



Methodological frameworks for Regions and Destinations

for assessing the main coastal
tourism-related issues concerning Climate
Change

The Consortium:

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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.

Climate risk concept: climate risk is potential for adverse impact on human and ecological systems because of dynamic interactions between climate-related hazards with the exposure and vulnerability.

Climate-related hazard: the potential occurrence of natural or human-induced physical events or trends that may cause adverse impacts on life, health, property, infrastructure, services and environmental capital.

1. INTRODUCTION

1.1 Objective within the Project Framework

The NaTour4CChange project, of which Plan Bleu is a partner, seeks to enhance the resilience and sustainability of coastal tourism destinations in the Mediterranean region through comprehensive climate action plans and strategies, with an ecosystem-based approach. This activity, coordinated by Plan Bleu, specifically aims to develop two methodological frameworks—one for the Regional level and another for the Destination level. These frameworks are designed to assess climate change adaptation and mitigation in coastal tourism, providing actionable, evidence-based guidelines to improve resilience and sustainability.

1.2 State of the Art: Tourism and Climate Change in the Mediterranean Region

The Mediterranean region, renowned for its rich biodiversity, cultural heritage, and attractive coastlines, is a prime destination for global tourism. However, it is also identified as a climate change hotspot, facing significant environmental and socio-economic challenges due to its high vulnerability to climate impacts. The following overview provides a snapshot of the current state of tourism and climate change in the Mediterranean, highlighting the key challenges and opportunities for adaptation and mitigation.

1.2.1 Climate Change Impacts on Tourism

Climate change profoundly affects the tourism sector in the Mediterranean through altered weather patterns, environmental degradation, and increased operational risks. Key impacts include:

1. **Temperature Rise and Precipitation Changes:** Elevated temperatures and changing precipitation patterns disrupt traditional tourism seasons and activities. For instance, rising temperatures and reduced snowfall threaten winter tourism destinations, shortening skiing seasons and increasing reliance on artificial snowmaking.
2. **Sea-Level Rise and Coastal Erosion:** Coastal tourism faces significant threats from sea-level rise, increasing the risks of flooding and coastal erosion. This directly impacts infrastructure and natural attractions, escalating maintenance and repair costs.
3. **Degradation of Marine Ecosystems:** Marine-based tourism activities, such as diving and snorkeling, are threatened by coral bleaching and ocean acidification, which diminish the attractiveness of marine ecosystems.
4. **Biodiversity Loss:** The loss of biodiversity and degradation of natural landscapes detract from the overall tourism experience, impacting visitor

satisfaction and reducing the economic viability of destinations reliant on natural attractions.

1.2.2 Challenges in Adaptation and Mitigation

Coastal tourism destinations in the Mediterranean face several critical challenges in adapting to climate change:

- **Financial Constraints:** Significant financial investments are required to upgrade infrastructure and cope with extreme weather events and rising sea levels. These investments are often beyond the reach of many destinations, particularly in developing regions.
- **Uncertainty in Climate Impacts:** The unpredictability of climate change impacts complicates effective planning and decision-making. The lack of accurate data and predictive models makes it challenging to formulate robust adaptation strategies.
- **Institutional and Governance Barriers:** Limited coordination and overlapping responsibilities among local authorities hinder cohesive climate strategies. Effective adaptation requires coordinated action across multiple governance levels and the engagement of diverse stakeholders.
- **Balancing Economic and Sustainability Goals:** Tourism businesses often prioritize immediate financial gains over long-term sustainability investments, delaying necessary adaptation measures. Integrating climate policies into existing tourism strategies is also challenging due to the sector's dependence on natural resources and climatic conditions.

1.2.3 Opportunities for Enhancing Climate Resilience

Despite these challenges, there are several opportunities for enhancing climate resilience in coastal tourism:

- **Promoting Sustainable Practices:** Eco-tourism, advanced water-saving solutions in accommodations, seasonal water storage, and blue infrastructure (swimming pools, decorative pools, artificial ponds) can reduce environmental impacts and attract eco-conscious tourists. Extending tourist seasons in cooler regions can balance economic impacts.
- **Adaptive Management Strategies:** Flexible infrastructure that can withstand extreme weather and nature-based solutions, such as the restoration and management of coastal wetlands and lagoons, can protect shorelines and enhance biodiversity. *Posidonia Oceanica* plays a crucial role in carbon sequestration, while other nature-based solutions like dune restoration can help with the adaptation of the Mediterranean coast. Additionally, structural measures such as planning for different land uses in response to sea level changes, relocating coastal promenades and infrastructure, and installing raised wooden beach elements can be considered. Soft measures, including education for adaptive management, local strategy development, monitoring, and fostering partnerships from

government to local communities, are essential for comprehensive adaptive management.

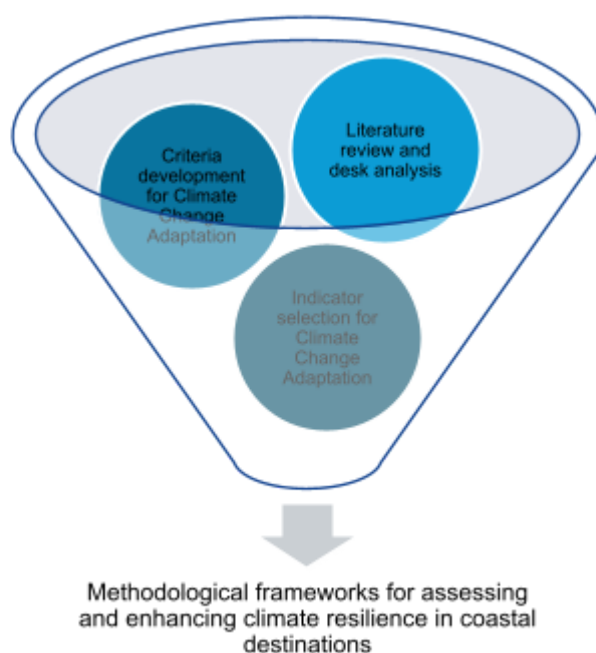
- **Investing in Low-Carbon Technologies:** Renewable energy projects and energy-efficient technologies in tourist facilities can significantly reduce greenhouse gas emissions, aligning with global climate goals.
- **Strengthening Community Involvement:** Community-based tourism and local stakeholder engagement ensure that adaptation measures are culturally appropriate and widely supported, leading to more effective implementation.
- **Improving Governance:** Better coordination and stakeholder engagement are essential for effective climate strategies. Public-private partnerships can pool resources and knowledge to implement effective adaptation strategies.
- **Integrating Climate Considerations into Planning:** Ensuring that tourism development plans incorporate climate risk assessments can help destinations better prepare for and respond to climate impacts.

While the Mediterranean region faces significant challenges due to climate change, proactive adaptation and mitigation strategies can enhance the resilience and sustainability of its coastal tourism sector. By leveraging opportunities for sustainable practices, adaptive management, and improved governance, Mediterranean destinations can mitigate adverse climate impacts and ensure their long-term viability.

1.3 Implemented Methodology to develop the document

The activity employed a multi-faceted methodology across three key areas: *literature review*, *criteria development*, and *indicator selection*. Each of these components contributed to the creation of robust frameworks for assessing and enhancing climate resilience in coastal tourism.

FIGURE 1 IMPLEMENTED METHODOLOGY



1- Literature Review and Desk Analysis:

- a. **Objective:** Establish a comprehensive knowledge base on climate change impacts on the tourism sector.
- b. **Process:** Conducted a systematic literature review, encompassing existing initiatives, projects, methodologies, and publications related to climate change and tourism. This analysis included recommendations from past Interreg Med projects, providing a solid baseline of knowledge that identifies key challenges, opportunities, and best practices.
- c. **Outcome:** A detailed understanding of the current landscape of climate change impacts on Mediterranean coastal tourism, informing the subsequent development of criteria and indicators.

2- Criteria Development for Climate Change Adaptation:

- a. **Objective:** Create a unified and adaptable set of criteria for assessing climate change adaptation strategies in tourism that are applicable at both regional and destination levels.
- b. **Process:**
 - i. **Stakeholder Identification and Engagement:** Involved local governments, tourism operators, environmental NGOs, community representatives, and academic experts to ensure diverse perspectives.
 - ii. **Needs Assessment and Gap Analysis:** Conducted survey to gather insights on current challenges and gaps.
 - iii. **Review of Existing Frameworks and Best Practices:** Analyzed current adaptation frameworks and successful case studies.
 - iv. **Development of Draft Criteria:** Synthesized insights to formulate an initial set of criteria.
 - v. **Stakeholder Validation and Refinement:** Iteratively refined the criteria based on stakeholder feedback.
- c. **Outcome:** A comprehensive set of criteria covering environmental sustainability, economic viability, socio-cultural integrity, governance, and resilience building.

3- Indicator Selection for Climate Change Adaptation:

- a. **Objective:** Develop a set of practical, measurable indicators tailored for the tourism sector to monitor adaptation efforts over time and across different geographical locations.

b. **Process:**

- i. **Systematic Literature Review:** Compiled indicators used in climate change adaptation, focusing on those relevant to tourism.
 - ii. **Expert Consultations:** Gathered insights from climate change and tourism experts to ensure practical applicability.
 - iii. **Engagement with Project Partners:** Facilitated discussions to align indicators with project objectives and capacities.
 - iv. **Alignment with CLIMATE-ADAPT:** Cross-referenced identified indicators with those listed on the CLIMATE-ADAPT platform.
 - v. **Indicator Refinement and Selection:** Refined the list based on feedback and practical considerations.
- c. **Outcome:** A curated set of indicators encompassing physical and environmental, economic, sociocultural, governance and policy, and biodiversity and ecosystem health dimensions.

This integrated methodology ensured that the developed frameworks are robust, evidence-based, and tailored to the specific needs of Mediterranean coastal tourism destinations and regions.

2. GENERAL METHODOLOGY FOR ASSESSING CLIMATE CHANGE IMPACTS AND DEVELOPING STRATEGIES

2.1 Methodology for Assessing Climate Change Impacts and Developing Strategies – Step-by-Step Guide

Developing a robust methodology for assessing climate change impacts is crucial for enhancing the resilience and sustainability of coastal tourism destinations and regions. The NaTour4CChange project focuses on building this resilience through comprehensive climate action plans and strategies. The following methodology outlines a structured approach for pilot destinations and regions to assess climate change impacts, characterize risks, and develop effective management strategies. This methodology is designed to provide actionable, evidence-based guidelines, ensuring that these areas can continue to thrive despite the challenges posed by climate change.

The rationale behind this methodology is to equip destinations and regions with the tools and knowledge necessary to understand and mitigate the impacts of climate change. Given the Mediterranean region's vulnerability to climate change, it is essential to develop a comprehensive framework that addresses both immediate and long-term risks. By involving diverse stakeholders, utilizing advanced tools such as GIS, and continuously monitoring and adjusting strategies, this approach aims to create a resilient tourism sector that can adapt to changing environmental conditions.

This methodology should be implemented by a collaborative team comprising pilot regions/destination representatives, local government officials, tourism operators (businesses), environmental NGOs, and community representatives. Regional authorities can provide overarching support and coordination, ensuring alignment with broader climate adaptation and mitigation goals.

Step 1: Conducting a Comprehensive Climate Change Impact Assessment

The first step involves a thorough baseline assessment to collect historical climate data and current climate observations. This includes analyzing past extreme weather events and their impacts on local ecosystems, infrastructure, and communities. Engaging stakeholders is crucial in this phase, as local communities, businesses, and governments can provide valuable insights into observed changes and impacts. Conducting workshops and surveys helps gather qualitative data on perceived vulnerabilities, ensuring a comprehensive understanding. Vulnerability mapping using GIS tools identifies sectors and populations at risk, creating visual representations of these vulnerabilities. Documenting and quantifying current impacts on ecosystems, economies, and health through local and regional studies validates findings and ensures accuracy.

1. **Baseline Assessment:**

- Collect historical climate data and current climate observations.
- Analyze past extreme weather events and their impacts on local ecosystems, infrastructure, and communities.

2. **Stakeholder Engagement:**

- Involve local communities, businesses, and governments in identifying observed changes and impacts.
- Conduct workshops and surveys to gather qualitative data on perceived changes and vulnerabilities.
- Engage diverse stakeholders to ensure diverse perspectives and comprehensive understanding.

3. **Vulnerability Mapping :**

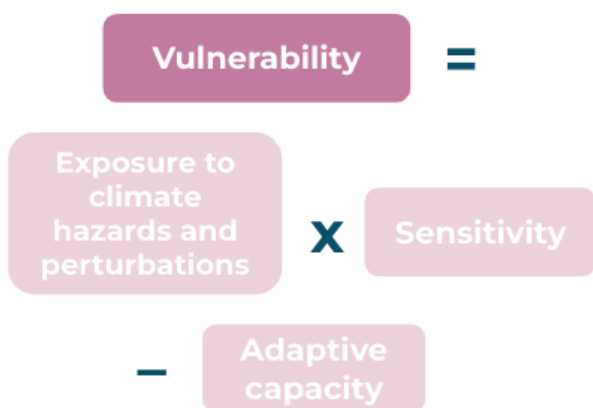
- Identify vulnerable sectors (e.g., agriculture, tourism, water resources) and populations (e.g., low-income groups, elderly).
- Use tools such as GIS to create vulnerability maps highlighting areas at risk.

4. **Current Impact Assessment:**

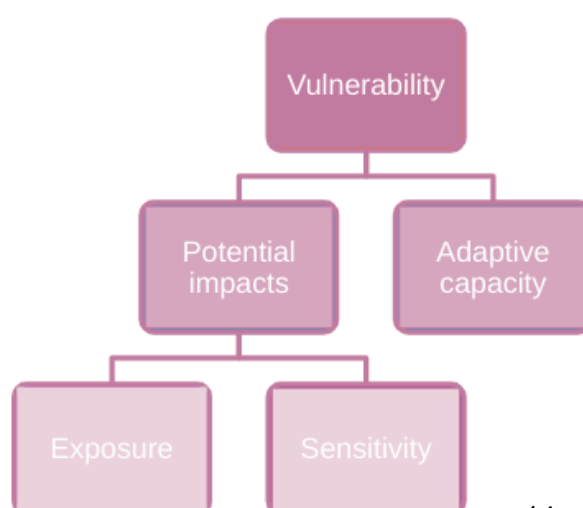
- Document and quantify current impacts on ecosystems, economies, and health using appropriate data, such as meteorological, hydrological, spatial data, and information on infrastructure and socio-economic challenges.
- Utilize local and regional studies to validate findings and ensure accuracy.

Let's Focus on Vulnerability Mapping

What is Vulnerability?



How does it decompose?



United National Development Programme. (2010). Mapping Climate Change Vulnerability and Impact Scenarios. A Guidebook for Sub-National Planners.

To determine and map the sensitivity of a territory, it requires to ask a series of guiding questions, which will help us to structure the assessment process:

1. What are the projected hazards and perturbations under climate change?

- ▶ What is likely to happen to temperature patterns (average and variance) in the future?
- ▶ What is likely to happen to rainfall events (average and variance) in the future?
- ▶ Are extreme events (such as droughts, floods, or cyclones) likely to increase in frequency and/or magnitude?
- ▶ What is likely to happen to sea level?

2. What is the sensitivity to the projected hazards and perturbations?

- ▶ How will existing sectors of society (population, agriculture, water, energy, tourism, fisheries, health,

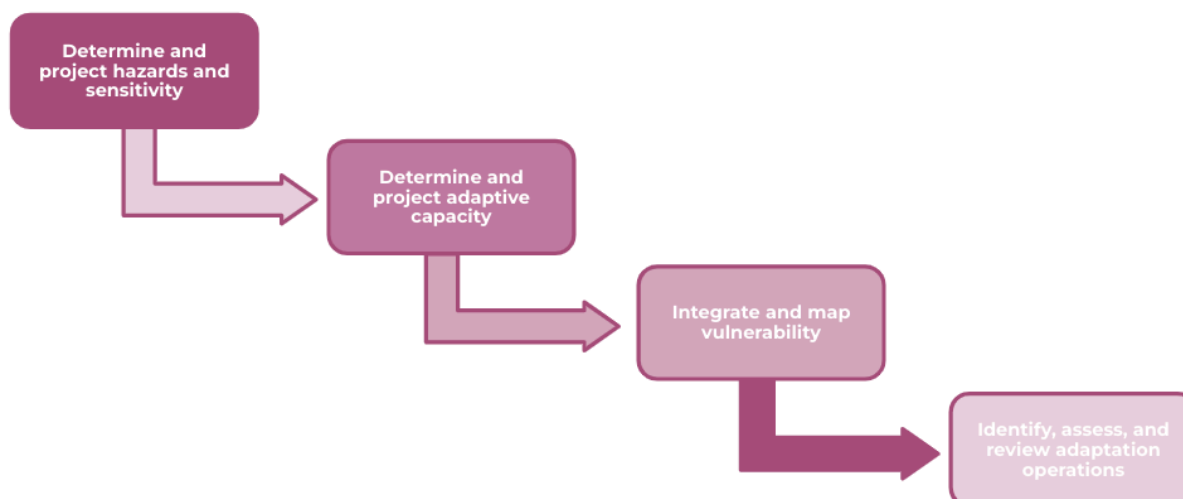
and biodiversity) be affected by these hazards and perturbations?

- ▶ Are there current socio-economic trends that interact with these sensitivities (and in particular run the risk of amplifying them)?

3. What is the level of adaptive capacity?

- ▶ How will society be able to cope with and manage these changes? Will they be able to make changes through policies and activities that minimize adverse impacts (or make the most of the opportunities presented)? Or will the expected changes increase their vulnerability?
- ▶ Can adaptation take place at sector level, or is there a need for more structural changes within society (e.g., economic diversification)?

Key Steps for Mapping Vulnerability and Identifying Adaptation Options:



Step 2: Characterizing and Communicating Risk

Understanding the dynamic nature of risk is essential. Climate hazards, exposure, and vulnerability change over time, influenced by socio-economic factors and decision-making. Applying IPCC-calibrated uncertainty and confidence language helps describe knowns and unknowns about potential adverse consequences¹. This transparent assessment of uncertainties aids in effective communication. Using the hazard-exposure-vulnerability framework², risks are assessed based on interactions between climate-related hazards and exposed systems. This framework ensures that assessments consider changes in exposure and vulnerability, not just the frequency and magnitude of hazards.

1. Dynamic Nature of Risk:

- o Understand that risk is dynamic, influenced by changing climate hazards, exposure, and vulnerability over time.
- o Recognize the role of socio-economic changes and decision-making in altering risk levels³.

2. Uncertainty and Confidence:

- o Apply IPCC-calibrated uncertainty and confidence language to describe knowns and unknowns about potential adverse consequences.
- o Provide a transparent assessment of uncertainties in climate projections, exposure, and vulnerability⁴.

¹ The IPCC uses five confidence levels, ranging from very low to very high, indicated in italics (e.g., *medium confidence*). Likelihood of outcomes is expressed with terms such as virtually certain (99-100% probability), very likely (90-100%), likely (66-100%), more likely than not (>50-100%), about as likely as not (33-66%), unlikely (0-33%), very unlikely (0-10%), and exceptionally unlikely (0-1%). Additional terms like extremely likely (95-100%) and extremely unlikely (0-5%) are used as needed, also typeset in italics (e.g., *very likely*). Source:

https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_FullVolume.pdf

² Cardona, O. D., van Aalst, M. K., Birkmann, J., Fordham, M., McGregor, G., Perez, R., Pulwarty, R. S., Schipper, E. L. F., & Sinh, B. T. (2012). *Determinants of risk: Exposure and vulnerability*. In C. B. Field, V. Barros, T. F. Stocker, D. Qin, D. J. Dokken, K. L. Ebi, M. D. Mastrandrea, K. J. Mach, G.-K. Plattner, S. K. Allen, M. Tignor, & P. M. Midgley (Eds.), *Managing the risks of extreme events and disasters to advance climate change adaptation* (pp. 65-108). Cambridge University Press.

https://www.ipcc.ch/site/assets/uploads/2018/03/SREX-Chap2_FINAL-1.pdf

³ Vulnerability and risk assessments use diverse methods, from global indicator-based evaluations to local participatory approaches, each serving different objectives. Local participatory methods have been adapted to address climate change risks. Challenges include data scarcity and the complex dynamics of community capacities and vulnerabilities. Balancing sophisticated scientific inputs with simplicity and scalability is crucial. Guidance on assessing climate vulnerability and risk management at the community level is available in Chapter 5 of the IPCC's 2012 report:

Intergovernmental Panel on Climate Change (IPCC). (2012). *Managing the risks of extreme events and disasters to advance climate change adaptation*. In C. B. Field, V. Barros, T. F. Stocker, D. Qin, D. J. Dokken, K. L. Ebi, M. D. Mastrandrea, K. J. Mach, G.-K. Plattner, S. K. Allen, M. Tignor, & P. M. Midgley (Eds.), *A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change*. Cambridge University Press.

⁴ The methods for risk and vulnerability assessments can be categorized into two types: top-down and bottom-up. Top-down methods rely on quantitative data, such as census data and downscaled climate models, and often involve mapping. Bottom-up methods utilize local knowledge to identify risks and are typically qualitative in nature. (Source: European Union, Climate-ADAPT. Retrieved from <https://climate-adapt.eea.europa.eu/en/knowledge/tools/urban-ast/step-2-4>).

3. Hazard-Exposure-Vulnerability Framework⁵:

- Use this framework to assess risks resulting from climate-related hazards interacting with exposed and vulnerable systems.
- Ensure assessments include changes in exposure and vulnerability regarding current and future climate, not just hazard frequency and magnitude.

Step 3: Developing Risk Management Strategies

Effective risk management strategies are developed by prioritizing feasible adaptation measures based on outlined criteria. These measures include nature-based solutions, infrastructure improvements, and policy changes. Establishing a monitoring system based on defined indicators tracks the effectiveness of implemented measures, allowing for adjustments based on monitoring results and new scientific findings. Promoting resilience through community engagement, education, and capacity building is crucial. Supporting diverse and flexible approaches enhances social, economic, and environmental resilience, ensuring long-term sustainability.

1. Implement Adaptation Measures:

- ***Based on the outlined criteria for CC adaptation and mitigation, develop and prioritize feasible strategies to reduce exposure and vulnerability (select the most relevant criteria P.24).***
- Include nature-based solutions, infrastructure improvements, and policy changes in adaptation plans.

2. Monitoring and Evaluation:

- ***Based on the indicators outlined, establish a monitoring system to track the effectiveness of implemented measures (select the most relevant indicators P.36).***
- Adjust strategies based on monitoring results and new scientific findings.

3. Promote Resilience:

- Foster resilience through community engagement, education, and capacity building.
- Enhance social, economic, and environmental resilience by supporting diverse and flexible approaches.

⁵ Cardona, O. D., van Aalst, M. K., Birkmann, J., Fordham, M., McGregor, G., Perez, R., Pulwarty, R. S., Schipper, E. L. F., & Sinh, B. T. (2012). Determinants of risk: Exposure and vulnerability. In C. B. Field, V. Barros, T. F. Stocker, D. Qin, D. J. Dokken, K. L. Ebi, M. D. Mastrandrea, K. J. Mach, G.-K. Plattner, S. K. Allen, M. Tignor, & P. M. Midgley (Eds.), *Managing the risks of extreme events and disasters to advance climate change adaptation* (pp. 65-108). Cambridge University Press.
https://www.ipcc.ch/site/assets/uploads/2018/03/SREX-Chap2_FINAL-1.pdf

2.2 Purpose of the Criteria and Indicators

In the face of escalating climate vulnerabilities, particularly within the Mediterranean region, it is paramount to establish robust criteria and indicators for climate change adaptation and mitigation. These tools are designed to guide coastal tourism destinations in their efforts to address and adapt to the impacts of climate change, ensuring the sustainability and resilience of tourism activities.

The criteria provide a comprehensive framework for assessing and implementing adaptation and mitigation strategies at both the destination and regional levels. By focusing on localized strategies and broader regional coordination, the criteria help destinations address unique challenges while promoting cohesive strategies that enhance overall resilience.

The selected indicators provide critical insights into the impacts of climate change on tourism, aiding in formulating effective adaptation strategies. These indicators are essential for consistently tracking climate impacts, informing data-driven decision-making, and supporting policy development.

Policymakers should prioritize a set of mandatory indicators at both destination and regional levels to effectively guide climate change adaptation and mitigation in coastal tourism, ensuring sustainability and resilience. Additionally, incorporating optional indicators allows for a more nuanced understanding of specific climate risks and environmental conditions, enhancing targeted adaptation strategies. This balanced approach supports the development of robust, effective, and contextually relevant strategies that enhance the sustainability and resilience of Mediterranean coastal tourism.

The criteria and indicators are intrinsically linked, serving complementary roles in the assessment and implementation of climate adaptation and mitigation strategies. Criteria outline the key areas and specific goals for adaptation and mitigation efforts, providing a structured approach for destinations to follow. Indicators, on the other hand, offer measurable parameters that help track progress towards these goals, providing concrete data to inform decision-making and strategic planning.

For instance, criteria such as environmental sustainability, economic viability, and socio-cultural integrity are supported by specific indicators that measure relevant aspects like changes in annual temperature, tourism revenue variability, and community attitudes. This integration ensures that adaptation and mitigation efforts are both guided by clear objectives and supported by empirical data, facilitating continuous improvement and accountability.

The criteria and indicators are specifically designed to aid tourism destinations and regions in their climate action, ensuring they are relevant and effective. The reflection on their importance and the explanation of their rationale link both criteria and indicators to nature-based tourism development. This approach provides a framework for sustainable practices while offering concrete, measurable metrics to monitor progress. By emphasizing the critical role of

natural ecosystems in enhancing resilience, it supports the implementation of Nature-based Solutions to address climate challenges at both destination and regional levels.

2.3 Selecting Relevant Criteria and Indicators

It is crucial for stakeholders to understand that not all criteria and indicators are equally relevant to every destination. The Mediterranean region encompasses a diverse range of coastal environments, each with unique characteristics and challenges. Therefore, stakeholders should prioritize the most relevant criteria and indicators based on their specific territorial contexts.

Key Steps for Selection:

- **Assess Local Vulnerabilities and Strengths:** Identify the primary climate drivers and their induced direct and indirect impacts affecting the destination, such as temperature changes, sea-level rise, or extreme weather events. Consider local socio-economic conditions and environmental features that may influence - positively and/or negatively - the effectiveness of adaptation strategies.
- **Engage Stakeholders:** Involve local communities, tourism operators, policymakers, and other relevant parties in the selection process. Their insights and knowledge are crucial for understanding local needs and ensuring the acceptance and feasibility of selected criteria and indicators.
- **Align with Existing Frameworks:** Where possible, integrate new criteria and indicators with existing monitoring and evaluation systems. This alignment helps leverage current data and resources, facilitating smoother implementation and reducing redundancy.
- **Prioritize Feasibility and Impact:** Select criteria and indicators that are both practical to implement and likely to have a significant impact on enhancing resilience and sustainability. Consider resource availability, technical capacity, and potential barriers to implementation.
- **Iterative Review and Adaptation:** Regularly review and adjust the selected criteria and indicators based on new data, stakeholder feedback, and evolving climate conditions. This iterative process ensures that the adaptation and mitigation strategies remain effective and relevant over time.

By carefully selecting the most relevant criteria and indicators, stakeholders can tailor their adaptation and mitigation efforts to their specific needs and contexts, enhancing the overall resilience and sustainability of Mediterranean coastal tourism destinations. This targeted approach not only addresses immediate climate challenges but also supports long-term sustainability and economic viability in the face of changing climatic conditions.

3. ASSESSMENT MANUAL FOR REGIONS

3.1 Criteria Section

The criteria for assessing climate change mitigation and adaptation efforts are essential tools for regions to develop comprehensive and effective tourism strategies. These criteria provide a structured approach to ensure that all critical aspects of climate resilience and sustainability are addressed. Integrating these criteria into regional tourism strategies helps regions systematically evaluate their efforts, identify gaps, and implement targeted actions to mitigate and adapt to climate change. This integration ensures that climate considerations are embedded into the overall strategic planning process, making it easier to achieve long-term sustainability goals. The detailed process of criteria development is provided in Appendix 1.

How to Integrate Criteria into Strategic Planning:

1. **Align Goals and Objectives:** Regions should align their tourism goals and objectives with climate adaptation and mitigation criteria. This means setting clear, measurable targets related to reducing emissions, enhancing resilience, and protecting natural and cultural resources.
2. **Incorporate Criteria into Policy Frameworks:** Ensure that regional policies and regulations reflect the criteria. This can involve revising existing policies or creating new ones that support sustainable tourism practices and climate resilience.
3. **Engage Stakeholders:** Involve a broad range of stakeholders, including local communities, tourism operators, and policymakers, in the planning process. Their input ensures that the criteria are relevant and actionable.
4. **Develop Action Plans:** Create detailed action plans that outline specific steps to meet the criteria. These plans should include timelines, responsible parties, and required resources.
5. **Monitor and Evaluate Progress:** Use the criteria as benchmarks to regularly monitor and evaluate progress. This helps in identifying areas for improvement and adjusting strategies as needed.

Criteria for Mitigation Efforts:

Regions should focus on promoting renewable energy, improving energy efficiency, and encouraging sustainable transportation options. Implementing sustainable practices, such as sustainable agriculture and improved waste management, helps minimize environmental impact. Creating a supportive regulatory environment through the development and enforcement of climate policies and providing economic incentives for sustainable practices is crucial. Engaging the community in climate action through public awareness campaigns and fostering stakeholder collaboration ensures broader support and participation.

Criteria for Adaptation Efforts:

Protecting and enhancing natural ecosystems involves monitoring environmental changes, using flexible and reversible measures, and promoting soft engineering solutions. Ensuring economic resilience requires developing cost-effective adaptation measures, building climate-resilient infrastructure, and creating rapid recovery plans. Maintaining socio-cultural integrity means involving local communities in planning, increasing public education and awareness, and integrating traditional knowledge into adaptation strategies. Strengthening institutional frameworks includes incorporating climate change into tourism planning, enhancing crisis management, and developing supportive policies and regulations. Building resilience involves promoting flexible infrastructure and providing financial incentives and climate services. Efficient water management can be achieved through water-saving technologies, wastewater reuse, and conservation programs.

3.2 Indicators Section

Indicators are essential for measuring the progress and effectiveness of climate change mitigation and adaptation efforts. By integrating these indicators into regional tourism strategies, regions can monitor their performance, track changes over time, and make data-driven decisions to improve their resilience and sustainability. These indicators provide a comprehensive overview of the region's climate-related challenges and successes, helping to inform policy adjustments and strategic planning. The detailed process of indicator development is provided in Appendix 2.

How to Integrate Indicators into Strategic Planning:

1. **Define Key Indicators:** Identify key indicators from the list that align with the region's strategic objectives and criteria.
2. **Set Baselines and Targets:** Establish baseline data for each indicator and set realistic targets. This provides a starting point for measuring progress.
3. **Incorporate Indicators into Monitoring Frameworks:** Integrate these indicators into existing monitoring and evaluation frameworks. This ensures that data collection and analysis are systematic and consistent.
4. **Regular Reporting:** Use indicators to produce regular progress reports. These reports should be shared with stakeholders to maintain transparency and accountability.
5. **Adjust Strategies Based on Data:** Use the data collected through indicators to make informed decisions and adjust strategies as needed. This helps in responding to new challenges and opportunities effectively.

Indicators for Mitigation Efforts:

Renewable energy usage rates, improvements in energy efficiency, and reductions in tourism-related emissions should be measured. Indicators should also track the adoption of sustainable agriculture practices, waste management efficiency, and resource consumption levels. Policy and legislation indicators include the number of climate policies implemented, economic incentives

provided, and alignment with national and international standards. Community engagement and education indicators should measure public awareness levels, the frequency of stakeholder collaboration, and the integration of community feedback.

Indicators for Adaptation Efforts:

Environmental sustainability indicators include changes in annual temperature, the frequency of hot days, and sea-level rise data. Economic viability indicators track tourism revenue variability, the cost of climate adaptation, and economic recovery speed post-climate events. Socio-cultural integrity indicators assess tourist satisfaction levels, local community attitudes towards tourism, and the effectiveness of public awareness campaigns. Governance and policy support indicators measure the implementation of climate adaptation policies, funding for adaptation projects, and crisis management effectiveness. Resilience building indicators include infrastructure flexibility and removability, financial incentives for adaptation, and the availability of climate services. Sustainable water use indicators track water usage efficiency, wastewater reuse rates, and the success of conservation programs.

4. ASSESSMENT MANUAL FOR DESTINATIONS

4.1 Criteria Section

The criteria for assessing climate change adaptation efforts are essential for destinations to create robust tourism strategies that address climate risks. These criteria help destinations systematically evaluate their adaptation efforts, ensuring all critical areas are covered. By integrating these criteria into tourism strategies, destinations can enhance their resilience, protect their unique natural and cultural assets, and secure the long-term sustainability of their tourism industry.

How to Integrate Criteria into Strategic Planning:

1. **Align Destination Goals:** Ensure that the destination's tourism goals align with climate adaptation criteria. This includes setting targets for environmental sustainability, economic resilience, and socio-cultural integrity.
2. **Revise Policies and Practices:** Incorporate the criteria into local policies and tourism management practices. This may involve updating existing policies or creating new ones that support sustainable tourism and climate resilience.
3. **Engage Local Stakeholders:** Involve local communities, tourism operators, and other stakeholders in the planning process. Their involvement ensures the criteria are relevant and that there is local buy-in.
4. **Develop Detailed Plans:** Create action plans that detail specific steps to meet the criteria, including timelines and responsible parties.
5. **Monitor and Evaluate:** Regularly monitor progress against the criteria and make adjustments as needed to ensure continuous improvement.

Criteria for Adaptation Efforts:

Destinations should focus on protecting and enhancing natural ecosystems by monitoring environmental changes, using flexible and reversible measures, and promoting soft engineering solutions. Ensuring economic resilience involves developing cost-effective adaptation measures, building climate-resilient infrastructure, and creating rapid recovery plans. Maintaining socio-cultural integrity means involving local communities in planning, increasing public education and awareness, and integrating traditional knowledge into adaptation strategies. Strengthening institutional frameworks includes incorporating climate change into tourism planning, enhancing crisis management, and developing supportive policies and regulations. Building resilience involves promoting flexible infrastructure and providing financial incentives and climate services. Efficient water management can be achieved through water-saving technologies, wastewater reuse, and conservation programs.

4.2 Indicators Section

Indicators are vital for measuring the effectiveness of climate change adaptation efforts at the destination level. By integrating these indicators into tourism strategies, destinations can monitor their progress, identify areas for improvement, and make informed decisions to enhance their resilience and sustainability. These indicators provide valuable insights into the destination's climate-related challenges and achievements, guiding continuous improvement in adaptation efforts.

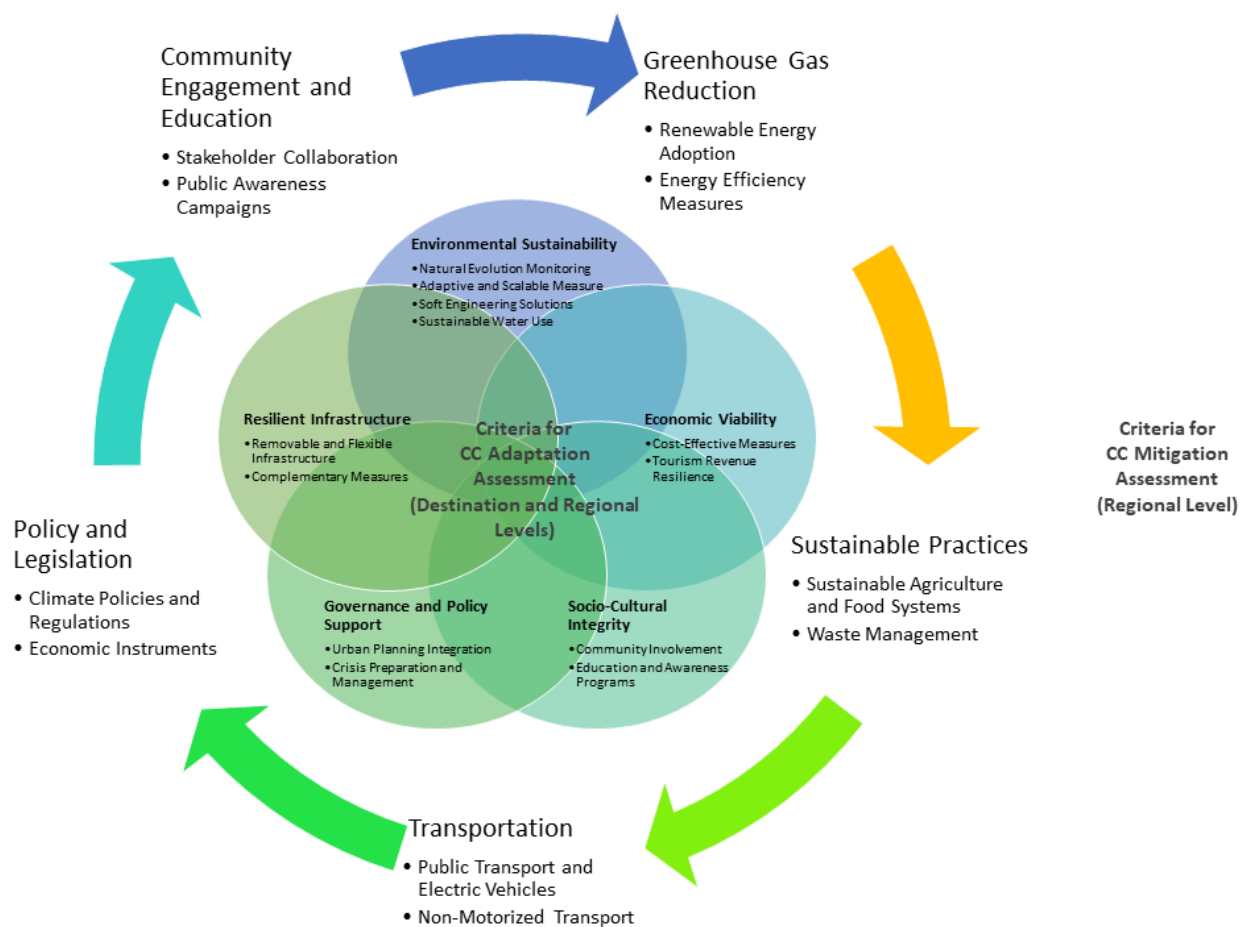
How to Integrate Indicators into Strategic Planning:

1. **Identify Key Indicators:** Select indicators from the list that reflect the destination's strategic objectives and adaptation criteria.
2. **Establish Baselines:** Gather baseline data for each indicator to provide a reference point for measuring future progress.
3. **Integrate into Monitoring Systems:** Incorporate the indicators into the destination's existing monitoring and evaluation systems to ensure consistent data collection and analysis.
4. **Regular Reporting:** Use the indicators to produce regular progress reports. Share these reports with stakeholders to ensure transparency and foster trust.
5. **Use Data for Improvement:** Analyze the data collected through indicators to identify trends, assess the effectiveness of current strategies, and make necessary adjustments.

Indicators for Adaptation Efforts:

Environmental sustainability indicators include changes in annual temperature, the frequency of hot days, and sea-level rise data. Economic viability indicators track tourism revenue variability, the cost of climate adaptation, and economic recovery speed post-climate events. Socio-cultural integrity indicators assess tourist satisfaction levels, local community attitudes towards tourism, and the effectiveness of public awareness campaigns. Governance and policy support indicators measure the implementation of climate adaptation policies, funding for adaptation projects, and crisis management effectiveness. Resilience building indicators include infrastructure flexibility and removability, financial incentives for adaptation, and the availability of climate services. Sustainable water use indicators track water usage efficiency, wastewater reuse rates, and the success of conservation programs.

FIGURE 2 INTEGRATION OF CRITERIA FOR CLIMATE CHANGE ADAPTATION ASSESSMENT (DESTINATION AND REGIONAL LEVELS) AND CLIMATE CHANGE MITIGATION ASSESSMENT (REGIONAL LEVEL)



5. DEVELOPED CRITERIA AND INDICATORS FOR REGIONS AND DESTINATIONS

5.1 Criteria for CC Mitigation Assessment (Regional Level)

To effectively address climate change mitigation in coastal tourism, a set of criteria focused on key areas such as greenhouse gas reduction, sustainable practices, transportation, policy and legislation, and community engagement and education has been proposed. These criteria are based on comprehensive analysis and best practices from successful global case studies and have been specifically tailored to the Mediterranean region through extensive stakeholder surveys.

These criteria are designed to be practical and adaptable, suitable for both individual tourism destinations and broader regional initiatives. By focusing on these critical areas, we provide a robust framework that guides tourism operators, local governments, and communities in reducing emissions and promoting sustainability. This structured approach ensures a cohesive and comprehensive strategy for mitigating the impacts of climate change, enhancing the resilience and sustainability of Mediterranean coastal tourism. By implementing these criteria, policymakers can help ensure that tourism destinations in the Mediterranean are well-prepared to meet climate challenges while maintaining economic and environmental sustainability.

1. Greenhouse Gas Reduction

Renewable Energy Adoption

Definition and Importance: Promoting the use of solar, wind, and other renewable energy sources to reduce dependence on fossil fuels is critical for lowering greenhouse gas emissions. Transitioning to renewable energy helps mitigate climate change by reducing the carbon footprint of tourism operations.

Key Components:

- Installing solar panels and wind turbines in tourism facilities.
- Providing incentives for renewable energy projects.
- Integrating renewable energy systems into local and regional energy grids.

Examples of Best Practices:

- Increase the use of renewable energy sources such as solar, wind, and biomass to reduce dependence on fossil fuels and decrease CO₂ emissions in Sardinia, Italy.
- Wind farms in coastal Spain that supply renewable energy to nearby tourist destinations.

Energy Efficiency Measures

Definition and Importance: Implementing energy-saving technologies and practices in buildings, transport, and tourism operations is essential for reducing energy consumption and greenhouse gas emissions. Enhanced energy efficiency contributes to both environmental sustainability and cost savings.

Key Components:

- Retrofitting buildings with energy-efficient lighting, heating, and cooling systems.
- Promoting the use of energy-efficient appliances and machinery.
- Implementing energy management systems to monitor and reduce consumption.

Examples of Best Practices:

- The Green Key certification program recognizes hotels and tourism facilities that implement energy-efficient practices.
- Upgrading to more energy-efficient lighting and HVAC systems (heating, ventilation, and air conditioning), implementing smart room technologies, and using renewable energy sources like solar panels in hotels can lead to cost savings in the long run and attract sustainability-conscious guests.

2. Sustainable Practices

Sustainable Agriculture and Food Systems

Definition and Importance: Encouraging practices that reduce emissions from agricultural activities and promote local food sourcing help minimize the carbon footprint associated with food production and transportation. Sustainable agriculture supports local economies and enhances food security.

Key Components:

- Promoting organic farming and reduced use of chemical fertilizers.
- Encouraging local food sourcing and farm-to-table initiatives in tourism.
- Implementing practices that enhance soil health and carbon sequestration.

Examples of Best Practices:

- Farm-to-table programs that provide restaurants and hotels with fresh, locally sourced food.

- Organic farming initiatives reduce agricultural emissions and support local biodiversity and livelihoods.

Waste Management

Definition and Importance: Improving waste management practices to minimize methane emissions and promote recycling and reduction of single-use plastics is vital for reducing the environmental impact of tourism activities. Effective waste management contributes to cleaner environments and lower greenhouse gas emissions.

Key Components:

- Implementing comprehensive recycling programs in tourism facilities.
- Reducing the use of single-use plastics through bans and alternatives.
- Managing organic waste through composting and anaerobic digestion.

Examples of Best Practices:

- Zero Waste initiatives that promote recycling and composting in hotels, restaurants, and tourist attractions.
- The elimination of single-use plastics in the hospitality industry by providing reusable alternatives.

3. Transportation

Public Transport and Electric Vehicles

Definition and Importance: Encouraging the use of public transportation and the adoption of electric vehicles reduce emissions from tourism-related transport. Sustainable transportation options are crucial for lowering the carbon footprint of tourism activities.

Key Components:

- Expanding and improving public transportation networks.
- Providing incentives for the use of electric vehicles, including charging infrastructure.
- Promoting car-sharing programs and electric bike rentals.

Examples of Best Practices:

- The introduction of electric buses and trams to serve tourists and locals.
- The widespread availability of e-bike share systems supports sustainable mobility within the destinations.

Non-Motorized Transport

Definition and Importance: Developing infrastructure to support cycling, walking, and other non-motorized modes of transport encourages low-emission travel and enhances the tourist experience. Non-motorized transport reduces traffic congestion and pollution while promoting health and well-being.

Key Components:

- Building and maintaining bike lanes and pedestrian pathways.
- Implementing bike-sharing programs and pedestrian-friendly zones.
- Promoting non-motorized transport through tourism marketing and incentives.

Examples of Best Practices:

- The extensive bike-sharing program in Paris, known as Vélib', which offers tourists an eco-friendly way to explore the city.
- The pedestrian-friendly zones and walking tours in historic cities like Florence, Italy, reduce vehicle traffic and emissions.

4. Policy and Legislation

Climate Policies and Regulations

Definition and Importance: Developing and enforcing policies that limit emissions and promote sustainable practices across the tourism sector is essential for achieving long-term climate goals. Effective policies provide a regulatory framework that drives sustainable behaviour.

Key Components:

- Establishing emission reduction targets and standards for tourism businesses.
- Enforcing regulations that require energy efficiency and sustainable practices.
- Supporting policies that promote renewable energy and sustainable transport.

Examples of Best Practices:

- Encouraging hospitality businesses' certification aligned with GSTC criteria⁶ promotes the adoption of green practices.

⁶ Global Sustainable Tourism Council. (2024). GSTC criteria. Retrieved from <https://www.gstcouncil.org/gstc-criteria/>

Economic Instruments

Definition and Importance: Utilizing carbon pricing, taxes, and subsidies to incentivize emission reductions and sustainable practices aligns economic interests with environmental goals. Economic instruments make it financially attractive to adopt green practices.

Key Components:

- Implementing carbon pricing mechanisms, such as carbon taxes or cap-and-trade systems.
- Providing subsidies and tax incentives for renewable energy projects and energy-efficient upgrades.
- Offering grants and low-interest loans for sustainability initiatives in tourism.

Examples of Best Practices:

- The carbon taxes could encourage businesses, including tourism operators, to reduce their carbon emissions⁷.
- Subsidies for solar energy installations could promote renewable energy use in the tourism sector⁸.

5. Community Engagement and Education

Stakeholder Collaboration

Definition and Importance: Fostering partnerships between local communities, governments, and tourism operators to support and implement mitigation strategies ensures a coordinated and inclusive approach. The collaboration leverages diverse expertise and resources for greater impact.

Key Components:

- Establishing multi-stakeholder committees and working groups.
- Facilitating regular meetings and communication channels for stakeholders.
- Sharing best practices and resources to support joint mitigation efforts.

⁷ World Bank. "Pricing Carbon." World Bank. Available: <https://www.worldbank.org/en/programs/pricing-carbon>.

World Bank. "State and Trends of Carbon Pricing 2023." World Bank. Available: <https://openknowledge.worldbank.org/entities/publication/58f2a409-9bb7-4ee6-899d-be47835c838f>

⁸ European Commission. (2024). EU renewable energy financing mechanism. Retrieved from https://energy.ec.europa.eu/topics/renewable-energy/financing/eu-renewable-energy-financing-mechanism_en

Examples of Best Practices:

- The collaborative approach where stakeholders work together to protect the heritage from climate impacts.
- Community-based tourism initiatives where local communities participate in sustainable tourism planning and implementation.

Public Awareness Campaigns

Definition and Importance: Conducting educational programs to raise awareness about the importance of reducing greenhouse gas emissions and adopting sustainable practices ensure that all stakeholders are informed and motivated to contribute to climate action. Awareness campaigns build a culture of sustainability.

Key Components:

- Developing and distributing educational materials on climate change and sustainability.
- Organizing workshops, seminars, and public events to engage and educate the community.
- Utilizing media and social platforms to reach a broader audience.

Examples of Best Practices:

- The "Leave No Trace" campaign in New Zealand, educating tourists on minimizing their environmental impact.
- Climate change education programs, such as "Eco-School" in Seychelles, inform tourists and locals about sustainable practices and resilience measures.

5.2 Criteria for Adaptation Assessment (Destination and Regional Levels)

The criteria for climate change adaptation at the regional and destination levels have been carefully crafted to tackle the specific challenges faced by coastal tourism destinations. These criteria cover five key areas such as environmental sustainability, economic viability, socio-cultural integrity, governance and policy support and resilience building

These criteria are based on successful global adaptation strategies and best practices, and have been tailored to the Mediterranean context through comprehensive stakeholder surveys. They provide a detailed framework to guide tourism operators, regional and local governments, and communities in enhancing their ability to adapt to climate change. The focus on these critical areas ensures that adaptation measures are both practical and effective, addressing the specific needs and contexts of Mediterranean coastal destinations.

This structured approach ensures that all aspects of adaptation—from environmental monitoring to community involvement and policy integration—are thoroughly addressed. This framework not only supports immediate adaptive actions but also promotes long-term sustainability and resilience. It provides a solid foundation for maintaining the viability and attractiveness of coastal tourism in the face of climate change, ensuring that these destinations and regions can continue to thrive despite environmental challenges.

1. Environmental Sustainability

Natural Evolution Monitoring

Definition and Importance: Implementing and maintaining surveillance networks to track physical processes and ecological changes is crucial for understanding and responding to the dynamic coastal environment. Continuous monitoring helps detect early signs of environmental stress, facilitating timely interventions.

Key Components:

- Establishing a monitoring plan by implementing a network of sensors and observation points (depending on destination).
- Regularly collecting and analyzing data on coastal environmental processes and related ecological health.
- Integrating monitoring results into decision-making processes.

Examples of Best Practices: The Mediterranean Integrated Coastal Zone Management (ICZM) Protocol⁹ includes extensive monitoring of coastal dynamics to guide sustainable development.

Adaptive and Scalable Measures

Definition and Importance: Adaptation measures that can be easily reversed or adjusted without significant financial impact ensure that strategies remain effective as conditions change. This flexibility is crucial for managing uncertainty and reducing long-term risks.

Key Components:

- Designing infrastructure and policies that allow for adjustments.
- Regularly reviewing and updating measures based on new data and changing conditions.
- Developing solutions that can be scaled up or down based on the severity of climate impacts and available resources.

⁹ Priority Actions Programme Regional Activity Centre (PAP/RAC). (2024). ICZM Protocol. UNEP MAP. Retrieved from <https://papr.org/iczm-protocol>

Examples of Best Practices: Reversible land-use policies in the Netherlands that allow for temporary agricultural use of flood-prone areas.

Soft Engineering Solutions¹⁰

Definition and Importance: Promoting beach nourishment and ecological engineering methods to stabilize beaches and dunes leverages natural processes to enhance coastal resilience. These methods are less intrusive and more sustainable compared to hard engineering solutions.

Key Components:

- Adding sand to eroding beaches to restore their profiles sustainably.
- Ecological restoration by using vegetation and other natural biomaterials to stabilize dune cordons and prevent erosion.

Examples of Best Practices:

- The beach nourishment programs in some Med countries (e.g., Italy) contributed to successfully restoring eroded beaches and improving coastal resilience.
- The use of vertical bundles of heather wood in the chestnut wood structure and coconut roll filled with sand increase the resistance and resilience of coastal dunes against erosion in the Italian region of Tuscany.

Sustainable Water Use

Definition and Importance: Implementing strategies for the efficient use and management of water resources is essential for sustaining tourism activities, especially in regions prone to water scarcity. Sustainable water use practices ensure that the demand for water does not exceed the supply, protecting both natural ecosystems and tourism operations.

Key Components:

- Tackling the balanced distribution (between activity sectors) of the water resources.
- Installing water-saving technologies such as low-flow fixtures and irrigation systems.
- Promoting the reuse of treated wastewater for landscaping and other non-potable uses.

¹⁰ Soft engineering solutions utilize natural processes and materials to protect and enhance coastal areas. These measures are less intrusive and more sustainable compared to traditional hard engineering solutions, offering a flexible and environmentally friendly approach to managing coastal resilience and adaptation. (e.g. Adding sand to beaches to combat erosion and maintain beach width and planting vegetation to stabilize dunes and protect against flooding. Using natural elements to stabilize the coast, provide habitat, and to control erosion.)

- Implementing water conservation programs and incentives for reducing water use.

Examples of Best Practices:

- The use of greywater systems in hotels for irrigation purposes.
- Water conservation campaigns that encourage both tourists and residents to reduce water consumption.

2. Economic Viability

Cost-Effective Measures

Definition and Importance: Prioritizing adaptation strategies that offer high impact with manageable costs ensures that resources are used efficiently. Cost-effective measures provide significant benefits without imposing excessive financial burdens on communities and businesses.

Key Components:

- Evaluating the cost-benefit ratio of different adaptation options.
- Implementing measures that provide immediate and long-term economic benefits.

Examples of Best Practices: The dune management program in the Netherlands, which uses cost-effective sand replenishment to maintain coastal defenses.

Tourism Revenue Resilience

Definition and Importance: Ensuring tourism activities and infrastructure can withstand and quickly recover from climate-related disruptions is essential for maintaining the economic stability of tourism-dependent areas. Resilient tourism infrastructure supports continued visitor engagement and revenue generation.

Key Components:

- Designing and retrofitting infrastructure to be climate-resilient.
- Developing rapid response and recovery plans for tourism businesses.

Examples of Best Practices:

- The resilient design of the tourism facilities, which includes elevated structures and flexible operations to handle extreme weather events.
- A Tourism Crisis Management Plan and a Crisis Communication Strategy in Greece covers a wide range of potential crises that can impact tourism, including health, environmental, economic, and societal crises

3. Socio-Cultural Integrity

Community Involvement

Definition and Importance: Engaging local communities in adaptation planning and implementation ensures that their needs and knowledge are integrated into strategies. Community involvement fosters ownership and enhances the relevance and acceptance of adaptation measures.

Key Components:

- Including community representatives in planning and decision-making processes.
- Conducting regular consultations and feedback sessions with local residents.

Examples of Best Practices:

- A participatory coastal management approach in Bari, Italy, involves the local community in decision-making processes.
- Community-led dune restoration projects in the Region of Tuscany, Italy. The intervention involved planting 600 trees and 16,000 herbaceous and shrub plants, closing 130 paths on the dune, and opening 50 environmentally sustainable accesses.

Education and Awareness Programs

Definition and Importance: Raising awareness among tourists and locals about climate risks and adaptation strategies through targeted sensibilization campaigns fosters a culture of resilience and proactive adaptation. Education programs help stakeholders understand the importance of adaptation measures and how they can contribute.

Key Components:

- Developing and disseminating educational materials on climate risks and adaptation strategies.
- Organizing workshops, seminars, and awareness campaigns for different stakeholder groups.

Examples of Best Practices:

- The Mission for Natural Heritage releases an awareness campaign aiming to share knowledge about the causes and effects of coastal erosion, as well as solutions proposed or already put in place, engaging citizens from shore to shore all along the Mediterranean basin.
- The Caribbean Tourism Organization launched a Regional Tourism Education and Awareness Campaign to foster a discussion on climate resilience and sustainability on both the regional and international stage.

4. Governance and Policy Support

Urban Planning Integration

Definition and Importance: Incorporating climate change adaptation considerations into local urban planning and development regulations ensures that future developments are resilient to climate impacts. Urban planning integration helps avoid maladaptation and promotes sustainable growth.

Key Components:

- Revising zoning laws and building codes to include climate resilience criteria.
- Ensuring new developments undergo climate impact assessments.

Examples of Best Practices:

- The climate-resilient urban planning framework in Rotterdam, which includes flood-proof building designs and green infrastructure.
- Barcelona's green urban planning initiatives, which incorporate climate adaptation measures into city development projects.

Crisis Preparation and Management

Definition and Importance: Enhancing the resilience of communities through comprehensive disaster preparedness and response plans is vital for protecting both residents and tourists from climate-related hazards. Effective crisis management minimizes damage and speeds up recovery.

Key Components:

- Developing and regularly updating disaster response plans.
- Conducting drills and training programs for emergency response teams.

Examples of Best Practices:

- Portugal undertook an ambitious process to develop a new integrated wildland fire management plan with the goal of protecting Portugal from severe wildland fires.
- Spain has introduced the National Climate Change Adaptation Plan (PNACC) 2021-2030 – the basic planning instrument to promote coordinated action against the effects of climate change in Spain. Its main objective is to avoid or reduce present and future damage from climate change and to build a more resilient economy and society.

5. Resilient Infrastructure

Removable and Flexible Infrastructure

Definition and Importance: Promoting the construction of infrastructure and facilities (public, transportation, tourism-related) that can be easily moved or adapted in response to changing environmental conditions, as well as the systems for increasing efficiency of water and energy use, provides long-term resilience. Flexible infrastructure minimizes the risk of damage and reduces operational and recovery costs.

Key Components:

- Designing modular and movable buildings.
- Implementing infrastructure that can be easily adapted or relocated as needed.
- Implementing systems for reducing energy and water consumption, along with rainwater collection and green and blue infrastructure.

Examples of Best Practices:

- Floating houses in the Netherlands, designed to rise with water levels during floods.
- Artificial reefs, which can be set offshore or on the foreshore, reduce wave energy on the beaches behind them, slow down long-shore drift, favor foreshore growth to limit erosion, and function like submerged breakwaters, often made from materials such as geotextile, sand, large blocks, concrete, or pit run material.

Complementary Measures

Definition and Importance: Implementing financial incentives, climate services, and information systems supports adaptation efforts and encourages proactive engagement from all stakeholders. These measures provide the necessary resources and information to facilitate effective adaptation.

Key Components:

- Offering subsidies and tax breaks for climate-resilient practices.
- Providing climate information services that offer real-time data and forecasts.

Examples of Best Practices:

- The use of climate information services helps stakeholders make informed decisions based on weather forecasts.
- Financial incentives for green building practices encourage sustainable construction and retrofitting.

5.3. Proposed Indicators for Climate Change Adaptation Tailored for the Tourism Sector

To effectively guide climate change adaptation and mitigation efforts in coastal tourism, policymakers need to prioritize a specific set of indicators at both the destination and regional levels. These indicators are crucial for ensuring tourism activities' sustainability and resilience against climate change's impacts. The proposed indicators are structured into five key categories: **physical and environmental, economic, sociocultural, governance and policy, and biodiversity and ecosystem health indicators.**

At the **destination level**, it is essential to monitor indicators such as changes in annual temperature, the number and frequency of hot days, sea-level rise, tourism revenue variability, tourist satisfaction, local community attitudes, and public awareness campaigns on water efficiency. These indicators provide a comprehensive overview of the local environmental, economic, and socio-cultural conditions. This facilitates targeted adaptation strategies that address both immediate and long-term vulnerabilities. At the **regional level**, policymakers should emphasize indicators that reflect broader climate trends and regional coordination efforts. Key indicators include sea-level rise, tourism revenue variability, the cost of climate adaptation, the existence and implementation of climate adaptation policies, funding allocated for adaptation projects, and stakeholder involvement. These indicators are vital for regional planning, ensuring cohesive and scalable strategies that address the systemic drivers of climate change and enhance overall resilience.

In addition to these mandatory indicators, policymakers should consider a set of optional indicators to provide further insights and support more nuanced adaptation and mitigation efforts. At the destination level, optional indicators such as extreme precipitation days, the fire weather index, air quality, and marine submersion events and storm surges can offer additional information on specific climate risks and environmental conditions. Similarly, at the regional level, optional indicators like changes in annual temperature, the number and frequency of hot days, air quality, species distribution changes, and water quality can enhance understanding of regional climate impacts and inform broader environmental health strategies. By distinguishing between mandatory and optional indicators, policymakers can ensure that critical aspects of climate change adaptation and mitigation are prioritized while allowing flexibility to address context-specific challenges and opportunities. This balanced approach supports the development of robust, effective, and contextually relevant strategies that enhance the sustainability and resilience of Mediterranean coastal tourism.

1. Physical and Environmental Indicators

- **Ind 1.1 Change in Annual Temperature**
 - **Definition:** This indicator measures deviations from the long-term average annual temperature. It provides insight into how the local climate is changing over time.

- **Rationale:** Temperature changes directly affect tourist comfort and seasonal arrivals, influencing tourism patterns and infrastructure needs. Understanding these changes helps destinations plan for climate adaptation and mitigate negative impacts on tourism.
- **Measurement:** Degree Celsius change per year from a long-term average baseline (30 years).
- **Ind 1.2 Number and Frequency of Hot Days**
 - **Definition:** Counts the number of days per year exceeding a critical temperature threshold (e.g., 35°C) and the frequency of consecutive hot days.
 - **Rationale:** Indicates stress levels on tourists and tourism infrastructure during heatwaves, affecting health and activity participation. The frequency of consecutive hot days can further stress infrastructure, increase health risks and potential occurrence of dry periods (droughts) and reduce the availability of water needed for tourism activities and related economic sectors (e.g. agriculture)..
 - **Measurement:**
 - Number of days per year with maximum temperatures above the threshold.
 - Frequency of consecutive hot days exceeding the threshold (e.g. the number of instances where there are more than 3 consecutive hot days).
 - Number of tropical nights per year where the temperature does not fall below 20°C.
- **Ind 1.3 Sea-Level Rise**
 - **Definition:** Monitors the long-term increase in sea levels.
 - **Rationale:** Rising sea levels threaten coastal tourism infrastructure, beaches, and natural attractions, necessitating adaptation strategies. This increase can lead to more frequent and severe flooding, erosion, and loss of habitat, directly impacting tourism and local communities. Understanding and monitoring sea-level rise is essential for developing effective coastal management and protection plans to safeguard these valuable resources.
 - **Measurement:** Millimeters per year, measured using tide gauges and satellite altimetry.
- **Ind 1.4 Extreme Precipitation Days**
 - **Definition:** Counts the number of days with significant rainfall above a certain threshold and considers the water infiltration capacity of the ground.

- **Rationale:** Important for assessing flood risks, impacting outdoor tourism activities and infrastructure. The risk varies based on ground properties, infiltration index, slope and artificialization rates.
- **Measurement:**
 - Number of days per year with precipitation exceeding a set threshold (e.g., 50 mm).
 - Assessment of ground properties including infiltration index, slope, and artificialization rates to evaluate the actual risk and potential for water infiltration.
 - Frequency of extreme precipitation events, including consecutive days with heavy rainfall.
- **Ind 1.4 Fire Weather Index**
 - **Definition:** A scale indicating the risk of fire based on weather conditions.
 - **Rationale:** Monitoring the Fire Weather Index (FWI) is crucial for ensuring the safety of both tourists and local populations in forested areas. High FWI values can indicate increased risk of wildfires, which can devastate natural landscapes, disrupt tourism activities, and endanger lives. Effective monitoring and response to FWI levels are essential for preserving natural attractions and maintaining the economic stability of tourism-dependent regions.
 - **Measurement:** Fire Weather Index (FWI)¹¹ values calculated daily.
- **Ind 1.5 Air Quality**
 - **Definition:** Measures the concentration of greenhouse gases (GHGs) and small particles (e.g., PM2.5, PM10) in the air.
 - **Rationale:** Air quality significantly impacts tourist health and comfort, as poor air quality can deter tourism activities. Monitoring air quality is essential for ensuring a safe and pleasant environment for visitors and residents alike. Additionally, air quality serves as a broader indicator of environmental health and sustainability, reflecting the overall effectiveness of pollution control measures and environmental policies.

¹¹ European Environment Agency. (2024). Fire weather index - monthly mean, 1979-2020. European Climate Adaptation Platform Climate-ADAPT. Retrieved from <https://climate-adapt.eea.europa.eu/en/metadata/indicators/fire-weather-index-monthly-mean-1979-2019>

- **Measurement:** Concentration of GHGs (measured in parts per million) and small particles (measured in micrograms per cubic meter) using air quality monitoring stations.
- **Ind. 1.6 Marine Submersion Events and Storm Surges**
 - **Definition:** Measures the frequency and impact of marine submersion events or storm surges on coastal areas.
 - **Rationale:** Marine submersion events and storm surges pose significant risks to coastal tourism infrastructure and safety, impacting beaches, resorts, and other coastal attractions. These events can lead to severe flooding, erosion, and property damage, disrupting tourism activities and endangering lives. Monitoring these events is crucial for developing effective coastal management strategies and emergency response plans, ensuring the resilience and sustainability of coastal tourism destinations.
 - **Measurement:**
 - Number of marine submersion events or storm surges per year.
 - Extent of the impacted area measured in square kilometers.
 - Economic damage measured in local currency.
- **Ind. 1.7 Water availability per inhabitant**
 - **Definition:** This indicator measures the average amount of available water per person in a specific region over a given period. It reflects the balance between water supply and demand, indicating the sufficiency of water resources to meet the needs of the population.
 - **Rationale:** Water availability is critical for both residents and tourists, influencing the sustainability of tourism activities, overall health, and quality of life. Understanding water availability helps in planning and managing water resources efficiently, ensuring that tourism growth does not compromise local water needs.
 - **Measurement:** Cubic meters of water available per inhabitant annually.

2. Economic Indicators

- **Ind 2.1 Tourism Revenue Variability**
 - **Definition:** Measures changes in tourism revenue over time.
 - **Rationale:** Tourism revenue variability indicates the economic impact of climate variability on tourism revenue, reflecting the

sector's resilience. Understanding this variability is essential for assessing how climate events and seasonal changes affect tourism income, which in turn helps in planning for economic stability and growth. By tracking revenue fluctuations, stakeholders can identify patterns and develop strategies to mitigate negative impacts and enhance the sector's adaptability to changing climate conditions.

- **Measurement:** Percentage change in tourism revenue annually, adjusted for inflation.

- **Ind 2.2 Cost of Climate Adaptation**

- **Definition:** Tracks investments required to adapt tourism infrastructure to climate change, including both capital and operational expenses.
- **Rationale:** Understanding the cost of climate adaptation is crucial for budgeting, planning, and ensuring sustainable tourism. Knowing the full financial requirements, including ongoing operational expenses, provides a comprehensive picture of the economic impact of climate adaptation efforts. This information helps stakeholders allocate resources effectively, prioritize investments, and develop strategies that enhance the resilience and sustainability of tourism infrastructure.
- **Measurement:**
 1. Monetary value (in local currency) of adaptation investments annually.
 2. Monetary value (in local currency) of operational expenses related to climate adaptation annually.

- **Ind 2.3 Insurance Costs**

- **Definition:** Measures changes in insurance premiums for tourism-related properties.
- **Rationale:** Insurance costs reflect the increased economic risks from climate impacts on tourism infrastructure. Rising premiums indicate higher perceived risks by insurers, driven by factors such as more frequent and severe weather events, which can cause significant damage to tourism facilities. Monitoring these changes helps stakeholders understand the financial implications of climate risks and aids in planning for resilience and risk management strategies.
- **Measurement:** Percentage change in insurance premiums annually.

3. Sociocultural Indicators

- **Ind 3.1 Tourist Satisfaction**

- **Definition:** Assesses satisfaction levels of tourists regarding their experiences.
- **Rationale:** Tourist satisfaction is influenced by climate conditions and their impact on the overall tourist experience. High satisfaction levels are essential for positive reviews, repeat visits, and sustained tourism revenue. Understanding satisfaction trends helps tourism managers make informed decisions to enhance the quality of services and address issues related to climate impacts, ensuring a positive and resilient tourism environment.
- **Measurement:** Average satisfaction rating from tourist surveys on a scale of 1 to 10.

- **Ind 3.2 Local Community Attitudes**

- **Definition:** Surveys local perceptions of tourism and climate change.
- **Rationale:** Understanding local community attitudes towards tourism and climate change adaptation is crucial for securing community support and ensuring sustainable tourism development. Positive community attitudes are essential for the successful implementation of tourism projects and climate adaptation strategies, as they foster cooperation, minimize conflicts, and enhance the social license to operate. Monitoring these attitudes helps identify areas of concern, allowing stakeholders to address issues proactively and build stronger, more resilient communities.
- **Measurement:** Percentage of positive responses in community surveys regarding tourism and climate change adaptation.

- **Ind 3.3 Public Awareness Campaigns on Water Efficiency**

- **Definition:** Number of campaigns aimed at promoting sustainable water use practices.
- **Rationale:** Public awareness campaigns on water efficiency encourage sustainable practices among tourists and businesses, helping to mitigate the impacts of water scarcity. These campaigns play a critical role in educating the public about the importance of conserving water resources, reducing water wastage, and adopting water-efficient technologies. By fostering a culture of sustainability, these initiatives contribute to the long-term resilience and sustainability of tourism destinations.
- **Measurement:** Number of campaigns conducted annually.

4. Governance and Policy Indicators

- **Ind 4.1 Effectiveness of Climate Adaptation Policies**

- **Definition:** Existence and implementation of policies aimed at adapting tourism to climate change.
- **Rationale:** The effectiveness of climate adaptation policies reflects the quality of governance and preparedness for climate resilience in the tourism sector. Robust and well-implemented policies are crucial for mitigating the impacts of climate change, ensuring the sustainability and resilience of tourism destinations. These policies support infrastructure development, risk management, and community engagement, highlighting the commitment of local authorities to protect and enhance tourism under changing climatic conditions.
- **Measurement:** Qualitative assessment of policy presence (document existence) and implementation status (fully implemented, partially implemented, not implemented).

- **Ind 4.2 Funding for Adaptation Projects**

- **Definition:** Amount of funding allocated for climate adaptation in tourism.
- **Rationale:** Funding for climate adaptation projects is a key indicator of the prioritization and commitment by governments and stakeholders towards achieving climate resilience in the tourism sector. Adequate funding is essential for the development and implementation of effective adaptation measures, such as infrastructure improvements, risk assessments, and community education programs. Monitoring this funding helps to understand the readiness and capacity of the tourism sector to withstand and adapt to climate impacts.
- **Measurement:** Monetary value (in local currency) of allocated funds annually.

- **Ind 4.3 Stakeholder Involvement**

- **Definition:** Level of involvement of local stakeholders in climate adaptation planning.
- **Rationale:** Stakeholder involvement is crucial for developing inclusive and effective climate adaptation strategies. Engaging local stakeholders ensures that adaptation measures are tailored to the specific needs and priorities of the community, enhancing the legitimacy and acceptance of

these measures. Involving a wide range of stakeholders, including local residents, businesses, and environmental organizations, fosters collaboration and leverages local knowledge, leading to more resilient and sustainable outcomes.

- **Measurement:** Number of stakeholder meetings and participation rates annually.

5. *Biodiversity and Ecosystem Health Indicators*

● Ind 5.1 Species Distribution Changes

- **Definition:** Tracks the movement of species due to climate shifts.
- **Rationale:** Monitoring species distribution changes is critical for eco-tourism and wildlife viewing experiences. Changes in species distribution can also indicate the presence of alien species, which can pose risks to both local ecosystems and tourists. Alien species may carry diseases or exhibit aggressive behavior, potentially endangering tourists and disrupting native wildlife habitats.
- **Measurement:** Number of species showing significant distribution changes annually.

● Ind 5.2 Habitat Loss and Degradation

- **Definition:** Measures the extent and quality of natural habitats.
- **Rationale:** Habitat loss and degradation significantly impact natural attractions and biodiversity-based tourism. The health and extent of natural habitats are crucial for maintaining the biodiversity that supports tourism activities such as wildlife viewing, hiking, and nature photography. Loss and degradation of these habitats not only diminish the aesthetic and recreational value of tourism destinations but also threaten the ecosystems that sustain local communities and wildlife. Understanding and monitoring these changes are essential for conservation efforts and sustainable tourism development.
- **Measurement:** Area (hectares) of habitat lost or degraded annually (frequency of the assessment should be adjusted to the site specific conditions).

● Ind 5.3 Water Quality

- **Definition:** Levels of pollutants in water bodies used for tourism activities.
- **Rationale:** Water quality is crucial for water-based tourism activities and overall environmental health. High levels of pollutants can deter tourists, pose health risks, and damage aquatic ecosystems, which are essential for maintaining the appeal and sustainability of tourism destinations. Ensuring good water quality supports safe and enjoyable recreational activities such as swimming, diving, and boating, while also protecting biodiversity and ecosystem services.
- **Measurement:** Concentration of key pollutants (e.g., nitrates, phosphates) in water samples taken quarterly.
 1. Chemical pollutants: concentration of key chemical pollutants (e.g., nitrates, phosphates) in water samples.
 2. Microorganisms: concentration of microorganisms, including bacteria (e.g., E. coli) and viruses, in water samples.
 3. Sampling frequency: water samples taken quarterly from multiple locations within the tourism area.

● 5.4 Protected Areas

- **Definition:** Extent and condition of protected natural areas.
- **Rationale:** Protected areas are crucial for nature-based tourism and conservation efforts. They help preserve biodiversity, support ecosystem services, and provide recreational and educational opportunities. The "condition" of these areas refers to their ecological health and the effectiveness of management practices in achieving conservation goals. This includes maintaining species diversity, preventing habitat degradation, and ensuring sustainable use of natural resources. Effective management of protected areas enhances their value for tourism and conservation.
- **Measurement:**
 1. Area (hectares) under protection and assessment of ecological condition annually.
 2. Evaluation of the effectiveness of management practices in achieving conservation targets using tools such as the Management Effectiveness Tracking Tool (METT) or other similar frameworks.

6. RECOMMENDATIONS FOR IMPLEMENTATION OF CRITERIA AND INDICATORS

Assessing climate change impacts and developing effective strategies is a complex, sequential process that involves three key steps: (1) conducting a comprehensive climate change impact assessment, (2) understanding and characterizing the associated risks, and (3) developing robust risk management strategies. ***While the first two steps are integral parts of the established process and are carried out by a team of experts, the following sections focus on the integration and selection of criteria and indicators specifically designed for the pilot destinations and regions within this project.*** This includes a detailed explanation of the process for selecting both indicators and criteria at both the destination and regional levels, ensuring that the methodologies are tailored to address the unique challenges and opportunities presented by each location.

6.1 Recommendations for Implementing Climate Change Adaptation and Mitigation Criteria in Coastal Tourism

To effectively implement climate change adaptation and mitigation **criteria** in coastal tourism, policymakers should adopt a strategic and phased approach. This involves establishing foundations, integrating criteria into policies and practices, and ensuring continuous monitoring and refinement.

Establishing Foundations:

Policymakers should begin by engaging a broad range of stakeholders, including local communities, tourism operators, governments, and NGOs. This engagement ensures that the criteria reflect diverse needs and perspectives, fostering a sense of ownership and commitment among stakeholders. Building capacity through comprehensive training programs is essential. These programs should enhance local capacities and bridge knowledge gaps related to climate adaptation and mitigation. By equipping stakeholders with the necessary skills and knowledge, we can ensure they are well-prepared to implement and sustain the proposed measures. Additionally, securing funding is crucial. Policymakers should explore and secure diverse funding sources, such as public-private partnerships, international aid, and climate finance mechanisms, to support the implementation of the proposed measures. Adequate funding ensures that resources are available to carry out the necessary actions, from infrastructure development to community programs and beyond.

Integrating and Executing Criteria:

In the next phase, the focus shifts to integrating the criteria into local and regional policies and executing practical measures. Policymakers should advocate for incorporating climate adaptation and mitigation considerations into planning and development policies to ensure these aspects are systematically addressed. Promoting the construction of resilient and flexible infrastructure that can adapt

to changing environmental conditions is vital for long-term sustainability. Furthermore, launching targeted awareness campaigns and inclusive engagement strategies helps to foster community buy-in and active participation in climate action. By making the criteria part of the standard operating procedures, we ensure that climate considerations become an integral part of tourism planning and development.

Monitoring and Refining Strategies:

The final phase emphasizes the importance of monitoring and continuous improvement. Developing robust monitoring and evaluation frameworks with clear indicators is necessary to track the effectiveness of implemented measures. Policymakers should leverage advanced technologies such as remote sensing, GIS, and climate modeling to enhance data collection and analysis. These technologies provide accurate and timely information on environmental changes, infrastructure resilience, and community engagement, enabling a more comprehensive understanding of the impacts and effectiveness of the adaptation and mitigation strategies. Regular reporting mechanisms are essential for maintaining transparency and accountability. By implementing consistent reporting schedules, progress can be tracked, and findings shared with stakeholders, fostering a culture of openness and continuous improvement. Creating feedback loops ensures that lessons learned and stakeholder inputs are systematically incorporated into the ongoing refinement and adjustment of strategies. This iterative process allows for the dynamic adaptation of measures, ensuring they remain effective and relevant in the face of evolving climate conditions and emerging challenges.

6.2 Recommendations for Implementing Indicators for Climate Change Adaptation and Mitigation in Coastal Tourism

To effectively implement **indicators** for climate change adaptation and mitigation in coastal tourism, policymakers need to establish a robust framework that ensures data quality, stakeholder engagement, and continuous improvement. Here are the key recommendations for achieving this:

Engage Diverse Data Sources:

To implement physical and environmental indicators, such as changes in annual temperature, number and frequency of hot days, and sea-level rise, policymakers should rely on data from meteorological agencies, satellite observations, and climate monitoring networks. Organizations like the European Space Agency (ESA) and national meteorological services provide crucial climate data through remote sensing and ground-based observations. For economic indicators, including tourism revenue variability and the cost of climate adaptation, data should be sourced from tourism boards, financial records from local businesses, and governmental economic reports. Sociocultural indicators, such as tourist satisfaction and local community attitudes, can be gathered through structured surveys, interviews, and public opinion polls conducted by research institutions and local tourism authorities. Governance and policy indicators, like climate

adaptation policies and funding for adaptation projects, require data from policy documents, government reports, and funding allocation records. Biodiversity and ecosystem health indicators, such as species distribution changes and water quality, benefit from data collected by environmental agencies, conservation organizations, and academic research institutions. Ensuring the integration of these diverse data sources will enhance the robustness and comprehensiveness of the monitoring framework.

Ensure Data Quality and Availability:

Maintaining high data quality is crucial. Data should be collected from reliable and consistent sources, employing standardized methodologies to maintain accuracy and comparability across all indicators. Policymakers must address potential data gaps, inconsistencies, and variability in data collection practices, particularly in regions with limited monitoring infrastructure.

Utilize Advanced Technologies:

Leverage advanced technologies such as remote sensing, IoT devices, and automated data collection tools. These technologies facilitate real-time monitoring of climate variables and environmental conditions, providing high-resolution spatial and temporal data. This approach enables a comprehensive understanding of climate impacts on tourism and supports timely decision-making.

Tailor Indicators to Specific Contexts:

Indicators should be tailored to the specific context of each tourism destination, considering local environmental, economic, and sociocultural factors. Generic indicators may not fully capture the unique challenges and opportunities of individual destinations, reducing the relevance and applicability of the data.

Foster Continuous Stakeholder Engagement:

Continuous engagement with a broad range of stakeholders, including local communities, tourism operators, and policymakers, is essential. This engagement ensures that indicators are relevant and actionable. Lack of stakeholder buy-in can result in poor implementation and limited practical use of the indicators.

Address Technological and Resource Constraints:

Ensure stakeholders have the necessary resources and training to utilize advanced technologies. Technological and resource limitations can hinder the comprehensive implementation and monitoring of indicators, especially in resource-constrained regions.

Consider Both Average Conditions and Extreme Events:

Indicators should reflect both average conditions and extreme events to provide a holistic view of climate impacts. Using scenario modeling to predict future impacts can help in understanding the potential risks and opportunities under various conditions.

Align with Existing Frameworks:

Integrate new indicators with existing monitoring and evaluation systems to leverage current data and resources. Misalignment can lead to redundancy, inefficiency, and confusion among stakeholders.

Regular Reviews and Updates:

Conduct periodic reviews and updates of the indicators to reflect new scientific insights, evolving climate conditions, and stakeholder feedback. Stagnant indicators may fail to capture the dynamic nature of climate impacts and adaptive responses, reducing their effectiveness over time.

Comply with Legal and Regulatory Frameworks:

Ensure that indicator implementation complies with local, national, and international legal and regulatory frameworks. Stay informed about regulatory changes that could impact the feasibility and applicability of certain indicators.

Recognize Interdependencies:

Understand the interdependencies between different indicators and consider the broader socio-economic and environmental context when analyzing results. Focusing on individual indicators in isolation can lead to fragmented understanding and suboptimal adaptation strategies.

Outcome and Recommendations:

Implementing a systematic approach to data collection for each indicator involves establishing standardized protocols, leveraging advanced technologies, and engaging local stakeholders. Regular trend analyses and scenario modeling help in understanding the evolving nature of climate risks. Producing regular reports in multiple formats ensures transparency and accessibility, while establishing feedback mechanisms helps in refining indicators and improving data collection processes.

7. CONCLUSION

The development and implementation of robust climate change adaptation and mitigation criteria for coastal tourism in the Mediterranean region are essential for ensuring the sustainability and resilience of this vital sector. This deliverable has outlined a comprehensive framework for both regional and destination levels, providing actionable guidelines to address the unique challenges posed by climate change.

By integrating these criteria into strategic planning, regions and destinations can systematically evaluate their efforts, identify gaps, and implement targeted actions to enhance their climate resilience. This process involves aligning tourism goals with adaptation and mitigation criteria, revising policies to support sustainable practices, engaging stakeholders in meaningful ways, and continuously monitoring and evaluating progress.

The indicators selected for this framework serve as critical tools for measuring the effectiveness of these efforts. They provide concrete data to inform decision-making, ensuring that strategies are based on reliable and timely information. By using advanced technologies and maintaining high data quality, stakeholders can gain a comprehensive understanding of climate impacts and make informed adjustments to their strategies.

Continuous stakeholder engagement is crucial for the successful implementation of both criteria and indicators. By involving local communities, tourism operators, policymakers, and other relevant parties, the adaptation and mitigation measures can be tailored to the specific needs and contexts of each region and destination. This inclusive approach not only fosters ownership and commitment but also ensures that the measures are practical and effective.

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ANNEX.

ANNEX 1. Criteria Development for Climate Change Adaptation Assessment in Coastal Tourism Destinations.

ANNEX 2. Indicator Proposal for Climate Change Adaptation.