year.
- Mooring sites are free during the day but are paid overnight. Overnight stays must be booked and paid for in advance on a mobile app.
- Boats larger than 24m are not permitted to moor within the ZMEL, but may anchor on the sandy seabed outside the ZMEL.
- Scuba divers are not permitted to dive alone or unauthorized.
- Special dive mooring locations provided at 6 dive sites. Certain zones are restricted to scuba diving between April 1st - September 30th.
- Recreational fishing is highly restricted and only permitted in certain zones[156].

Participative management of the park has been in place since the early 2000s and had recently been engaged to establish carrying capacity limits on the islands. This process was used again to develop the new proposals[157]. An awareness campaign was also launched, including posters, leaflets and awareness days. A stakeholder survey established that 85% of respondents thought that the ZMEL would protect the marine environment[158].

The National Park of Port Cros published monthly scientific articles in which scientific monitoring results are listed and valorized. Moreover, the STOECHAS project (2021-2026) has been established in order to regularly update the fauna and flora inventories of the park. This species listing is an excellent indicator for assessing the conservation efforts implemented.

[153] Cadoret, 2021. Conflicts and acceptability of visitation management measures. Ocean and Coastal Management. Available Online

[154] Francour, 1999, Effects of boat anchoring in *Posidonia oceanica* seagrass beds in the PNPC. Available online.

[155] *Posidonia* Seagrass, WWF Website. Accessed 2 July. Available online.

[156] La ZMEL de Bagaud. Accessed 7 July. Available online

[157] Concertation relative à l'organisation du mouillage autour de l'île de Porquerolles Plaisance, 2021, PNPC. Available online.

[158] Bilan de la Communication sur la ZMEL de Bagaud. 2020. PNPC. Available online.

Successes and limiting factors

The regulations limiting boat tourism arrived just a few short years after the imposition of visitor capacity limits on the terrestrial islands of PNPC. Therefore, the concept of visitor reductions, while still contentious for the boating community, has already been addressed by many stakeholders. Consultative processes and management structures established over many years, were key to resolving disputes from these new initiatives[159], despite some skepticism remaining within the sailing community[160].

No studies have yet been carried out on the ZMEL mooring area, but it has been established that anchoring is the main threat, therefore it is presumed that the impact will be positive. The impact on dive centers appears to be generally positive, despite the restrictions[161].

Balancing intense tourism demand with the preservation of vulnerable ecosystems involves complex decision-making and trade-offs. It is essential to consider wealth generation and the quality of life for the local population while ensuring that both the environment and the community are adapting to climate resilient.

Table 15. Case Study 7 Criteria

Criteria	
Effectiveness / relevance	
Implemented	*Posidonia* conservation is critical for carbon storage capacity.
Monitoring/ evaluation	Implemented
Participation / collaboration	The Scientific Council organizes comprehensive monitoring.
Geog scope	Collaborative with many local and relevant stakeholders
Replicability/ shared lessons	France, northern basin
Integration	High relevant to other locations where water tourism is popular
Multi-sectoral	Rhône Méditerranée Corse Water Agency, the SUD Provence-Alpes- Côte d'Azur Region and Life MarHa.
Innovation	PNPC management is multisectoral.
Stakeholder Satisfaction	Tourism limitation strategies.
	Some stakeholders were skeptical, but a balance was reached.

[159] Cadoret, 2021. Conflicts and acceptability of visitation management measures for a marine protected area: PNPC. Ocean and Coastal Management. Available Online

[160] Ricardou, 2023, Interview / Le directeur du PNPC s'explique sur le projet de ZMEL de Porquerolles. Bateaux.com website. Available online.

[161] De Paoli et al., 2023. Assessing the costs and benefits of protection measures in two French marine protected areas, Plan Bleu. Available online.

Conclusion and next steps

As demonstrated in this Deliverable 6 report, the project activities conducted as a part of Activity 1.3, (Deliverables 1-5), underlined the main challenges, barriers, gaps and opportunities related to Mediterranean destinations' current climate actions and ambitions. The report provided a condensed summary of the key takeaways that stemmed from our desktop research and literature review combined with our original research in the form of our questionnaire, 1-1 consultations. By dividing out our findings per section, this report intended to compile concise results along with analyses for a holistic snapshot of outcomes from this scope of work.

Based on our research and literature review (Deliverable 1), which showed considerable differences between the capacity (financial, human, technical etc) and climate responses between Mediterranean basins, our analysis on stakeholder perception (Deliverable 3) found that there were more commonalities between the basins than major differences. This was reflected in the "scoring" analysis, which found the lesser equipped basins (eastern, followed by southern) to have achieved the highest ranking. However, perception was not correlated with the reality of the breadth of actions and ambitions taking place in destinations. Rather, scoring appears to have reflected the perception of respondents' overall understanding of their destinations' intended climate response as opposed to the actual work being done to alleviate the climate impact of tourism on their destinations. The lack of knowledge around the intersectionality of tourism and climate change was an undercurrent present in respondents' answers, indicating that regardless of the actions taking place, enhancing knowledge sharing, communications and understanding are crucial in order to improve perception around destinations' climate responses.

Additional gaps were found in responses and elaborated on in our Gap Analysis (Deliverable 4). Responses showed that obtaining financing, building capacity, increasing political willingness, and incentivizing the uptake of climate-friendly initiatives is paramount to addressing and facilitating an enabling environment for climate change mitigation and adaptation in the Mediterranean. The Gap Analysis additionally underlined the need for climate action to be prioritized by governments in both policy and planning to: advance the uptake of green energy and transport, enhance resilience in the face of resource challenges, build capacity for community-led action and adapt tourism to reflect changing environmental circumstances.
The selection of best practices (Deliverable 5) combined insights from all of the previous takeaways to showcase the potential for successful interventions to tackle climate and tourism challenges. The examples, which feature urban sustainability transformation, *Posidonia oceanica* management, dune rehabilitation, ecotourism development, among other successful practices, share the wide variety of the types of projects taking place in response to climate and tourism-related impacts. These practices aim to inspire and motivate the replication of similar actions across the Mediterranean basins and by doing

so, forward climate action and the integration of the sustainable management of tourism to alleviate the challenges affecting destinations.

For the next steps of this project, Activities 1.4, 1.5 and 1.6 will build on top of the findings presented in this scope, adding and expanding upon the trends, themes and other aspects of Activity 1.3.

As a continuation of the work featured in this Deliverable 6 report, these future project activities will expand on various aspects of this project scope, notably:

- the application of nature-based solutions in the context of climate action, tourism and destination management,
- challenges around coastal tourism,
- the effectiveness of tourism climate strategies/ plans and
- the potential to enhance tourism-specific climate action.

Annexes

Table 2. Destinations represented in Questionnaire Responses

Country	Destination	Counts
Albania	Tirana	3
Croatia	Dubrovnik, Zagreb, Zadar, Split, Sali	5
Cyprus	Nicosia, Pernera	2
France	Arles, Provence Alpes Côte d'Azur, Marseille	3
Greece	Thessaly, Athens (6), Katerini (2), Heraklion, Larissa	11
Israel	Jerusalem	1
Italy	Rome, Palermo (3), Tuscany, Ragusa, Cagliari, Forlì	8
Monaco	Monaco	1
Morocco	Rabat	1
Portugal	Lisbon, Cuba - Alentejo	2
Spain	Valencia (2), Barcelona (4), Gran Canaria, Andalusia, Berga, Palma de Mallorca, L'Estartit	11
Tunisia	Tunis	1
Türkiye	Ankara	1

Table 3. Stakeholders per Country

Country	Institutional Bodies	Local authorities' representatives	Private Sector	Researchers	Coordinators
Albania	3				
Croatia	4				1
Cyprus	1		1		
France				2	

Greece	4		5	1	1
Italy	4		1	2	1
Spain		6	5		
Portugal			2		
Monaco		1			
Türkiye	1				
Israel	1				
Tunisia	1				
Morocco	1				
Total:	**20**	**7**	**14**	**5**	**3**

Table 8. Gap Analysis Summary

Challenge	Sub-challenges (risk of status quo)	Relevance to tourism sector	Current state	Desired future state	Gaps	Future actions needed to bridge gaps[162]
The Mediterranean is facing unprecedented environmental challenges such as heat waves, floods, droughts and water shortages.	Beachfront losses and erosion from sea level rise, water and resource scarcity, wildfires, health and safety risk.	Climate-related consequences are disturbing tourism activities. Climate change risks changing tourism perceptions, booking patterns with consequences for accommodations, tourism operators, the food and beverage sector and those that rely on tourism for their livelihoods.	Environmental challenges are making the region less competitive in the high tourism season.	Stakeholders are equipped and able to contribute to national and international efforts to combat climate change through mitigation and adaptation methods. Risk mitigation and adaptation policies and strategies account for climate-induced risks: evacuations, flight cancellations and resource strain in destinations that are heavily reliant on tourism.	• Timely and effective green energy transition • Climate action related to tourism that are championed by governments and policy-makers • Tourism deseasonalization plans • Risk mitigation plans related to tourism and climate impacts	• Support for destinations and businesses to enhance resilience in the face of climate change-induced losses • Green energy transition (to renewables) to meet energy needs and growing demands for air conditioning and desalination • Stakeholder cooperation • Knowledge-sharing • Monitoring and evaluation structures • Strategies and plans to adapt to changing tourism patterns

[162] Future actions needed to bridge gaps are based on examples of successful actions being taken and best practices provided from desktop research, the questionnaire and stakeholder consultations

Challenge	Sub-challenges (risk of status quo)	Relevance to tourism sector	Current state	Desired future state	Gaps	Future actions needed to bridge gaps[162]
Lack of institutional coordination and capacity to effectively address the scale of impact climate change is having on tourism	Slow progress in NMCs towards mitigation targets Mitigation pledges are not making impact at the regional and municipal level Lack of comprehensive climate action plans particularly in the Southern Med. Basin	CC impacts of rising tides, increased temperatures and other impacts are harming coastal and marine economic activities within the tourism industry and in adjacent sectors	Capacity is varied per destination (county and region) and per basin, making coordination challenging.	Institutions' efforts to combat climate change are coordinated. Actions are guided by policies with capacity gaps addressed. Destinations with capacity gaps are supported (by policies, initiatives, projects, technical support and funding) to enable a more even climate response throughout the Mediterranean.	• Inter-basin efforts that support concerted action through capacity support, knowledge and skill sharing and other supporting mechanisms to help destinations collectively take mitigation and adaptation actions within their tourism industries	• A comparative study on each destinations' climate actions and ambitions in the context of the tourism industry to generate a baseline understanding of where gaps exist and where targeted support could be allocated • Capacity sharing by policies, initiatives, projects, technical support and funding
Implementing adaptation strategies	Adaptation strategies will not be implemented in time to prevent damage and economic losses as a result of climate change	Coastal, marine and other vulnerable tourism assets will have less protections, causing risks and vulnerabilities to remain and increase.	National Adaptation Plans are still in development phase (and years away from implementation in the Southern	National adaptation plans are in place for all Mediterranean countries. Adaptation plans for tourism assets are aligned with national climate	• Capacity gaps and delayed NAPs are slowing the implementation of adaptation efforts	• Promoting and employing nature-based solutions to secure tourism assets that are at risk of climate impacts • Providing support (capacity, technical or other) to

Challenge	Sub-challenges (risk of status quo)	Relevance to tourism sector	Current state	Desired future state	Gaps	Future actions needed to bridge gaps[162]
			Basin) meaning that current adaptation efforts are not guided by national strategies	change strategies.		destinations working on NAPs
Lack of accurate climate data	Reduced monitoring and evaluation capacity to measure the effectiveness of climate efforts	A lack of data will reduce ability to use data to conserve marine tourism assets i.e. coral reefs	Data gaps vary depending on the destination Data collection, monitoring and evaluation capacity is limited and varies per Mediterranean basin	Monitoring and evaluation mechanisms are in place Capacity to obtain and analyze data is adequate Indicators are inclusive of the impact CC is having on tourism assets Technical and financial support mechanisms are in place to aid the accumulation and evaluation of up to date climate data	• Lack of studies on the intersectionality of climate change and the tourism industry from an environmental, social and economic perspective	• Data collection, monitoring and evaluation processes to determine and forecast the impact of climate change on the tourism industry • New or updated studies modeling climate impacts (i.e. rising tides, erosion, wildfires etc) on tourism zones and other tourism assets • Studies on the impact of tourism on biodiversity and the impact biodiversity loss will have on

Challenge	Sub-challenges (risk of status quo)	Relevance to tourism sector	Current state	Desired future state	Gaps	Future actions needed to bridge gaps[162]
						destinations' tourism industries
Lack of understanding of the value of Nbs	Multitude of anthropogenic and climate induced stressors on natural environments reduce their capacity for providing ecosystem services	Nbs can help secure beaches and coastal tourism assets by preventing sea level rise, erosion and other climate induced impacts.	Nature-based solutions and the value that they could generate for the tourism industry are vastly underestimated.	Nature based solutions are integrated into tourism-related adaptation strategies as well as mitigation strategies	• Knowledge-sharing on the value of NbS to the tourism sector • Methods to create and replicate adaptation and mitigation efforts (incorporating NbS)	• Sharing best practices on the use of nature-based solutions in tourism destinations (as a means of adaptation and carbon sequestering) • The inclusion of nature-based solutions in ecotourism products
Lack of adequate efforts to address resource scarcity	Lack of action poses environmental and social challenges that could inflame existing tensions in the eastern Mediterranean basin	Water and other forms of resource scarcity. High tourism seasons for Mediterranean countries are concentrated on the summer months, when resources are more under pressure.	Resources, especially water, are becoming increasingly scarce during the high tourist season, causing tensions between locals and tourists.	Sustainable tourism is prioritized over overtourism. Behavioral changes are made to adapt resource consumption to changing climate scenarios. Resources are	• Technologies that enable resource conservation • Tourism strategies that reduce strain on resources under threat • Studies that analyze resource consumption by tourists (per destination) and the socio-economic	• Strategies to ease social tensions around resources • Methods that enhance resource efficiency while combating scarcity • Buy-in from communities • Measures and initiatives that address access to

Challenge	Sub-challenges (risk of status quo)	Relevance to tourism sector	Current state	Desired future state	Gaps	Future actions needed to bridge gaps[162]
				conserved sustainably in a way that is beneficial for local communities.	impacts this has on communities & recommendations to alleviate tensions	resources in a way that reduces inequalities, alleviates poverty, supports vulnerable communities
Lack of technical and financial capacity	Capacity gaps are preventing climate action	Tourism businesses lack the capacity to implement climate-friendly technology or measures that could lower emissions or enhance resilience	This is a major barrier for stakeholders in the Southern basin and in destinations that lack strategic and continuous funding to address capacity gaps	Stakeholders have adequate technical capacity and financial means available to them to take climate action i.e. switching to renewable energy sources, employing adaptation measures etc.	• Strategic and continuous funding to maintain capacity for climate response during and after implementation and to avoid staff turnover or outsourcing of experts	• Plans for strategic and continuous funding for projects that target climate action in the tourism industry

Challenge	Sub-challenges (risk of status quo)	Relevance to tourism sector	Current state	Desired future state	Gaps	Future actions needed to bridge gaps[162]
Heavy emphasis on "sun and sea" tourism and mass tourism	Leads to resource scarcity, overtourism and lack of tourism diversity (in regards to offerings)	The focus on sun and sea tourism could lead to economic losses for the tourism industry if the impacts of climate change (rising temperatures, coastal losses, crowded spaces) make sun and sea tourism less desirable. Water-based tourism is particularly vulnerable with activities currently making up a large part of the Mediterranean's tourism attractiveness.	Mediterranean tourism is heavily concentrated on coastal, beach-based tourism experiences, products, services and accommodations. There was already an estimated 10% decrease[163] in the number of tourists planning on visiting the Mediterranean region from June-November 2023. Tourists are traveling in shoulder seasons to avoid over-tourism	Tourism products and services are diversified, encompassing alternatives to "sun and sea" offerings by adding agritourism, ecotourism, gastro tourism, and other forms of tourism to their repertoire. Tourism seasons are lengthened into the "shoulder season" of spring and fall.	• Lack of diversity in tourism offerings (outside of sun, sand and sea tourism) • Lack of economic benefits going to tourism service providers (not located by coastlines) • Overtourism and strain on resources (in areas concentrated by the coast)	• Mitigating seasonality through diversified products and services • Adapting tourism seasons and diverting tourism flows • Ecotourism and agri-tourism development • Tourism decentralization policies and strategies

[163] The World Economic Forum, 2023. Rising global temperatures are already affecting the tourism industry - here's how. Online Article. Available online.

Challenge	Sub-challenges (risk of status quo)	Relevance to tourism sector	Current state	Desired future state	Gaps	Future actions needed to bridge gaps[162]
			and choosing destinations with favorable temperatures in the summer months.			
Climate change effects of warming, acidification and biodiversity loss in	Economic consequences for marine tourism and related ecosystem services.	Impact is felt in coastal tourism destinations that host activities such as diving, snorkeling, sea	Heat waves, induced by climate change, have led to losses of up to 80-90%[164] of	Policies and strategies account for the impacts that climate change is having on the marine	• Increased instances of biodiversity loss, invasive species and other threats that could upend water-based tourism	• Protections and projects that conserve and rehabilitate coral reefs

[164] Gómez-Gras D., Linares C., López-Sanz A., Amate R., Ledoux J. B., Bensoussan N., Drap P., Bianchimani O., Marschal C., Torrents O., Zuberer F., Cebrian E., Teixidó N., Zabala M., Kipson S., Kersting D. K., Montero-Serra I., Pagès-Escolà M., Medrano A., Frleta-Valić M., Dimarchopoulou D., López-Sendino P. and Garrabou J. 2021. Population collapse of habitat-forming species in the Mediterranean: a long-term study of gorgonian populations affected by recurrent marine heatwaves. Scientific Article. Available online.

Challenge	Sub-challenges (risk of status quo)	Relevance to tourism sector	Current state	Desired future state	Gaps	Future actions needed to bridge gaps[162]
coastal and marine waters		bathing and fishing.	coral reef biomass in the Mediterranean.	environment, with special protections and efforts made to conserve, preserve and combat climate change-induced biodiversity loss.	• Impact on jobs and livelihoods from reduced range, quality and volume of marine leisure activities such as fishing, scuba and snorkeling trips	• Habitat conservation through nature-based solutions • Efforts to reduce the number of alien and non-native species including apex predators like the lionfish • Education and support for product diversification (such as undersea sculpture parks) for marine tour operators , to preserve livelihoods and prevent negative tourism impacts concentrating on the few remaining areas with, for example, healthy corals

Annex A. Questionnaire

SECTION 1: Profile

1. What is your name (surname, first name)?

2. Which organisation do you work for?

3. Where do you work (city/destination)?

SECTION 2: Climate change and tourism-related impacts

The following section includes a series of questions on the impact that climate change is having on your destination and the tourism industry.

4. To what extent are climate challenges in my destination being addressed by the following:

(5 indicates that climate challenges are being addressed well and 1 indicates that climate challenges are not being addressed at all).

*1 2 3 4 5

- Strategies (i.e. international climate pledges and declarations),

- Policies (i.e. carbon neutrality by 2050),
- Initiatives (i.e. support for green energy transition),
- Other actions (i.e. community-led, grassroots organization etc).

- Strategies (i.e. international climate pledges and declarations),

- Policies (i.e. carbon neutrality by 2050),
- Initiatives (i.e. support for green energy transition),
- Other actions (i.e. community-led, grassroots organization etc).

4. Continued. Elaborate on your answer or list the methods (strategies, policies etc) that are helping your destination address climate challenges. *(Optional)*

5. How well are current initiatives addressing climate challenges in my region/destination in terms of the environment?

Environmental challenges are not being addressed. (1)

Environmental challenges are being addressed well. (5)

5. Continued. Elaborate on the above. (Optional)

6. How well are current initiatives addressing climate challenges in my region/destination in terms of the local community?

The local community is not being addressed. (1)

The local community is being addressed well. (5)

6. Continued. Elaborate on the above. (Optional)

7. How well are current initiatives addressing climate challenges in my region/destination in terms of the economy? *

Economic challenges are not being addressed. (1)

Economic challenges are being addressed well. (5)

7. Continued. Elaborate on the above. (Optional)

8. Do you think that climate change is an existential threat to your destination? Please share your opinion using the scale below.

Climate change is not an existential threat at all. (1)

Climate change is an extreme existential threat. (5)

8. Continued. Explain your ranking selection. *(Optional)*

9. Has climate change already started to change tourism patterns (arrivals, high/low season etc.) in your destination? Use the scale below to record your response.

No change at all (1)

Drastically changed (5)

9. Continued. List the changes being felt. *(Optional)*

10. Rate the impact of climate challenges on your destination. (5 indicates that the challenge is extreme and 1 indicates that the challenge is non-existent)

- Extreme temperatures
- Extreme weather events (flood/drought)
- Wildfires
- Water shortages
- Sea level rise
- Storm surges/inundation
- Coastal erosion
- Sea temperature rise
- Invasive alien species
- Loss of native species

10. Continued. Please add, or elaborate on, climate challenges that your destination is facing. *(Optional)*

11. Rate the impact of tourism challenges on your destination. (5 indicates that the challenge is extreme and 1 indicates that the challenge is non-existent)

- Water pollution
- Water consumption
- Energy consumption
- Land use changes
- Resource scarcity
- Waste management
- Biodiversity loss
- Marine disturbance (e.g. noise, anchoring)

11. Continued. Please add, or elaborate on, tourism challenges that your destination is facing. *(Optional)*

12. Rank the following barriers that your destination's tourism industry is facing in terms of combating climate change? (5 indicates that the barrier is extreme and 1 indicates that the barrier is non-existent)

- Lack of coordination between the public and private sector

- Information is not accessible or otherwise falls short of meeting your needs
- Lack of funding and/or economic incentives
- Inadequate selection of supporting tools for implementation, monitoring and/or compliance
- Lack of political support for climate action
- Lack of capacity and technical skills
- Lack of innovation and/or entrepreneurship
- Few or no alternative tourism business models

12. Continued. Elaborate on these barriers or barriers that were not mentioned. *(Optional)*

13. How would you describe the impact of your climate action efforts? (If not applicable, then write n/a)

14. What are some of the methods or tools that you are using/have used to track the impact of your climate action? *(Select all that apply)*

- Carbon emissions calculator
- Online platform (using data indicators)
- Government-run or EU platform
- Climate finance tracking tool
- Climate action guidelines (National, regional or international)
- Other:

14. Continued. Please elaborate on which of these tools have been the most effective. *(Optional)*

SECTION 3: Best practices identification

The following section aims to understand the types of best practices that would best support your destination's climate action efforts. The sub-section on nature-based solutions (NbS), an identified best practice in combating climate change, additionally provides questions on the types of NbS being used and the impact being felt in your destination.

15. Do you have any lessons from your destination or examples of other Mediterranean destinations that have overcome the barriers identified in the previous section? *(Optional)*

16. Which types of best practices do you think would best support your destination's climate ambitions? (Select all that apply)

- Nature-based solutions
- Knowledge sharing
- Training and capacity building
- Micro-loans
- Grassroots activation
- Tourism campaigns
- Developing and commercializing ecotourism products
- Diverting tourism flows
- Green transport and other sustainable mobility solutions
- Sustainable tourism experiences
- Reducing energy, waste and general consumption
- Other:

16. Continued. Elaborate on your response. *(Optional)*

17. Which methods are the most suitable for knowledge-sharing in your destination?

- Peer to peer learning
- Published information/newsletters
- Online networks
- Face-to-face networks (i.e. tourism forums/conferences)
- Electronic information/newsletters

17. Continued. Add or elaborate on suitable methods for knowledge sharing in your destination *(Optional)*

(Sub)-SECTION 3: Nature-based Solutions as a best practice

"Nature-based Solutions are defined as actions to protect, sustainably manage, and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits." (IUCN) These solutions are considered by the scientific community to be effective for both climate change mitigation and adaptation.

18. Respond to the following based on this statement: "Nature-based solutions (NbS) are being implemented in my destination".

I'm not aware of nature-based solutions being used. (1)

I know of multiple nature-based solutions being used. (5)

18. Continued. List the nature-based solutions that are being used in your destination. (Optional)

19. How effective have these NbS initiatives been in enhancing climate resilience and sustainability in your destination?

Nature-based solutions are not being used or have not been effective. (1)

Nature-based solutions have been very effective. (5)

19. Continued. Elaborate on your response, for instance, if nature-based solutions have recently been implemented or if results have not yet been recorded. (Optional)

SECTION 4: Barriers and solutions

The series of questions included in the following section aim to identify the challenges and barriers preventing climate action in your destination.

20. Rate how well the following initiatives, policies, cross-sector collaborations and strategies support you and impact the work in your destination. *(5 indicates that the following has a very large impact and 1 indicates that impact is non-existent)*

- Paris Agreement
- Glasgow Declaration
- European Green Deal (EGD)
- EU Transition Pathway for Tourism
- EU Blue Economy Report
- Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention)
- Mediterranean Strategy for Sustainable Development 2016-25 (MSSD)
- Regional Action Plan on Sustainable Consumption and Production in the Mediterranean (SCP AP)
- Protocol on Integrated Coastal Zone Management in the Mediterranean (ICZM Protocol)
- Conceptual Framework for Marine Spatial Planning in the Mediterranean

- Blue Med Initiative
- Interreg MED
- European Neighbourhood Policy (ENP)
- EU Tourism Dashboard

20. Continued. What initiatives or policies support you and/or have an impact on your destination? *(Optional)*

21. How would you describe the level of stakeholder engagement in and/or the general awareness of climate issues in the tourism industry in your region/destination?

There is no awareness at all, and no actions being taken. (1)

There is a substantial awareness of the impact of climate change on tourism and stakeholders are taking action. (5)

21. Continued. Elaborate on your answer if desired. (Optional)

22. To what extent do you consider the following to be barriers in replicating initiatives, projects and other climate actions in your destination? *(5 indicates that the barrier is very significant and 1 indicates that the barrier is non-existent).*

- Capacity within your team (Human resources, skill level, knowledge etc)

- Capacity within your destination (Access to funding, skilled experts, human resources etc)
- Associated costs (Funding)
- Access to technical skills and knowledge (Local expertise)
- Community engagement (Community that supports climate action)

- Bureaucracy (Red tape/excessive paperwork)

22. Continued. Elaborate on the barriers that you are facing or imagine that you would face with scaling or replicating climate action projects. *(Optional)*

23. Rate to what extent you believe the following gaps need to be addressed in order to further climate action in your destination? (5 indicates the gaps need to be addressed as a priority and 1 indicates the gaps do not need addressing).

- Technical support
- Financial support (Funding)
- Capacity building (Knowledge-transfer, upskilling, "train-the-trainer" modeling etc)
- Incentives (Financial, tax credits or other)
- Knowledge-sharing (Mentorship, expertise, guidance, networking)
- Local support for climate action policies and strategies

23. Continued. Elaborate on the gaps that need addressing. *(Optional)*

24. Do you have any innovations you wish to share in furthering climate action in the tourism sector?

- Yes
- No

24. Continued. If yes, please elaborate on the innovations. *(Optional)*

25. How satisfied are you, as a stakeholder, with your destination's action in the tourism sector with regards to the following: *(5 indicates being very satisfied, and 1 being not satisfied at all).*

- *Addressing climate change*
- *Building climate resilience*

25. Continued. Are there any actions related to addressing climate change or building climate resilience that you are involved in? *(Optional)*

Thank you once again for taking the time to complete this survey, your input is very much appreciated. Do you have any other remarks or comments about this questionnaire that you would like to share? *(Optional)*