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NbS for Coastal Destinations Climate Action manual

Guidelines to implement the methodology for the design and implementation of Nature-based Solutions (NbS) in NaTour4CChange Project Pilot areas

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List of Acronyms

CONAMA	Congreso Nacional del Medio Ambiente
CSO	Civil Society Organisation
EbA	Ecosystem-based Adaptation
GIS	Geographic Information Systems
GS	IUCN Global Standard for NbS
IUCN	International Union for Conservation of Nature
IUCN GS	IUCN Global Standard for Nature-based Solutions
M&E	Monitoring and evaluation
NbS	Nature-based Solutions
NGO	Non-governmental organisation
NT4CC	NaTour4CChange
SDG	United Nations Sustainable Development Goals
SMART	Specific, Measurable, Assignable, Realistic and Time-bound
SME	Small and Medium Enterprises
UNEP	United Nations Environmental Programme

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1. Introduction

Project scope

The Mediterranean is a vulnerable hotspot in the current climate emergency. Tourism is and will be one of the most impacted economic sectors, with heightened risks, including flooding and erosion of key coastal assets, while simultaneously increasing the existing pressure on local resources and affecting ecosystems. The recent EU Transition Pathway for Tourism (European Commission, 2022) and the Glasgow Declaration (UN Tourism, 2021) are building global momentum for Climate Action in tourism, but policymakers and destinations require support and new approaches.

The NaTour4CChange (NT4CC) project builds on successful experiences to test solutions, Nature-based Solutions (NbS) in particular, for increasing the climate resilience of coastal destinations in the Mediterranean and building the case for nature-positive as part of equitable local economies.

As part of the project actions, six pilot tourism destinations were selected by the partnership to increase their climate resilience through long-term planning of evidence-based activities to adapt the destination to Climate Change through the implementation of an Ecosystem-based Adaptation (EbA) approach and the deployment of NbS.

Within the scope of the project, each pilot destination will develop a destination tourism climate action plan that will identify the challenges in their area, alongside the identification of NbS that will serve to increase resilience in each of them.

These guidelines were developed to provide the ilot tourism destinations with a methodology aimed at guiding the design and implementation of NbS in their respective Mediterranean coastal areas according to their specific project objectives and challenges, while serving as a tool for further usage across coastal destinations in the Mediterranean region.

Definition of NbS

Initially, it is essential to define the concept of Nature-based Solutions (NbS) that will serve as our reference. According to the International Union for Conservation of Nature (IUCN), the prevailing definition is as follows: *"Nature-based Solutions are actions to protect, sustainably manage and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human well-being and biodiversity benefits"* (IUCN, 2016). In essence, these actions build on ecosystems and the services they provide to respond to challenges such as climate change, water security, or disaster risk reduction to generate multiple benefits for people and biodiversity.

Image 1. Defining Nature-based Solutions. IUCN (2020). Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of NbS. First edition. Gland, Switzerland: IUCN.

IUCN has compiled the challenges faced by society that could be addressed by NbS into seven general societal challenges, to which reference will be made throughout this text:

1. Climate change mitigation and adaptation
2. Disaster risk reduction
3. Economic and social development
4. Human health

5. Food security
6. Water security
7. Environmental degradation and biodiversity loss

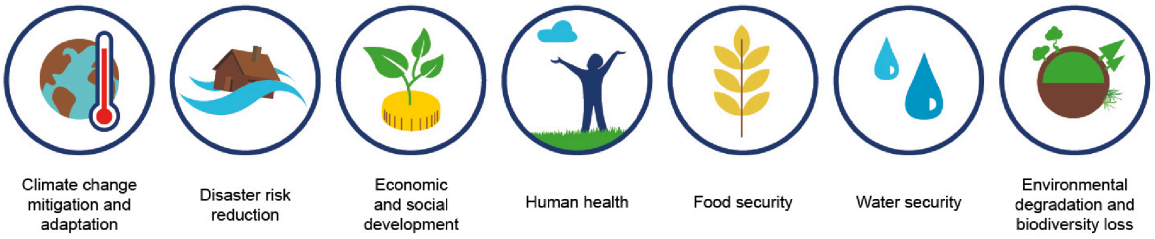


Image 2. Major societal challenges addressed by the NbS. IUCN (2020). Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of NbS. First edition. Gland, Switzerland: IUCN.

To be considered as such, NbS must address one or several of these societal challenges by benefiting both humans and nature.

Including the eight criteria of the IUCN Global Standard in the NbS

The IUCN has developed the IUCN Global Standard for NbS (GS), a tool that guides the design, evaluation, and continuous improvement of NbS; it is an overarching tool offering a comprehensive and holistic approach, seeking to maximise the NbS impact, mainstreaming and replication and scale-up potential. Therefore, when designing any NbS project, including those in the six pilot destinations of the NT4CC project, it is advisable to consider the IUCN GS.

As explained above, NbS must address the challenges facing society at both local and global levels, such as climate change, biodiversity loss, human health, and economic development. To this end, the IUCN GS provides a rigorous instrument that helps analyse and compare NbS interventions, identify areas for improvement, extract good practices and lessons learned, contribute to filling knowledge gaps, and facilitate continuous learning.

Using the Standard, users and pilot destinations can establish a strong framework for designing and verifying the results generated by the implemented NbS. In summary, the IUCN Global Standard for NbS is as follows:

1. It is a **mechanism for improving** NbS projects at any stage of development, identifying deficiencies, and generating recommendations for solutions.
2. It **allows the analysis and elaboration of effective communication strategies** to maximise participation and dialogue among the different stakeholders and sectors concerned, providing a common framework and language to discuss advantages and benefits compared to other alternatives.
3. It **lends credibility** to relations with investors, financiers, and other audiences with a high level of interest and involvement.

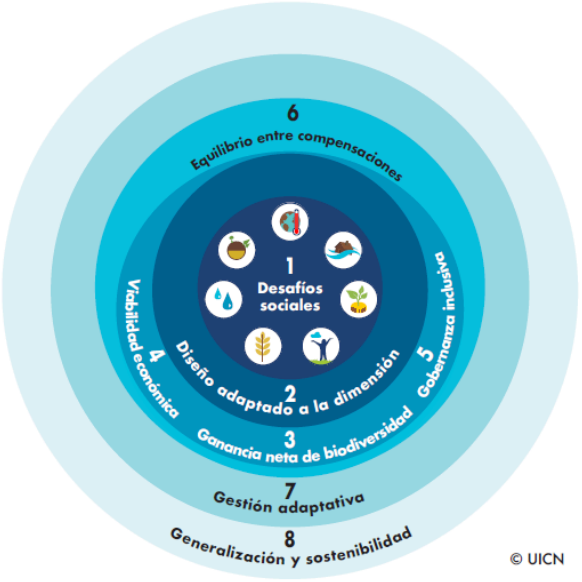


Image 3. The eight criteria of the IUCN Global Standard for NbS. IUCN (2020). Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of NbS. First edition. Gland, Switzerland: IUCN.

To ensure a comprehensive and multidisciplinary approach, the Standard consists of **eight criteria, each with several indicators** (28 in total), which are summarised below:

Criterion 1 - Social challenges

It consists of the application of the theory of change, specifically the logical linkage between the challenges, actions, activities, project actions, and the impact expected to be achieved. It focuses on identifying the main societal challenges that NbS should address. As the scope of NbS is variable, there may be other specific challenges. While a project may start with a particular challenge, the priority is to harness the multiple benefits of NbS.

Criterion 2 - Design at scale

Both the dimensions of the intervention and the interrelations between areas and ecological and socio-economic aspects should be considered, as NbS have an impact on different dimensions and scales. This allows the design of the solution to be guided according to the dimension or scale of the problem, in reference to the terrestrial and maritime geographical dimensions, as well as the economic, ecological, and social aspects of the corresponding landscape. The NbS design seeks to maintain the productive capacity of ecosystems and generate benefits necessary for human well-being.

Criterion 3 - Net biodiversity gain

It consists of a baseline study, elaboration of a biodiversity enhancement and management plan, and a monitoring plan (biodiversity indicators, ecosystem integrity,

and connectivity). NbS provide benefits based on the well-functioning of ecosystems; therefore, the design and implementation of these solutions must proactively seek to improve the state of the ecosystem, its functionality and connectivity, and biodiversity.

Criterion 4 - Economic viability

It consists of conducting a cost-benefit and cost-effectiveness analysis, with a special focus on comparative costs and benefits against conventional non-NbS solutions to the same challenges. In addition, a business model at the scale of the entire local economy generated by and around the NbS and a financing plan, including new innovative financing mechanisms for nature, should be developed to understand the extent of the opportunities generated by the NbS. Here, return on investment, efficiency and effectiveness of the intervention, and equity in the distribution of benefits and costs are key determinants of the success of a NbS.

This criterion requires sufficient consideration of the economic viability and sustainability of the project, both in the design phase and after implementation, during the ongoing monitoring, considering costs and benefits in the short and long terms.

Criterion 5 - Inclusive governance

It relates to the governance structure, communication plan, and inclusive and empowering involvement of stakeholders throughout the process. This criterion requires NbS practitioners to identify, engage, involve, and respond to the concerns of different stakeholders. Projects that incorporate good governance are more sustainable over time and improve their social licence to operate, which makes the difference between successful and unsuccessful interventions. NbS must comply with existing legal and regulatory requirements and identify who has the legal responsibilities and obligations.

Criterion 6 - Balancing trade-offs

It addresses risk identification, prevention, and management plans (limits and safeguards, including a contingency plan with adjustments and corrective measures). Land and natural resource management inevitably has trade-offs: ecosystems provide many different benefits, and not everyone values them in the same way or is affected equally. Although trade-offs cannot be avoided, they can be managed effectively and equitably. This approach requires NbS promoters to recognise and follow a fair, transparent, and inclusive process to manage them and balance the costs and benefits of the intervention, both in geographic space and time.

For example, some of the trade-offs that may arise in the pilot destinations of this project could be tourist access to a particular beach versus the need to protect a dune system that is being restored. This would be a challenge for destinations to address, and a balance will need to be found.

Criterion 7 - Adaptive management

A monitoring plan is mandatory and should include indicators related to the challenges addressed by the NbS, its expected impacts, and the evaluation methodology to use, establishing guidelines for iterative learning and continuous improvement systems. This criterion requires planning for adaptive management of the solution, considering uncertainty, as the management of most ecosystems involves an inherent degree of

uncertainty owing to their complex, dynamic, and self-organising nature. The aim is to ensure effectiveness, and thus resilience in the exploitation of ecosystem services.

Criterion 8 - Scaling up and sustainability

This criterion is about the replication and scaling up of NbS and the alignment and arising synergies with plans and strategies at all levels: local (urban agendas for sustainable development), regional (territorial plans), national (national strategies for adaptation, mitigation, NbS, etc.), and international (Sustainable Development Goals, Paris Agreement on Climate Change, participation in collaborative networks such as EUROCLIMA+, regional networks in the Mediterranean, etc.).

It aims to catalyse the true potential of NbS, which lies in its long-term and large-scale impact. To this end, it is essential to integrate them into policy or regulatory frameworks and link them to local, national, and international objectives to establish collaborative frameworks.

Relevance of NbS in the Mediterranean context according to tourism

The Mediterranean region has emerged as a rapidly growing tourist destination, with projections indicating an increase of between 440 and 665 million tourists by 2025 (IEMed, 2003). Currently, sustained demand has placed significant pressure on tourism infrastructure, leading to increased prices (IEMed, 2024) and pronounced seasonal disparities in the area.

Consequently, the primary challenges in this region being addressed by the NT4CCHange project are related to tourism and climate change. The population growth occurs rapidly in a short period of time, affecting the management and conservation of natural resources, especially the recharge of aquifers and the capacity of wastewater treatment plants. Tourism in this area is concentrated in July and August, which are marked by high temperatures and periods of heavy drought, characteristic of the Mediterranean climate. This contrasts sharply with the low season, when many cities become deserted. This is an increasingly relevant and worrying issue in the context of climate change, since the duration of heat waves and tropical nights -minimum temperatures above 20ºC- are increasing, while the number of rainy days is decreasing, with torrential rainfall dominating.

Sustainable tourism requires the systemic transformation of tourism economies, including a radical change in tourist consumption habits, tourism business practices, and the goals of destination management and planners (IEMed, 2024). Therefore, NbS are a promising tool to address these challenges, as their main goal is sustainable development, balancing environmental, social, and economic needs.

2. How to use these guidelines

In these guidelines, two main tools have been developed to help the project partners of the NaTour4CChange project identify, design, develop, and implement Nature-based

Solutions in the six pilot site destinations that have been selected in Croatia, France, Greece, Italy, Bosnia & Herzegovina, and Spain.

All of them are Mediterranean destinations with a high impact related to tourism pressure; however, each faces different challenges and therefore has diverse scenarios which will define the NbS to develop in their specific contexts.

The first tool is a step-by-step Methodology for NbS design, implementation, and monitoring.

3. Methodology for NbS design, implementation and monitoring

The methodology for designing and implementing NbS presented in these guidelines is practical and based on lessons learned from field experiences using the IUCN Global Standard for NbS. It is aimed at project stakeholders involved in promoting NbS actions, with the ultimate goal of building resilience of local communities to climate impacts, integrating the challenge posed by tourism in the Mediterranean areas, and seizing opportunities to work with local ecosystems and biodiversity through inclusive and participatory governance, which is key to equitably sharing the multiple benefits of NbS.

Nevertheless, it is not intended to be a magic or infallible formula, but rather a step-by-step guide that will serve project stakeholders as a reference when implementing NbS in the pilot destinations.

The methodology consists of seven steps, each divided into distinct phases to be implemented in chronological order (Image 4). Each step is defined by a series of relevant aspects:

1. *Objective*
2. *Description of phases*
3. *IUCN global standard criteria*
4. *Key actors involved*
5. *Tools*
6. *Expected results*

All the steps together form a guide to be followed from the very first moment in the design process of NbS. The methodology is adaptable and does not necessarily have to start from step one, as it will depend on the degree of progress of each pilot within the NT4CC project.

The seven steps are as follows:

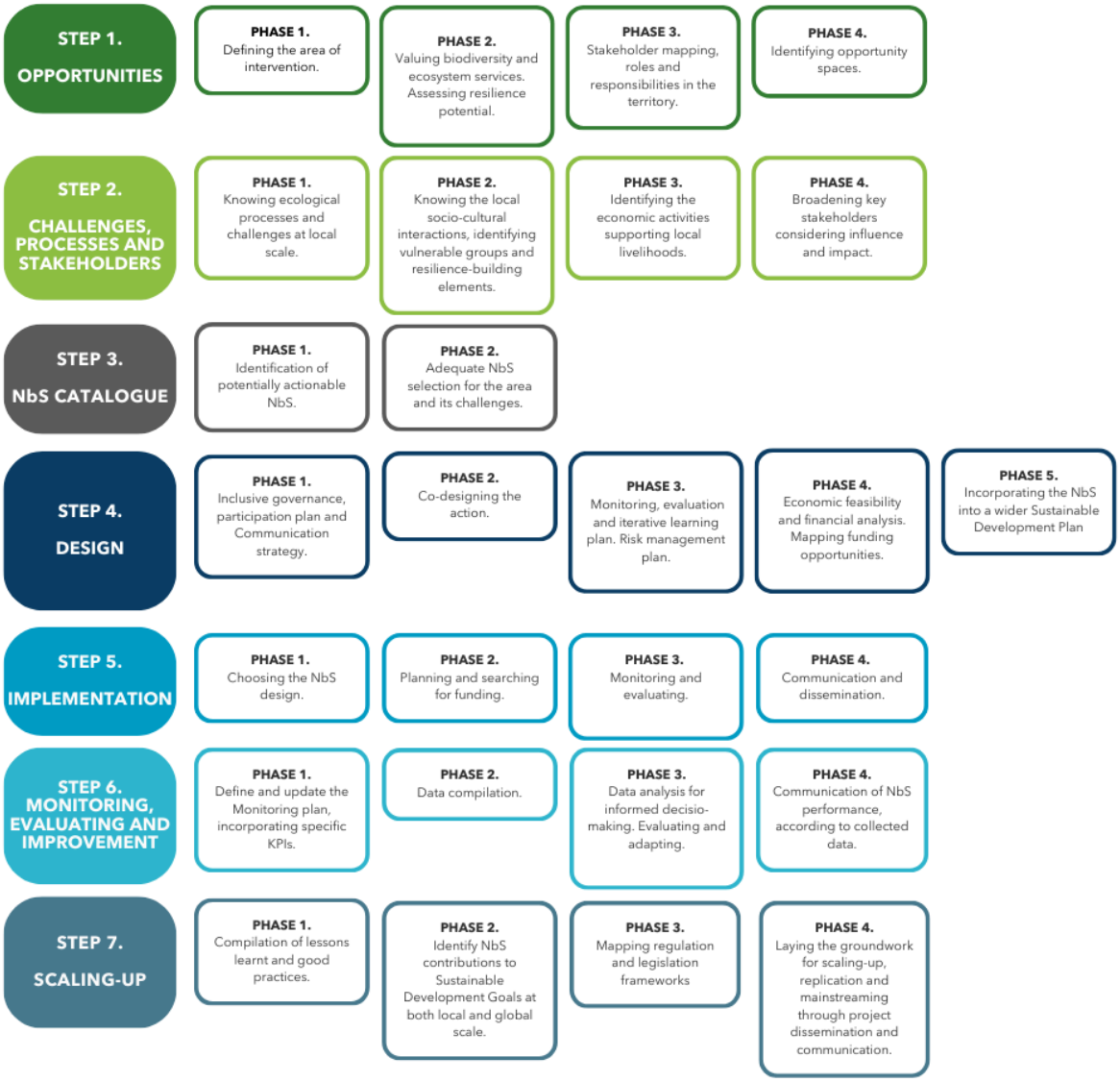


Image 4. The proposed seven steps and their phases. Adapted from *Manual de Soluciones Basadas en la Naturaleza para la Gestión del Cambio Climático en Panamá.* 2024.

Step 1: Opportunities

Objective

To define the physical spaces where opportunities for positive transformation through climate and ecological resilience and social equity are possible, by establishing Nature-based Solutions.

Phase 1.1: Define the area of intervention

First, the broad geographic area or **area of interest** over which action can be taken, where legal and political capacity exists, should be defined. Within this area, the most relevant current and future climate impacts should be broadly characterised according

to scientific reference scenarios and available cartography to limit the area of action to a specific physical space.

Phase 1.2: Initial evaluation of existing biodiversity and ecosystem services. Assessing resilience potential

An initial assessment of biodiversity, existing ecosystems, and their ecosystem services will be conducted to estimate if they are functional ecosystems and to assess the potential for climate resilience generated by NbS, based on these ecosystems, also known as "ecosystem-based adaptation". This step builds on existing research.

Phase 1.3: Stakeholder mapping roles and responsibilities in the territory

In parallel, this phase aims to map the **agents of change** who are active and have a driving capacity in the territory. This is achieved through surveys and interviews with the local community and its main actors (civil society organisations, business, academia, the media, tour-operators, service providers, etc.). This mapping is crucial for understanding the local governance structure and identifying the relevant roles within key sectors, such as tourism.

Phase 1.4: Cross-reference of information to identify the opportunity spaces

Finally, crossing the information from the three previous phases, always within the area of interest, the opportunity spaces are identified as those where, in the face of significant socioeconomic challenges derived from climate impacts and tourism, the potential of ecosystems and social participation for the development of NbS that generate resilience and equity is maximised. In other words, these are **places where NbS demonstration projects can be carried out** with the greatest guarantee of success and impact, and can be scaled up and replicated at a later stage. Among these, we choose the place where the optimal conditions exist a priori and keep the rest as alternatives.

IUCN global standard criteria

This step is related to the following criteria:
Criterion 1: Social challenges were identified.
Criterion 2: The scale concept is directly related to the area of intervention definition.
Criterion 3: The baseline of existing biodiversity and ecosystem services is key to comparing whether our actions result in positive effects on the environment.
Criterion 4: Although economic feasibility has not yet been analysed, the ecosystem services evaluation already outlines low-cost, cost-saving resilience pathways, which will contribute to the following steps.

Tools:	Expected results:

- Mapping - Reference climate scenarios and the Climate Action Plans developed by the project - Biodiversity and ecosystem inventories - Databases on entities and other socio-economic groups - Guiding questions for interviews to identify active stakeholders	- Preliminary study of climate impacts considering the present and future - Preliminary assessment of biodiversity, ecosystems and ecosystem services - Map of active agents and stakeholders to be included in the Climate task forces - Map of opportunity spaces

Step 2: Challenges, processes and stakeholders

Objective

The relevant socio-cultural, economic, and ecological challenges and processes taking place should be identified within the chosen opportunity space and characterised in detail, as well as the associated key actors.

Once the specific area of action is known, an in-depth analysis is carried out, and the issues listed below should be addressed.

Phase 2.1: Identify ecological processes and challenges at the local scale

The **study of biodiversity, ecosystems, and their services** should be carried out at the local level, complementing previous larger-scale studies. Fieldwork is recommended to collect relevant environmental data and review historical documentation, with the aim of understanding the evolution of ecosystems and how they are affected by anthropogenic processes, such as tourism. This will allow future interventions to restore ecosystem services as needed. In addition, citizens and the economic sector (tourism) could be surveyed to understand their vulnerability and resilience to ecological challenges and their perception of these challenges. The information obtained helps to **understand the climatic and ecological challenges of the environment and the tourism sector,** and the potential of both to build climate resilience.

Phase 2.2: Knowing the local socio-cultural interactions, identifying vulnerable groups and resilience-building elements

This phase focuses on analysing **socio-cultural and economic processes in the local community**, such as workforce, seasonality, emigration/immigration, integration of cultures, and variation in income levels, age, gender, and background. The aim is to characterise pre-existing social conditions that may increase vulnerability to **ecological challenges and tourism-related issues**, as well as to identify capacities for social resilience. For example, touristification and gentrification are now common problems

shared by Mediterranean coastal cities, where local populations are most impacted for the sake of tourism development (Mansilla, 2019; EP 2008). Public and community facilities play key roles in these processes. The information obtained will enable the inclusive design of NbS, thereby promoting resilience and social equity. Additionally, the causes of existing socio-cultural processes and tourism interactions in the selected area will be analysed to identify areas where NbS can act effectively.

Phase 2.3: Identifying the economic activities supporting local livelihoods

Analysis of the economic activities that underpin the local economy, including tourism and other economic sectors, the degree of globalisation, specialisation and diversity, and the capacity to meet basic local needs. An assessment of how globalisation can increase vulnerability to global shocks, while localisation and diversity can increase resilience. The aim is to **foster a nature-based economy** to enhance local resilience and sustainability. In addition, the analysis should identify the need for green skills, jobs, training, and entrepreneurship plans to foster this nature-based economy within the local economy. Collaboration with relevant institutions and organisations, such as universities, training centres, business incubators or accelerators, tourist offices, and municipalities, for the training of their technical staff is vital. The "train-of-trainers" methodology could be very useful for scalability. However, maximising returns to local populations and fostering a sustainable blue economy must be addressed differently at each location (Mejjad ,2022).

Phase 2.4: Broadening key stakeholders considering influence and impact.

If only highly active actors were identified in step 1, the circle is now expanded to all socio-economic actors that play a relevant role in the opportunity space. This phase focuses on **identifying and analysing all relevant socioeconomic actors in the opportunity space**. First, the social fabric is mapped from informal groups to formal associations. The impact and influence of each actor is then assessed. Impact refers to how these processes affect each actor's vulnerability and resilience. Influence refers to the capacity of each actor to influence the development and implementation of solutions. A **Stakeholder map** is created, prioritising those with the greatest impact and influence, but also considering highly vulnerable stakeholders with little influence. This analysis is complemented by research and **interviews** to obtain an overall perspective.

IUCN global standard criteria

This step is related to the following criteria:

Criterion 1: The ecological, social, and economic challenges affecting the local population in each pilot destination are identified and analysed while defining the key actors concerning them (impact and influence).

Criterion 2: The spatial-temporal scale of the NbS is bounded by the ecosystemic, socio-cultural, and economic dimensions studied in this step. In other words, NbS should fit the scale of the natural and cultural landscape and the local economy in each pilot destination.
Criterion 3: The analysis of ecological processes and challenges sets the stage for enhancing Mediterranean biodiversity, ecosystems, and their services at the time of design (steps 3 and 4).
Criterion 4: The economic viability of the NbS is understood in a broad sense, going beyond its own budgetary needs, to explore and leverage opportunities generated in the nature-based economy around the NbS that have benefits for the local economy, with a special focus on the tourism-related sector.
Criterion 5: At this level, the foundations are laid for the inclusive governance plan to be developed in the design phase (step 4): the identification of all key actors and their mapping according to their potential for impact and influence, highlighting the most vulnerable to Climate Change and tourism impacts.

Tools:	Expected results:
- Environmental survey: status of biodiversity, ecosystems and their services, carbon markets. - Historical documentation: mapping, photography, traditional knowledge, soil and water conservation practices, etc. - Micro socio-economic analysis. - Stakeholder mapping: impact-influence matrix.	- At the local scale of the opportunity space and its immediate surroundings: ecological, socio-cultural and economic characterisation. - List of key socio-economic actors, and characterisation of vulnerabilities and resilience capacities to Climate Change and tourism impacts.

Step 3: NbS catalogue

Objective

The applicability of predefined NbS actions to the opportunity space is determined to address the previously identified challenges (Step 2), paving the way for a design adapted to the local context (Step 4).

Phase 3.1: Identification of potentially actionable NbS

Elaboration of a list of possible NbS actions that could be suitable for the project pilot sites, according to the challenges identified. A pre-selection of examples is presented in this manual to provide NbS developers with an overview of some options with the greatest potential from the beginning.

Nature-based Solutions actions				
NbS strategies	**N°**	**NbS actions**	**Main challenges addressed**	**Spatial scope**
Comprehensive and Resilient Urban Renaturalisation	1	Urban cooling effect		Resilient human settlements
	2	Bioswales - Stormwater		
	3	Green walls for grey water		
Sustainable management	4	Marine resource management		
	5	Sustainable practices for agriculture or farming		
	6	Fire prevention through eco-pastoralism		
	7	Edible City Network		
Water management	8	Water harvesting and/or aquifer recharge		Integrated Watershed Management
	9	APOC Wastewater treatment		
	10	Urban wetland - wastewater treatment		
	11	Portable constructed wetlands		
	12	Semi-circular pits for water harvesting		

Ecological restoration and/or conservation	13	Dune restoration		Integrated Coastal Zone Management
	14	Seagrass restoration/conservation		
	15	Conservation and Enhancement of Natural and Man-Made Wetlands, Lakes and Ponds		
	16	Disaster risk reduction by soil conservation of Mediterranean Forests and bush areas		
Ecosystem-based management (EbM)	17	Wetland-coastal EbM		
	18	Coastal realignment		
	19	Agro-forestry traditional practices		

Phase 3.2: Adequate NbS selection for the area and associated challenges.

This choice results from cross-checking the identified challenges and opportunity spaces (Step 2) with the list of potentially applicable NbS actions to determine the most suitable ones, which can be one or a combination of several. The information that allows cross-referencing is related to the spatial scope, adaptation or mitigation potential, related ecosystem services, and the socio-environmental challenges that the actions selected to establish effective NbS will address.

IUCN Global Standard Criteria

The list of potential actions in these guidelines has been filtered accordingly, so that all examples could potentially adhere to all the criteria of the IUCN Global Standard. Therefore, **the eight criteria** are related to this step.

Tools:	Expected results
- Bibliography review of previous examples of NbS actions in the Mediterranean area or with great feasibility in the region.	- Potentially applicable NbS actions to address the baseline challenges - Suitable NbS for the opportunity areas in each pilot site

Step 4: Design

To design the final NbS for implementation by contextualising, specifying, and coherently integrating the selected NbS actions. This will be achieved through the application of the IUCN Global Standard in a co-creative and collaborative manner, involving all key stakeholders.

Phase 4.1: Inclusive governance, participation plan and communication strategy

The essence of equity in the benefits of NbS implementation lies in the establishment of an inclusive and truly **participatory governance** from the design itself (IUCN, 2019). To this end, a governance plan should be developed, including the dimensions of communication, involvement, decision-making, and empowerment of all key actors, always driven by the dynamic driving force of the most active stakeholders.

Here, an effective **communication and dissemination strategy** must be developed, as it is the key to reaching stakeholders and allowing sharing of the results of the governance processes, the potential of the actions to be implemented, the results, etc. Each action to be developed within the project should be communicated and disseminated; the information to be shared, the channels, the target audience, and the guidelines should be detailed within the strategy.

Phase 4.2: Co-designing the action

In this phase, the area for environmental actions is defined based on an inclusive and collaborative approach facilitated by experts. Suitable NbS are selected, and concrete actions are designed, considering their linkages and synergies with existing ecosystems and infrastructures. The **action space** is the physical area within the opportunity space where the actions are implemented, and the impact space is the geographical area that is impacted by the NbS, which is usually larger than the action space. The material flows involved are mapped and related to the changes produced by the NbS, creating a mapping of the alterations and their impact on ecological and sociocultural processes.

Phase 4.3: Monitoring, evaluation, and iterative learning plan. Risk management plan

A monitoring plan must be established to measure the impact of Nature-based Solutions on the identified challenges, allowing for data-driven adaptive management. This plan should include SMART indicators (Specific, Measurable, Assignable, Realistic and Time-bounded) (Aldrige 2024) and feed into a continuous learning and improvement system. In addition, a **constant monitoring and evaluation plan should be developed**, considering the entire lifecycle of the intervention, with an iterative learning framework. Possible risks arising from the NbS or affecting it should be identified, and contingency measures and safeguards should be set, which should be periodically monitored and reviewed to ensure the stability of the NbS and its provision of benefits.

Phase 4.4: Economic feasibility and financial analysis. Mapping funding opportunities

In this phase, the resources needed to finance the NbS should be detailed, including the initial investment, operational and maintenance costs, and monitoring and continuous improvement of the action. When analysing the NbS options to implement, an adaptable cost structure can be drafted, and then, later on, **the benefits of the NbS, both monetary and non-monetary**, should be quantified using various tools.

- Cost-benefit analyses are performed to compare project costs and benefits,
- Cost-effectiveness analyses are performed to compare projects with similar objectives.

Both analyses help determine the value of NbS compared to traditional infrastructure solutions. In addition, the **available financing mechanisms**, both public and private, should be explored, highlighting the diversity of new financial products for financing NbS, including the development of a local business model involving SMEs, specifically those related to tourism, and other key actors in the nature-based economy. This can include, among others, activities related to ecotourism, catering, outdoor/adventure sports, hospitality, and gastronomy. This approach aims to ensure that NbS are economically and financially viable and guarantee long-term sustainability.

Phase 4.5: Incorporating the NbS into a wider Sustainable Development Plan

This phase aims to develop **integrated sustainable development plans** at the territorial level, both in urban and rural areas, creating synergies between different sectors, with a special focus on tourism.

In **urban areas**, agendas that improve sustainable tourism (applying smart city tools, monitoring impacts, etc.), mobility (more space for pedestrians and bicycles), naturalisation (use of the gained public spaces for some NbS), and local commerce (small commerce benefits greatly from all of the above) should be identified, and the intervention must be framed in the context of these policies.

In **rural areas**, regenerative agriculture and livestock farming should be encouraged, along with the relocation of the local economy so that farmers can sell directly to local

markets and tourism service providers (restaurants, hotels, etc.). In this line, farm-to-table strategies, such as *Agriturismo* and *Ittiturismo* Initiatives and businesses, are very common in Italy. This might allow them to increase their margins (and therefore profitability) by eliminating globalised intermediaries, guaranteeing food sovereignty in the process (Meher 2024).

Focusing specifically on **tourist destinations**, a shift to sustainable tourism or ecotourism activities is encouraged (Ecounion 2024). This includes promoting eco-friendly accommodations, responsible travel practices, agritourism, and activities that minimise environmental impact while supporting local communities. Sustainable tourism initiatives can help preserve natural landscapes, promote conservation efforts, and provide economic benefits to local populations through increased employment opportunities and ecotourism revenue.

The integration of other NbS, such as sustainable forest management and the protection of natural spaces, along with the shift to sustainable tourism and ecotourism, creates a mutually reinforcing dynamic. This approach will not only ensure economic benefits for local communities through eco-friendly tourism activities but also promote rural empowerment and land stewardship in the long term. By preserving and enhancing ecosystem services, NbS can positively impact agriculture and livestock farming. Thereby boosting the local economy and encouraging community participation. Economic returns from sustainable tourism further support local development, making the preservation of natural resources a viable and attractive option for the population.

IUCN Global Standard Criteria

The proposed methodology touches on **all eight criteria** of the IUCN Global Standard in favour of a holistic design and maximising the impact.

Tools:	Expected results
- Tools for good governance - Tools for characterising material flows and their impacts - Cost-benefit analysis - Cost-effectiveness analysis - Mechanisms for financing NbS	- Governance plan - Environmental actions to be developed in the area of action, and their repercussions on the impact area - Monitoring plan and learning, and a continuous improvement system - Risk prevention and management plan - Economic-financial plan - Business model for the local economy - Comprehensive territorial sustainable development plan

Step 5: Implementation

Strategies are presented to put the design into practice, implement, and develop the NbS on the ground through a participatory approach adapted to the local context. The success of the implementation will depend on the design based on the IUCN GS, including, for example, that the chosen NbS responds to the socio-environmental challenges existing in the territory (Criterion 1) or that it achieves sustainability over time (Criterion 8).

Phase 5.1: Choosing the NbS design

The specific challenges existing in the area have to be identified (step 1); then, a selection among the available NbS must be made, evaluating them and choosing the most appropriate ones to address the identified challenges according to Step 4; special attention must be paid to tourism pressure issues identified in the pilot destination.
A **selection of NbS options** that could address the identified needs should be made, taking into account the benefits for biodiversity, the environment and local communities. Priority should be given to NbS that addresses more than one challenge.

Phase 5.2: Allocate necessary resources

A detailed plan for implementing NbS should be developed, continually assessing their effects on biodiversity and human well-being, and including adaptive management to readjust the NbS if necessary (criteria 1, 3 and 7). It is essential to detail staff resources, materials and associated costs, and to have developed an economic feasibility plan that considers alternative designs to demonstrate the suitability of the selected solution.

Implementation should include a **timeline of activities**, including the identification of suitable funding resources and a **cost-effectiveness study**, integrating **different types of financial mechanisms** (phase 4.4). Sources of investment may include public subsidies, incentives and low-interest loans, private loans and equity, public-private partnerships, as well as philanthropic or voluntary contributions, or a combination of these options for an equitable distribution of risks and returns. In addition, the information obtained in step 2 (in Phase 3) should be used to support economic activities that sustain the local economy.

Phase 5.3: Execute the implementation plan

The execution of the selected actions to implement the NbS is the most relevant phase. Once the design and implementation schedule are established, the implementation phase of a NbS begins with the execution of the planned actions. It will be crucial to **involve the local community, tourism sector and experts at every step** to ensure that the actions are carried out effectively. The developed monitoring plan (phase 4.3) should already be in function in order to evaluate the progress and impact of the solution, allowing for continuous adjustments and improvements. Successful

implementation depends on efficient coordination, stakeholder commitment and constant adaptation based on the feedback obtained.

Phase 5.4: Communication and dissemination of the actions

A **communication plan** should be set to guide the dissemination and sharing of the results of the NbS implementation with stakeholders and the general public (phase 4.1), highlighting the benefits gained, challenges faced and lessons learned during this phase. The design, implementation and lessons learned from NbS need to be shared to **drive transformational change** (Criterion 8). Therefore, the NbS design and implementation process must capture, document and make lessons learned available to individuals and stakeholders who wish to replicate the process, as well as to help mainstream these kinds of actions. Some of the targeted audiences include decision-makers, agents from the tourism sector, investors and other users of NbS in both the public and private sectors.

IUCN Global Standard Criteria

This step is related to the following criteria:

Criterion 4: The economic Feasibility Assessment is related to the direct and indirect costs of implementing NbS. It is important to determine who bears the costs and who benefits. Also, include in the plan the ongoing operational costs to ensure long-term economic viability, ideally by the generation of sustainable benefits.

Criterion 5: Inclusive Governance Involve diverse stakeholders (governments, local communities, NGOs, private sector) in decision-making to ensure that all perspectives and needs are considered, maximising benefits for all stakeholders.

Criterion 6: Equitable Balance Develop a comprehensive risk prevention and management plan to mitigate negative impacts and respond effectively to unforeseen events, ensuring that both, benefits and potential downsides are considered.

Criterion 7: Adaptive Management through continuous monitoring systems for interactive learning to account for uncertainty and ensure effectiveness and resilience in the exploitation of ecosystem services. And especially adapt the management to unpredictable climatic and socio-economic changes.

Tools:	Expected results
- Stakeholder mapping - NbS catalogue - Economic- Financial plan - Cost-benefit analysis - Business model for the local economy - Territorial sustainable development plan	- Implementation plan with a schedule of the activities. - Strategies to implement a diversified financial plan including creation of public-private partnerships and international and local fundraising. - The actions designed for the implemented NbS are expected to generate economic and social

	benefits, reducing the vulnerability of communities to the identified challenges at different time scales.

Step 6: Monitoring, evaluation and improvement

This step aims to facilitate continuous learning by providing documented evidence to support decision-making and planning related to NbS. This will involve implementing the monitoring and evaluation system designed (step 4) to measure the impact of Nature-based Solutions. Lessons learned and good practices in monitoring, evaluation and continuous improvement of the actions, considering the level of impacts achieved, will be crucial to achieving an adaptive management

Phase 6.1: Continuous performance monitoring

The monitoring and learning plan designed in step 4 is the reference for identifying relevant indicators for the intervention. In addition, indicators should be included to measure and evaluate the adequacy of the NbS against the different criteria of the NbS Standard, to check the **level of adherence** of the intervention to it, and to enable the identification of areas for improvement and good practices.

Within these indicators, it is important to note that there should not only be quantitative indicators on the performance of the NbS itself, but also to assess aspects such as citizen participation, the well-being generated, parameters related to cultural ecosystem services, etc. Similarly, the methodology, procedures and means necessary to carry out the measurements should have been established, identifying the actors involved in the data collection and the appropriate times (frequency of measurements, start dates, etc.), aligned with the budget foreseen for this phase.

Monitoring can be developed through different tools, methodologies and thanks to different actors, not only technical staff: involving citizens or relevant actors within the tourism sector in monitoring activities could contribute to achieving better governance, improving the sense of ownership and long-term sustainability of the NbS. For example, citizen science campaigns could be developed through apps, training, tours, etc., in which tourists could also participate.

Phase 6.2: Periodic evaluation

Collect relevant and reliable data regularly to measure the selected indicators throughout the lifecycle of the NbS, as it is important to compare baseline data with data during and after implementation. During Steps 1 and 2, the need to collect information on local biodiversity, climate and climate resilience potential has been indicated. Data collection might be done, as indicated in the previous phase, by different actors, but results must be evaluated by technical staff and, if needed, they should trigger adaptive measures, following the established plan.

Phase 6.3: Implement continuous improvements

Use the results of monitoring and evaluation (M&E) to make informed decisions and adjustments to the project as necessary. These adjustments could involve modifications to the implementation strategy, monitoring, governance, the allocation of resources or the introduction of new nature-based measures. It is relevant at this point to have **safeguards** in place according to the risk management plan elaborated (step 4); these are boundaries that should not be crossed, because beyond them the NbS may start to generate disservices (unintended negative consequences), harm local biodiversity or even have negative consequences beyond the area of the intervention. These limits are sometimes set by regulations (as in water quality issues), but in other cases, they must be set in advance by the project team.

Monitoring and evaluation activities should be included in the communication strategy to ensure that the impacts from the NbS can be shared and disseminated, contributing to replication and enhancing its influence, but, above all, to reach stakeholders, informing them and collecting their feedback, which helps to improve their engagement over time.

IUCN Global Standard Criteria

This step is related to the following criteria:

Criterion 2: Manage interactions between NbS, economics, social aspects and ecosystems, ensuring that no significant risk or damage is generated at other scales.

Criterion 3: NbS should enhance biodiversity and improve ecosystem integrity and connectivity, establishing indicators to measure these aspects before and after the intervention.

Criterion 6: Ensure that the benefits of NbS are distributed equitably, periodically reviewing the limits set and the interests of affected people.

Criterion 7: Prioritise data collection, progress monitoring and impact assessment of NbS, reflecting an evidence-based approach to sustainable management.

Criterion 8: Design a scalable and sustainable monitoring and evaluation system to ensure continuity and improvement of conservation initiatives over the long term.

Tools:	Expected results:
- Selection of indicators according to the Adaptation M&E System in each NbS intervention, - Use of Geographic Information Systems (GIS), - Conducting Expert Judgement, - Interviews with focus groups - Surveys	- A set of specific indicators chosen for M&E of Nature-based Solutions to measure change from the baseline, - Updated baseline, - Safeguards and limits in place, as well as mechanisms for correction and/or adaptation in case of deviation or unintended adverse consequences, - Inclusion in the communication plan of the information obtained through the continuous monitoring system, - A functional M&E System.

Step 7: Up-scaling

The lessons learned and good practices from projects are shared to improve the sustainability of the NbS, to replicate it in other places, to foster social and political dialogue on the issue, and ultimately, to influence public policies that favour its development and standardisation.

Phase 7.1: Compilation of lessons learned and good practices

Once the process of designing, implementing, and monitoring Nature-based Solutions (NbS) has begun, it is essential to compile lessons learned throughout each stage of the project, rather than waiting until its completion. This ongoing reflection enables the identification and extraction of good practices in a multidisciplinary and participatory manner, covering areas such as sustainability, tourism, governance, cost-effectiveness, and more.

This **information should be collected and documented systematically**. The IUCN Global Standard for Nature-based Solutions serves as a valuable guidance tool when applied from the outset of the intervention. It supports the identification of actions with the greatest potential across all relevant areas—corresponding to each criterion of the Standard—as well as those aspects that require improvement. Through this process, good practices can be highlighted and lessons learned can be clearly defined, helping to guide future improvements.

Sharing these insights with stakeholders and other relevant actors is essential to maximise the impact of the actions undertaken. The communication strategy should aim to reach diverse audiences and consider effective ways to disseminate the results of the NbS, including both best practices and lessons learned. In this particular case, special attention should be given to the intersection between the challenges posed by climate change in Mediterranean coastal areas and those related to tourism.

Phase 7.2: Identify NbS contributions to Sustainable Development Goals at a local and global scale

Along the same lines, an analysis should be made of **how the NbS developed contributes to meeting national and international objectives**, especially if there are any related to tourism, thus improving human well-being, Climate Change, biodiversity, sustainable development, etc.

One of the main objectives of Nature-based Solutions (NbS) is to address societal challenges. Therefore, it is essential to identify which Sustainable Development Goals (SDGs) the project responds to or how it contributes to the Paris Agreement. For instance, according to the United Nations Department of Economic and Social Affairs, sustainable tourism is closely related to SDG 8, on the promotion of economic growth; SDG 12, on responsible consumption and production; and SDG 1, on poverty reduction. Furthermore, sustainable tourism can significantly contribute to SDG 14, on the

conservation of marine life, as sustainable and well-managed coastal and maritime tourism can help protect marine biodiversity and support the Blue Economy. Additionally, SDG 11, on the protection of natural and cultural heritage, can also be addressed, as sustainable tourism can help preserve cultural and natural heritage, promoting diversity and local identity.

Phase 7.3: Mapping the regulation and legislation framework

Identifying and mapping relevant policies, regulations or legal frameworks that can affect the NbS, either by geographical location, type of intervention, population involved, etc., is another step to undertake. This will result in a first mapping of regional, national and international policies, and, depending on the scope of the actions. It may be necessary to consider also regulations at a local scale, such as territorial or urban planning regulations.

Sometimes the existing rules or regulations will favour the implementation of the selected NbS, but sometimes they will not, and even some contradictions between policies could be found. It is therefore important to identify areas where suggestions and improvements can be made, with the aim of modifying or even developing new policies that will allow the successful development of the current NbS and those to come, contributing to the mainstreaming of NbS (criterion 8).

Phase 7.4: Groundwork for scaling up. Replication and mainstreaming through project dissemination and communication

Once the previous analysis phases have been completed, the **results must be disseminated and shared,** either to a general audience or to a strategic and targeted one. In any case, the communication strategy developed from the very beginning of the design has to consider the target audiences and establish specific objectives and communication channels.

Sharing and disseminating the results of the project, what good practices have been identified, as well as the challenges (for example, challenges related to standards and regulations), is essential for **learning and facilitating the up-scaling and replication** of NbS. The information gathered about the contribution of NbS to national or global objectives of human well-being, sustainability, Climate Change, etc., will be valuable for highlighting the role of NbS, making **its potential impact visible.**

Ultimately, understanding and publicising the policies that affect NbS, both positively and negatively, will enhance their visibility and inform the establishment of advocacy campaigns. These lobbying strategies are crucial for achieving substantial changes in regulatory frameworks, as stated before, developing **policies that facilitate and encourage the implementation of NbS projects**, paving the way for future interventions.

IUCN Global Standard Criteria

This step is related to the following criteria:

Criterion 1: Identify the main societal challenges and analyse the key actors, especially governmental and decision-makers.
Criterion 2: Design solutions that address the problem within a larger system (ecological, economic or social) and adapt to municipal, regional and national legislation.
Criterion 4: Analyse economic viability holistically, drawing lessons and good cost-benefit practices to influence public policy and benefit the local economy.
Criterion 5: Establish mechanisms for joint decision-making when NbS transcend jurisdictional boundaries, identify and map key actors, and highlight the most vulnerable.
Criterion 7: Implement evidence-based adaptive management, with continuous monitoring and periodic evaluation, to maintain the relevance of NbS and minimise risks. Create a learning framework that benefits public policy and long-term sustainability.
Criterion 8: Design and manage NbS for long-term sustainability, considering, collaborating and adapting to sectoral and national policy frameworks.

Tools	Expected results
- Analysis, preferably based on the Standard, identifying good practices and areas for improvement, - Analysis and mapping of applicable legal and regulatory framework (international, national and local regional), - Communication strategy, - Policy influence strategy.	- Compilation of lessons learned and good practices. - Mapping of the solution's contribution to national and international policies. - Mapping of potential for improvement of public policies and local, regional and national regulatory frameworks. - Communication and dissemination materials (information pamphlets, leaflets, newsletters, social media posts etc).

4. Inspiring examples of NbS

Nature-based Solutions (NbS) represent innovative and sustainable approaches to addressing environmental, social, and economic challenges. These solutions leverage natural processes and ecosystems to provide benefits to both people and the environment. NbS can be categorised into several key areas, each with inspiring examples that demonstrate their potential and effectiveness. For this purpose, People and nature must work together (Image 5).

In this document, we present a series of selected examples that serve as inspirational references for project partners. These examples cover different categories of NbS, including ecosystem restoration, sustainable natural resource management, and

Climate Change adaptation. Each example illustrates how NbS can be effectively implemented to generate tangible and lasting benefits.

The following examples have been selected to serve as a catalogue of options, offering inspiration for the implementation of NbS in various contexts. Additionally, integrating sustainable tourism practices can enhance the positive impacts of NbS by promoting environmental stewardship, supporting local economies, and preserving cultural heritage.

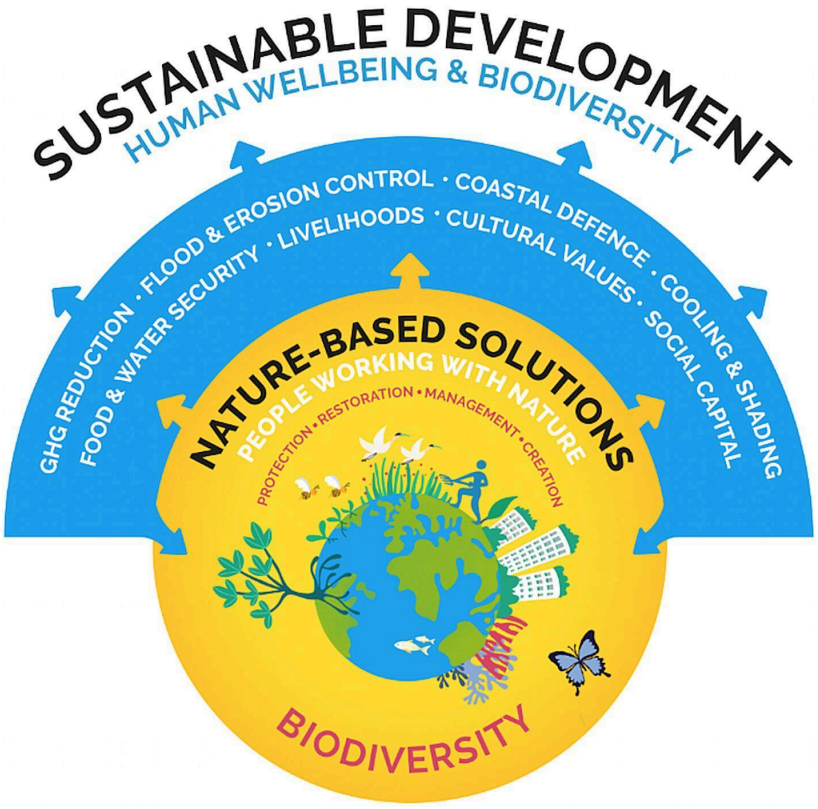


Image 5. Getting the message right on Nature-based Solutions to Climate Change. Global Change Biology, Volume: 27, Issue: 8, Pages: 1518-1546, First published: 01 February 2021, DOI: (10.1111/gcb.15513)

The following examples have been selected to serve as a catalogue of options:

1. Management of Posidonia beaches

Seagrass conservation for beach protection and wave reduction **Mediterranean countries**	
Strategy: Sustainable coastal management. *Posidonia oceanica* shields coastlines from storm impact while boasting one of the highest marine carbon fixation rates—comparable to mangroves and up to ten times greater than tropical forests	Conservation and management of *Posidonia oceanica* banquettes
Challenges addressed:	

Coastal erosion, Biodiversity loss, Climate change adaptation and Lack of public awareness


Climate change Adaptation / Mitigation / Cross-cutting	Adaptation and Mitigation
Area of intervention:	
	

Description

Seagrass meadows, particularly *Posidonia oceanica*, play a critical role in coastal protection and biodiversity conservation across the Mediterranean and Adriatic regions. These ecosystems act as natural wave attenuators, reducing coastal erosion and buffering the impacts of storm surges and sea-level rise.

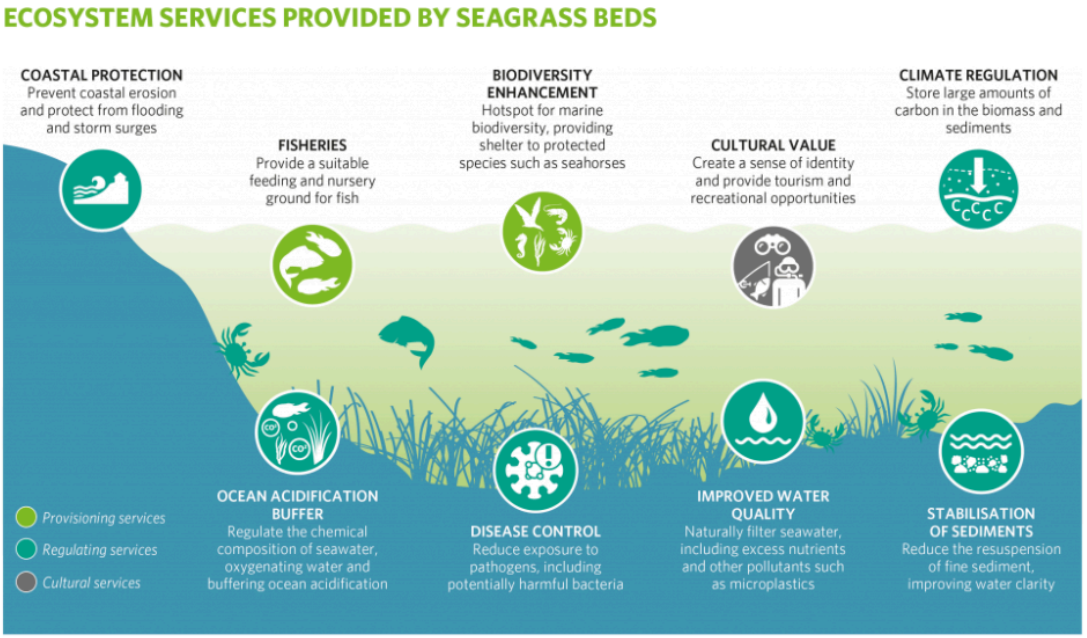
Nature-based solutions for *Posidonia oceanic*a management focus on preserving its ecological functions and enhancing its resilience against anthropogenic and climatic threats. **Beach management** involves the strategic handling of Posidonia banquettes, ensuring their incorporation into the coastal sediment system to strengthen shoreline stability and mitigate erosion during winter storms. At the seafloor level, **conservation efforts target bay habitats**, implementing anchoring exclusion zones and deploying seagrass-friendly mooring systems to prevent mechanical damage. **Restoration strategies**, though challenging due to Posidonia's low recovery rates, leverage seed dispersal techniques, transplantation methods, and marine protected areas to enhance recolonisation and long-term ecosystem functionality.

POSBEMED project has been identified as a reference initiative focused on the sustainable management of *Posidonia oceanica* residues or banquettes found on Mediterranean beaches. These natural accumulations have been traditionally considered as litter, and were often removed in Mediterranean touristic destinations, producing beach exposure to storms, resulting in sediment loss and the need to add further sediment. The project reframed Mediterranean Posidonia banquettes from beach waste into **high-value, nature-based coastal defences**, demonstrating how in situ retention and strategic placement dissipate wave energy, curb shoreline erosion, and crucially enhance blue-carbon sequestration. The project's guidelines and governance framework delivered by the partnership now enable a truly ecological beach-management model that balances tourism needs with the maximisation of *Posidonia oceanica* protective and carbon-sink functions. The project is considered a successful reference because it was able to promote integrated governance for Posidonia beach and dune systems; develop management guidelines for local authorities and protected areas; enhance public awareness of the ecological value of Posidonia residues and link sustainable tourism with conservation efforts.

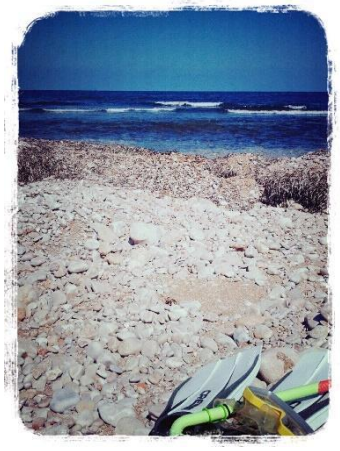
Another example, **Project MANAIA** is a dynamic marine conservation and research initiative operating within the Mediterranean. Established in 2014, the project utilises research sailing expeditions to monitor critical seagrass habitats, assess the spread of invasive species, and map marine debris—especially ghost nets. By collaborating with dive centres, NGOs, and local communities, Project Manaia not only gathers essential scientific data but also engages volunteers through hands-on

restoration workshops and citizen science activities. This approach fosters sustainable practices, enhances public awareness, and contributes to the long-term resilience of our marine ecosystems.

Images



Modified from UNEP (2020) and Potouroglou, M., Westerveld, L. and Fylakis, G. (2020).



Source: Irene Morell

Source: Project Manaia, https://projectmanaia.at/projects/seagrass

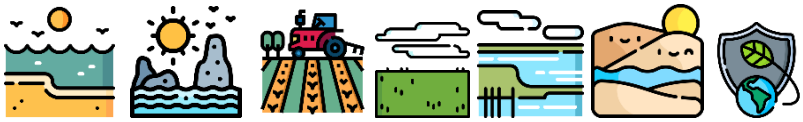
Source: POSBEMED

Sources and resources

POSBEMED2 project. Conserving Mediterranean beaches with *Posidonia oceanica*https://biodiversity.uma.es/posbemed-2-project/ https://posbemed2.interreg-med.eu/fileadmin/user_upload/Sites/Biodiversity_Protection/Projects/POSBEMED2/EN_2022_UICN_Manual_Posidonia_V7.pdf https://iucn.org/sites/default/files/2023-06/nature-oriented-destination-marketing_es_compressed.pdf https://projectmanaia.at/
How does this NbS address tourism-related challenges?
By maintaining Posidonia banquettes, beaches benefit from **natural coastal defence**, reducing the need for artificial interventions. The project also fosters **ecotourism**, highlighting the role of seagrass in maintaining healthy coastal ecosystems. Additionally, it encourages **local engagement**, ensuring that conservation efforts align with tourism and economic activities. Furthermore, one potential approach worth exploring is the integration of POSBEMED's focus on Posidonia conservation with an interactive tourism experience, akin to the model proposed by Project Manaia. Imagine local dive centres serving as hands-on hubs where tourists and community members participate in seagrass restoration workshops. Although such initiatives have yet to be fully implemented, they could inspire innovative ways to transform traditional beach visits into engaging, educational experiences. This proposal aims to enhance environmental awareness and actively involve visitors in measures that strengthen coastal resilience. By coupling these concepts, stakeholders can consider how to balance sustainable tourism with the conservation of natural coastal defences, creating attractive and eco-friendly destinations.

2. Coastal realignment

Medmerry Managed Coastal Realignment **United Kingdom**	
As a response to the increasing coastal flood events and consequent damages, the Environmental Agency of the United Kingdom funded a project to build new sea defences inland, creating a new "intertidal" area.	Managed Coastal Realignment
Challenges addressed Coastal floods, Sea level rise, Storm surges, Erosion, Ecosystem loss, Lack of public and decision maker's awareness	
	
Climate change Adaptation / Mitigation / Cross-cutting	Adaptation
Area of intervention	



Description

The Medmerry Realignment Project, located in West Sussex, UK, is a groundbreaking coastal management scheme completed in 2014. It is the largest managed realignment of its kind on an open coast in Europe, designed to address the increasing threat of coastal flooding and habitat loss due to rising sea levels.

The key aspects of the project include:

- **Managed Realignment:** Instead of continuously maintaining a vulnerable shingle bank, the project involved constructing a new 7km clay embankment up to 2km inland from the original coastline. This created a new "intertidal" zone between the old and new defenses.
- **Flood Protection:** The primary goal was to provide sustainable flood protection for 348 properties in Selsey, as well as critical infrastructure like a water treatment plant and the main road. The new defenses offer a significantly higher standard of protection (from a 1-in-1 year flood risk to 1-in-1000 year initially, designed to be resilient for 100 years, including climate change).
- **Habitat Creation:** A significant outcome is the creation of approximately 300 hectares of new wildlife habitat, including 183 hectares of intertidal habitats (mudflats, saltmarsh, and saline lagoons) and additional freshwater ponds and reedbeds. This compensates for habitat loss elsewhere in the Solent area due to coastal squeeze and has led to a flourishing of bird populations. The site is now managed as a nature reserve by the RSPB.
- **Economic Benefits:** The project has resulted in substantial economic benefits, estimated at £90 million. It significantly reduced annual maintenance costs for the old shingle bank (from £300,000 per year) and boosted the local economy through increased "green tourism" and extended seasons for caravan parks.
- **Community and Recreation:** The scheme involved extensive public consultation and has created 10km of new footpaths, 7km of bike paths, and 5km of bridleways, enhancing recreational opportunities and well-being for the local community.
- **Sustainability and Innovation:** The project emphasized sustainability, using clay from within the site for the embankment and incorporating the "borrow pits" into the final design as new habitats. Innovative ecological mitigation techniques were also employed to protect existing wildlife during construction.

The project, which had a cost of £28 million funded by the Environment Agency of the United Kingdom, offers a long-term, sustainable solution compared to the ongoing high costs and limited effectiveness of maintaining the previous shingle bank. It serves as an exemplar for future coastal flood and erosion risk management, demonstrating how working with natural processes can provide both flood protection and significant environmental and social benefits.

Images

Source: Aerial Shot – September 2013 Environmental Agency

Sources and resources:

Environment agency of UK: https://www.gov.uk/government/publications/medmerry-coastal-flood-defence-scheme/medmerry-coastal-flood-defence-scheme
PANORAMA Solutions: https://panorama.solutions/en/solution/medmerry-managed-coastal-realignment
Internet geography: https://www.internetgeography.net/topics/medmerry-case-study-coastal-realignment/
Project LOTE LIFE: https://www.projectlote.life/news/medmerry
Esteves, Luciana. (2014). Managed realignment: A viable long-term coastal management strategy? https://www.researchgate.net/publication/261508267_Managed_realignment_A_viable_long-term_coastal_management_strategy

How does this NbS address tourism-related challenges?

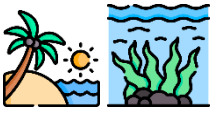
The Medmerry Realignment Project has had a significant and positive relationship with tourism, specifically promoting sustainable tourism and contributing to the local economy.

For instance, the creation of a major **Nature Reserve**, managed by the RSPB (Royal Society for the Protection of Birds), a new habitat, rich in mudflats, salt marsh, lagoons, and diverse birdlife, has become a significant draw for nature enthusiasts, birdwatchers, and walkers. Also, the **tourism season has been extended** - it was one of the project goals - by providing opportunities for low-impact activities like cycling, walking, and birdwatching; Medmerry encourages visits during autumn and winter, which helps to vitalize the local economy year-round, rather than relying solely on peak summer tourism. But not only are these new areas being used by tourists, the local population has benefited as well from improved recreational opportunities.

In addition, Medmerry has been explicitly highlighted for providing a major boost for "**green tourism**." This aligns with the principles of sustainable tourism by focusing on nature-based activities, minimizing environmental impact, and supporting local communities. The project is often cited as an example of how environmental adaptation can lead to **economic benefits** such as local caravan parks with an extended opening period of two months, reduced maintenance costs of the new sustainable flood defences, increased visitor numbers, or even the creation of a unique local product, as the cattle that graze the salt marsh grasses at Medmerry produce beef with a higher salt content, which is favoured by some consumers, potentially leading to higher prices for local farmers.

In summary, the Medmerry Realignment Project has not only provided essential flood protection and created vital habitats but has also successfully leveraged its environmental benefits to become a significant driver for sustainable tourism, generating economic value and enhancing the quality of life for the local community.

3. Dune restoration

Sand Dune restoration for Coastal Flood Protection	**Algeria and Egypt**
Strategy: Dune restoration for coastal flooding, Sea level rise, Extreme weather events, Erosion, Habitat degradation	Ecological restoration
Challenges addressed	
	
Climate change Adaptation / Mitigation / Cross-cutting	Cross-cutting
Area of intervention	
	
Description	

In Algeria and Egypt, dune restoration is used to mitigate climate change impacts.

In **Algeria**, dune restoration initiatives have focused on stabilising degraded coastal areas through ecological techniques such as vegetation planting, sand fencing, and community-based monitoring. These actions aim to restore the natural morphology of dunes, reduce erosion, and protect inland ecosystems and infrastructure. The interventions are designed to work with natural processes, allowing wind and sediment dynamics to shape the landscape while enhancing its resilience.

In **Egypt,** the project "Enhancing Climate Change Adaptation in the North Coast and Nile Delta," funded by the **Green Climate Fund**, targets five vulnerable hotspots within the Nile Delta Coastal Zone. The initiative involves constructing **sand dune dikes** using locally sourced materials to reduce the risk of coastal flooding caused by sea-level rise and increasingly frequent extreme storm events.

These dikes act as natural buffers, absorbing wave energy and preventing saltwater intrusion into agricultural and urban areas.

Key features:

- **Flood Risk Reduction**: Natural barriers absorb wave energy.
- **Use of Local Materials**: Enhances sustainability and community ownership.
- **Integrated Coastal Management**: Includes early warning systems and policy support.

Both projects integrate **traditional knowledge and local participation**, ensuring that the interventions are culturally appropriate and economically viable. The use of local materials not only reduces costs but also strengthens community ownership and long-term maintenance. These nature-based solutions are embedded within broader coastal management strategies that include early warning systems, policy development, and stakeholder engagement.

The restoration of dune systems in both countries demonstrates how medium-level interventions can provide **effective, scalable, and sustainable** responses to climate-related hazards. They also contribute to biodiversity conservation by creating habitats for native flora and fauna, reinforcing the ecological value of coastal zones.

Images

Source: Photo by Zeynel Cabezi, published by IUCN in https://iucn.org/sites/default/files/2022-07/towards_nature-based_solutions_in_the_mediterranean.pdf

Source: Example of dune restoration in Valencia, Spain, published by Global Nature at https://fundacionglobalnature.org/portfolio/restauracion-de-dunas-costeras/?lang=en

Sources and resources

- Algeria: https://iucn.org/sites/default/files/2022-07/towards_nature-based_solutions_in_the_mediterranean.pdf
- Egypt: https://www.greenclimate.fund/project/fp053
- PANORAMA: https://panorama.solutions/en/solution/enhancing-climate-change-adaptation-north-coast-and-nile-delta-egypt

How does this NbS address tourism-related challenges?

Although tourism is not the primary focus of these dune restoration projects, they offer **significant indirect benefits** for sustainable tourism. In Argelia, restored dunes enhance the **aesthetic and ecological value** of coastal areas, making them more attractive for eco-tourism and nature-based recreation. These areas can be promoted as destinations for hiking, birdwatching, and environmental education, especially in regions where mass tourism is not yet dominant.

In Egypt, the protection of agricultural zones and urban settlements from flooding helps maintain the viability of local economies, including tourism-related services. Coastal resorts, historical sites, and natural attractions in the Nile Delta benefit from improved resilience, reducing the risk of damage and service disruption during extreme weather events.

Importantly, these projects contribute to **mitigating the negative impacts of tourism** by preserving natural landscapes and preventing uncontrolled development in fragile coastal zones. They also offer opportunities for **community-based tourism**, where local populations can engage in guiding, conservation activities, and cultural exchange, fostering inclusive economic growth.

By demonstrating how ecological restoration can support tourism infrastructure and enhance visitor experiences, these dune restoration projects highlight the **replicability and multifunctionality** of NbS. They serve as models for integrating climate adaptation with sustainable tourism planning, especially in regions facing high environmental and socio-economic vulnerability.

4. Water recharge

LIFE Matrix: Safe water reuse	Spain
This EU co-funded project aims to demonstrate the technical, environmental and health feasibility of a Managed Aquifer Recharge (MAR) using reclaimed water in the Costa del Sol (Spain). It is located in a water-stressed area, with high pressure on the resources due to seasonal demand.	Managed Aquifer Recharge (MAR) with reclaimed water.
Challenges addressed	
	
Climate change Adaptation / Mitigation / Cross-cutting	Adaptation
Area of intervention	
	

Description

The project's core aim is to demonstrate the technical, environmental, and health feasibility of recharging aquifers with treated wastewater. The project addresses the challenges of water stress in Spain, particularly in coastal regions like the *Costa del Sol* (Marbella, Málaga), where seasonal demand (due to tourism) and population growth lead to aquifer overexploitation and salinisation.

The MAR system will be implemented at *La Víbora* WWTP (Marbella), where the volume of reclaimed water required will be conveyed from the tertiary treatment plant, passing through a constructed wetland, where phytoremediation takes place, and will then be transferred to recharge ponds, where the water will percolate by gravity through a permeable reactive organic layer until it reaches the aquifer level. The whole process will naturally improve water quality, reducing its salinity, nutrients and emerging pollutants.

Here are some of the key aspects of the project:

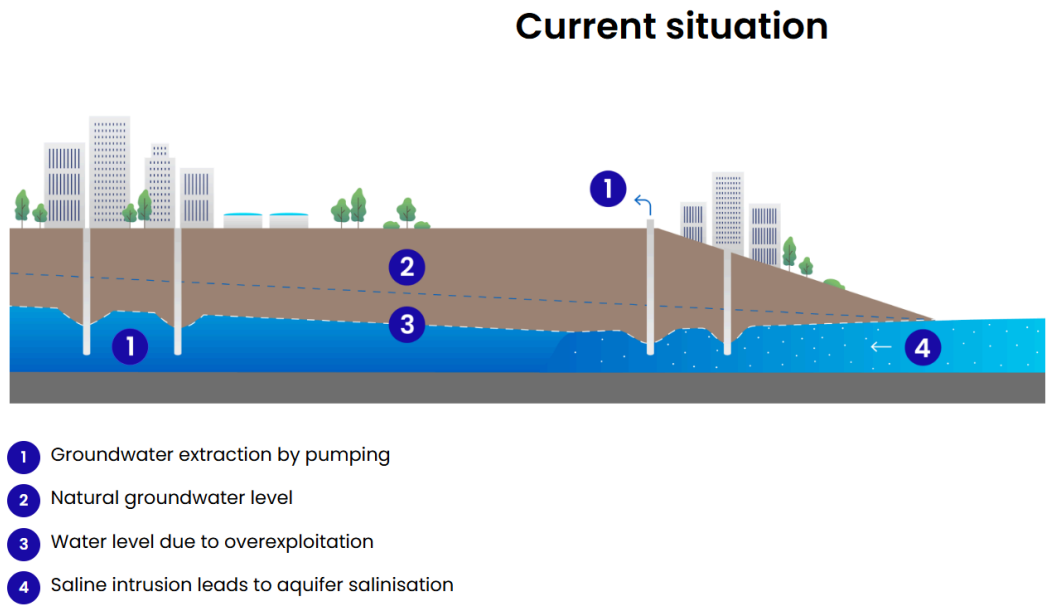
- Two different techniques are being used to achieve the project's goal:
  1. **Managed Aquifer Recharge (MAR)**, which involves reusing 50.000 m^3 of reclaimed water to recharge the aquifer by surface infiltration.
  2. Development of **Sanitary Safety Plans (SP)**, maintaining a strict control of water quality parameters in water, soil, and the aquifer, to ensure the recharged water meets optimal quality and safety standards.
- The materialisation of the solution involves three components, described below.
  1. **Physical Component:** implementing a multiple-pond percolation recharge system at the WWTP. This system leverages natural water treatment processes like phytoremediation (using constructed wetlands) and a permeable reactive organic layer to further purify the water as it percolates towards the aquifer. A hydrogeological monitoring network tracks quality parameters in the three phases: water, soil and aquifer.

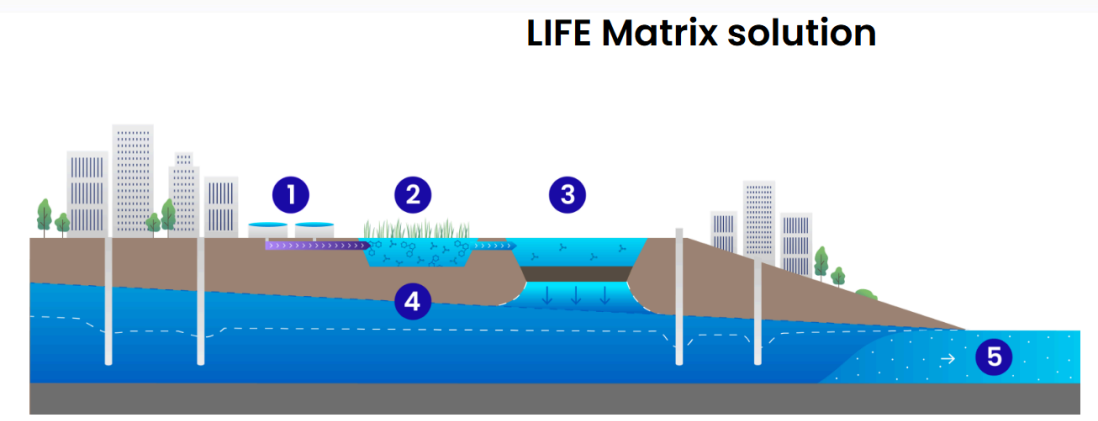
2. **Digital Component:** A Decision Support System (DSS) that transforms monitoring data into health risk and environmental impact levels. This tool integrates modules for risk management, socio-economic impact estimation, and optimisation of the recharge system.
3. **Governance Component:** Focuses on developing methodological guidelines to promote aquifer recharge with reclaimed water, aiming to contribute to the standardisation of this technique.

Some of the expected benefits and results include an **increase in water availability** of groundwater resources by 15% in the study area, or a **reduction of the energy consumption and greenhouse gas emissions** compared to other technologies. It also seeks to **improve public perception and acceptance** of reclaimed water reuse through dissemination and communication activities.

The project, which started in 2021, is co-funded by the LIFE Programme (LIFE20ENV/ES/000788), the EU's funding instrument for the environment and climate action, with a total budget of 1,675,312.00€. It is coordinated by Cetaqua Andalucía (Andalusian Water Research Centre Foundation), and includes in the consortium other partners as Cetaqua Barcelona, Acosol, and Málaga University through its Hydrogeology Centre of the University of Malaga (CEHIUMA).

Images





1. EDAR: Reclaimed water from WWTP
2. Artificial wetland: Reduces salinity and improves water quality
3. Infiltration basin: Nutrients and emerging pollutants decrease in concentration and groundwater levels rise
4. Water level by aquifer recovery
5. Reduction of saline intrusion

Source: Life Matrix Project, https://www.life-matrix-project.eu/context/

Sources and resources

- LIFE Matrix project. https://www.life-matrix-project.eu/context/
- Water management and treatment. LIFE Matrix - managed Aquifer recharge with reclaimed Water in Costa del Sol Area. https://cehiuma.uma.es/wp-content/uploads/noticias_life_matrix.pdf

How does this NbS address tourism-related challenges?

In the past decade, droughts have been more frequent and intense throughout Europe, but this water stress is particularly intense in coastal areas, where there is a highly variable seasonal demand.

In particular, in the *Costa del Sol* region in Spain, **water consumption doubles and sometimes even triples in summer due to tourism**, increasing the pressure on the already stressed water resources. Moreover, the population of the Málaga region has grown by 30% in the last 20 years. The 2015-2021 Management Plan for the Andalusian Mediterranean River Basin District (PHDHCMA) indicates that 34 groundwater bodies of a total of 69 are experiencing significant stress due to water use (21 because of farming activities, 11 due to urban supply and 2 because of golf courses).

Therefore, non-conventional and sustainable water resources, such as reclaimed water, need to be included in management plans. Also, in the Marbella area, nowadays only 3.6% of available tertiary treatment capacity is reclaimed, so there is a great opportunity to promote the managed recharge of aquifers through reclaimed water, which would reduce the dependence on natural water resources, while reducing as well energy costs and greenhouse gas emissions.

In summary, the LIFE Matrix project contributes to **mitigating seasonal water stress** linked to tourism by reducing the dependency on natural water resources and addressing aquifer overexploitation and salinisation. The aim of **mainstreaming** these kinds of Nature-based Solutions and including them in Water Management Plans and increasing citizens' and tourists' acceptance towards them could **trigger their replication** in other areas facing similar challenges.

5. Ecological Water Treatment

Urban Wetland for wastewater treatment and Eco-tourism **Italy**	
Strategy: Medium human intervention for sustainable wastewater management in Molentargius Ecological park (Ecotourism destination in Cagliari City)	Construction of a natural wastewater treatment wetland (EcoSistema Filtro) within a protected urban reserve.
Challenges addressed	
	
Climate change Adaptation / Mitigation / Cross-cutting	Cross-cutting
Area of intervention	
	
Description	

The EcoSistema Filtro (ESF – EcoSystem Filter) is a constructed wetland located within the Molentargius-Saline Nature Reserve, in the city of Cagliari, Sardinia. This nature-based solution was implemented in 2004 as part of a broader strategy to improve urban water management and ecological resilience. The reserve itself was established in 1999 to protect a unique wetland system composed of both freshwater and saltwater basins, historically used for salt production.
The ESF treats urban wastewater while enhancing biodiversity and promoting sustainable urban development. Key features include:

- **Wastewater Treatment**: Natural filtration using vegetation and microbial activity.
- **Biodiversity Enhancement**: Habitat for flamingos, herons, and other wetland fauna.
- **Eco-tourism Development**: Integrated into the reserve's visitor experience.
- **Urban Sustainability**: A model for integrating NbS into city planning.

The ESF was designed to treat urban wastewater using natural processes, including filtration through aquatic vegetation and microbial activity. This approach significantly reduces nutrient loads and contaminants before the water reaches sensitive habitats, improving overall water quality and reducing pressure on conventional treatment systems. The wetland also contributes to flood mitigation by absorbing excess water during heavy rainfall events.

Beyond its technical function, the ESF has become a thriving habitat for wetland species, including flamingos, herons, and amphibians. Its integration into the reserve enhances ecological connectivity and supports the conservation of Mediterranean biodiversity. The project demonstrates how urban infrastructure can be harmonised with ecological functions, offering a replicable model for other Mediterranean cities facing similar challenges.

The success of the ESF lies in its multifunctionality: it simultaneously addresses environmental, social, and economic goals. It is a clear example of how medium-level interventions, when well-planned and community-integrated, can deliver long-term sustainability outcomes.

Images

Source: Molentargius https://planbleu.org/en/publications/nbs-for-mediterranean-cities/;

Source : Mappa del Parco naturale Regionale Molentargius- Saline; https://www.parcomolentargius.it/servizi/canali/1002

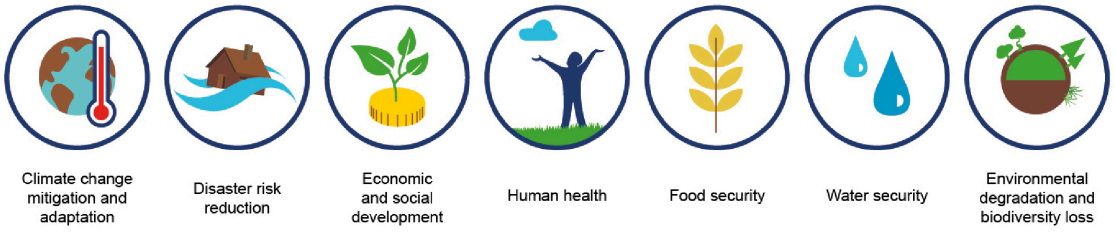
Sources and Resources

- Plan Bleu: https://planbleu.org/en/publications/nbs-for-mediterranean-cities/
- Molentargius-Saline Reserve: https://www.parcomolentargius.it

How does this NbS address tourism-related challenges?
The ESF has become a major eco-tourism attraction in Cagliari. It supports year-round tourism, environmental education, and reinforces the city's identity as a hub for ecological innovation. The ESF has transformed a technical infrastructure into a **flagship eco-tourism destination**. Its location within the Molentargius-Saline Reserve allows visitors to experience a unique blend of urban nature, biodiversity, and environmental innovation. The site attracts birdwatchers, nature photographers, school groups, and international tourists interested in sustainable travel. By offering low-impact recreational activities such as walking trails, guided tours, and educational programmes, the Molentargius Park helps **distribute tourism pressure** throughout the year, reducing the seasonal overload typical of Mediterranean destinations. This contributes to a more balanced local economy and minimises environmental degradation. Moreover, the initiative fosters **environmental awareness and stewardship**. Visitors learn about the importance of wetlands, water purification, and biodiversity conservation, which can influence their behaviour both locally and abroad. The ESF also serves as a demonstration site for urban planners and decision-makers, showcasing how ecological infrastructure can enhance urban livability and attract responsible tourism. In summary, the ESF exemplifies how a nature-based solution can **mitigate tourism impacts**, promote ecological restoration, and generate socio-economic benefits. Its replicability in other urban contexts makes it a valuable reference for integrated planning in Mediterranean cities.

A breakdown of the different parameters chosen to characterise each type of NbS described is given below:

i. Societal challenges adressed

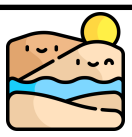


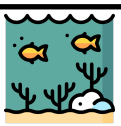
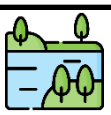
ii. Area of intervention and Ecosystem type

For these guidelines, a simple characterisation has been made of the different types of ecosystems in which the NbS proposed in this guide could be implemented, bearing in mind that this classification is a simplification and that many of the categories chosen include different types of ecosystems, climates or landscapes. In addition, it should be considered that any of these categories may be associated with human settlements, with varying degrees of urbanisation.

	OF INTERVENTION

ICONS	TYPE OF ECOSYSTEM / AREA

	**Urban**
	**Agricultural**
	**Protected area**
	**Wetlands**
	**Lagoons**
	**Estuaries & Deltas**
	**Sandy beaches**
	**Rocky beaches**
	**Intertidal habitats**

	**Seagrass**
	**Coral reefs**
	**Deep-sea**
	**Grasslands**
	**Coastal Dunes**
	**Mountains**
	**Valleys**
	**Forests**
	**Rivers and Lakes**

iii. How does this NbS address tourism-related challenges?

These section explores the relationship between the Nature-based Solution and tourism dynamics in the example proposed. It describes how the NbS contributes to addressing tourism-related challenges—such as seasonal pressure, environmental degradation, or lack of community engagement—while also identifying opportunities to promote sustainable tourism models. Each case provides contextualised insights into how NbS can support more resilient and inclusive tourism practices in Mediterranean coastal regions.

Reinforcing actions to enhance NbS implementation in Pilot Areas

The implementation of Nature-based Solutions (NbS) in pilot areas can greatly benefit from complementary measures that strengthen their effectiveness, sustainability, and systemic impact. These actions are not exhaustive but represent key areas where support is often needed to overcome barriers and maximise the transformative potential of NbS.

Several categories of reinforcing actions can be considered, depending on the socio-cultural and ecological context of each pilot site. These include:

- **Communication, awareness raising and participation:** Cultural shifts are often preceded by a broad understanding of the benefits of new models or practices. In the case of NbS, it is crucial to communicate the science behind ecosystem services and their local impact, using real-world examples and demonstration projects. Participation must go beyond simple outreach, embracing inclusive governance principles.
- **Training:** Managing NbS throughout their lifecycle requires diverse technical and interpersonal skills. Training should be tailored to the needs of each stakeholder group, with special attention to vulnerable populations. NbS also create opportunities for green jobs, which may require targeted capacity-building efforts.
- **Public policies:** Supportive regulatory frameworks, economic incentives, and the removal of administrative barriers are critical success factors. Awareness-raising and training for both technical staff and policymakers are essential, along with the exchange of good practices—especially among municipalities. Resources from UNEP, Network Nature, the CONAMA Foundation, and the NbS Observatory provide useful references.
- **Financing:** Investment in NbS remains significantly lower than in activities harmful to nature. According to UNEP's 2023 *State of Nature Finance* report, public funds account for up to 82% of NbS financing, highlighting the need for greater private sector involvement. Financing mechanisms such as biodiversity credits, green/blue bonds linked to sovereign debt, and payment for ecosystem services are emerging tools with potential in cooperation contexts. Instruments like the IUCN Global Standard can help ensure that financing prioritises positive local impact over return on investment. Frameworks such as the Kunming-Montreal Global Biodiversity Framework and the European Nature Restoration Act offer promising avenues.

- **Complementary environmental actions:** Additional environmental measures can enhance the performance and scalability of NbS. For example, in dune restoration projects, protecting the restored area from foot traffic or establishing native seed banks can ensure long-term success and generate local employment.

5. Bibliography

European Commission: Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs. (2022). *Transition pathway for tourism*. Publications Office of the European Union. https://data.europa.eu/doi/10.2873/344425

One Planet Sustainable Tourism Programme (2021) – Glasgow Declaration: a Commitment to a Decade of Climate Action

IUCN, I. (2020). Global standard for nature-based solutions. A user-friendly framework for the verification, design and scaling up of NbS. *Gland, Switzerland*.

IUCN. (2016). *Defining NbS*. https://portals.iucn.org/library/node/46486

Mansilla, J. (2019). Gentrificación, turistificación y clases sociales en las ciudades del Mediterráneo. El Turismo En La Geopolítica Del Mediterráneo, (9), 62–65.

European Parliament. (2008). The role of the EU in the prevention of maritime pollution from ships and shipwrecks (IP/B/TRAN/FWC/2006-156/Lot5/C1/SC1). European Parliament. https://www.vliz.be/imisdocs/publications/140189.pdf

Mejjad, N., Rossi, A., & Pavel, A. B. (2022). The coastal tourism industry in the Mediterranean: A critical review of the socio-economic and environmental pressures & impacts. Tourism Management Perspectives, 44, 101007. https://doi.org/10.1016/j.tmp.2022.101007

Iza, A. (Ed.). (2019). Governance for ecosystem-based adaptation. Gland, Switzerland: IUCN. https://doi.org/10.2305/IUCN.CH.2019.EPLP.89.en

Aldridge, C. A., & Colvin, M. E. (2024). Writing SMART objectives for natural resource and environmental management. Ecological Solutions and Evidence, 5(2), Article e12313. https://doi.org/10.1002/2688-8319.12313

Bano, M. (2024). Farm-to-table: Exploring the benefits and challenges of local food systems. Frontiers in Agriculture, 1(2), Article 31. https://sprcopen.org/FA/article/view/31

González-Domingo, A., & Grimalt Vigo, M. (2024). Practices handbook: Unpacking the potential of ICZM/MSP processes for sustainable tourism in the Mediterranean. Intermediterranean Commission of the Conference of Peripheral Maritime Regions (IMC-CPMR). https://sustainable-tourism.interreg-euro-med.eu/wp-content/uploads/sites/6/c4t/c4t_practices_handbook.pdf

6. Annex: Key actors to be involved in each of the 7 Steps of the Methodology

Step 1: Opportunities

Key actors involved

Promoter: entity or consortium of entities that leads, drives, and coordinates the development of the project throughout all its phases. This may be, for example, the Pilot Destination Climate task force. In the first step, they coordinate the studies, interacting with the local community and its main stakeholders, with whom they would ideally have pre-existing links of trust.

Institutions: with the legal and political capacity to act in the area of interest, such as municipalities, provincial or regional governments, hydrographic confederations, ministries, or specific public agencies.

Experts: relevant to the project, who carry out all technical work, including consultancy, studies, and impact assessments. In this step, the areas of expertise would be biology, climate change, and ecosystem restoration, to carry out studies of climate impacts and assessment of ecosystems and ecosystem services.

Tourism sector: as tourism pressure is a cross-cutting aspect to consider within NT4CC, relevant actors from this sector should be identified; those affected by the intervention, particularly the local community and SMEs, and those with higher capacities to implement changes in their activities.

Other active stakeholders: people, groups, or entities active in the territory, working from their perspective and capacities to help generate climate resilience and social equity in the territory. We are talking about local NGOs or CSOs, neighbourhood or business associations, tourists, local tour operators, and other tourism organisations. They are essential for the success of NbS actions to be established and are therefore the main subject of this first step.

Step 2: Challenges, processes and stakeholders

Key actors involved

Promoter: entity or consortium of entities that leads, drives, and coordinates the development of the project throughout all its phases. This may be, for example, the Pilot Destination Climate task force. In the first step, they coordinate the studies, interacting with the local community and its main stakeholders, with whom they would ideally have pre-existing links of trust.

Public administrations: the corresponding local or regional authorities in charge of spatial planning and resources for implementing and maintaining NbS. These administrations are normally the main sources of socio-economic and environmental information on the territory.

Local NGOs and CSOs: at this level, in addition to being key agents, there will probably be local non-profit organisations with in-depth knowledge of the social, environmental and economic reality, complementary to that of the administrations. Farmers and Fishermen associations can be decisive in capacity building in areas such as sustainable agricultural production, market access, natural resource management, and community empowerment.
Experts: The experts in the relevant areas of knowledge of the project could be the same as those in the previous step. In this case, they will analyse ecological and sociocultural processes, challenges, and the local microeconomy.
Academia: Complementary to experts, higher academic institutions are essential for conducting advanced research on local dynamics in global contexts when addressing climate change and tourism interactions in coastal zones (IUCN, 2022). Furthermore, their involvement in studies is a key factor in the permanence of NbS.
Tourism and other key socio-economic actors: expanding the circle from the most active (step 1), as explained in Step 4, identifies and starts involving all key socio-economic actors from the first phase of characterising processes and challenges.

Step 3: NbS catalogue

Key actor involved

Promoter: Responsible for selecting the appropriate NbS actions for the designated area, considering the identified challenges and available budget.
Local communities and local producers: Their perspectives should be integrated into the selection process, as their involvement is crucial for the success and sustainability of the actions.

Public administration: Assists in identifying feasible actions within the legal framework, which can vary by territory and may be more restrictive or favourable different NbS proposed.

Experts: Provide examples to be included in the catalogue of potential NbS that could be implemented at the project pilot sites.
Academia: Offers technical expertise to develop new and tailored solutions for each pilot destination, and their participation in studies should be considered a key decision factor.

Academia: Offers technical expertise to develop new and tailored solutions for each pilot destination, and their participation in studies should be considered a key decision factor.

Step 4: Design

Key actor involved

Promoter: assumes the key role of coordinating and facilitating the design process, ensuring inclusiveness, and equitable participation.

Public administration: represents the voice of the common good, assuming the tasks considered at the implementation, monitoring, and maintenance level, contributing with the appropriate resources available to the economic-financial plan, and integrating NbS into their territorial development plans.
Private landowners: take responsibility for aligning their private interests with the common good.
Foundations and local NGOs: involve the most vulnerable social groups and collectives, and contribute their knowledge of the local context.
Experts: provide the prism of technical knowledge, especially in the environmental field.
Academia: they operate the tool of advanced scientific research in both directions, providing the latest knowledge on NbS and using the data taken from the project to model and simulate results, enabling informed decision-making systems.
Tourism and other key socio-economic stakeholders: the equitable participation of all stakeholders is vital at this stage, in order to maximise broad ownership of the project by the local community, and the equitable distribution of costs and benefits, based on inputs and capacities, according to the principle of shared but differentiated responsibility.

Step 5: Implementation

Key actors involved

Promoter: assumes the key role of coordinating and facilitating the implementation plan in chronological order, ensuring inclusiveness and equitable participation.
Local communities and local producers: Local communities living in areas where NbS are implemented are key actors, as they may have deep traditional knowledge of local ecosystems and may be the main beneficiaries or affected by these solutions.
National forest associations: they can play an important role in representing and defending the interests of forest owners, forest industries and the local community. They also often provide community capacity building, dissemination of good practice, support for forest certification and assist governments in forest policy development.
Non-governmental organisations (NGOs): NGOs play an important role in promoting, implementing and monitoring NbS projects. They can provide technical advice, mobilise resources and work in partnership with local communities and government to ensure participation and successful implementation of NbS.
Tourist and other private sector actors: tourism-related businesses and others from the private sector can be involved in implementing NbS through corporate social responsibility initiatives, investments in conservation and sustainable development, or through public-private partnerships for project financing and implementation, which may have a payback.
Academic institutions and research centres: Academic institutions and research centres play a crucial role in the generation of scientific and technical knowledge

related to NbS. They contribute with research, capacity building and impact assessment to improve the effectiveness of NbS.

Step 6: Monitoring, evaluation and improvement

Key actors involved

Governmental authorities: This group includes governmental authorities, such as directors, civil servants at different levels who are responsible for making decisions related to the monitoring and evaluation of the implemented NbS.

Non-governmental organisations: Environmental organisations, cooperatives, conservation and sustainable development foundations that work in collaboration with government and other stakeholders to implement projects and programmes, and have experience in monitoring and evaluation of NbS.

Expert managers: This group provides technical expertise and advice in the implementation, monitoring, follow-up and evaluation of NbS actions.

Local tourism agents and communities: agents involved in touristic activities, such as SME owners, workers, tourism entrepreneurs or the tourists themselves, as well as residents of areas where NbS are implemented; they could be involved in data collection, monitoring of environmental changes and evaluation of the impacts of implemented actions on their environment.

Academia: Academic institutions and research centres that can provide technical-scientific expertise in the monitoring and evaluation of NbS.

Step 7: Up-scaling

Key actors involved

Promoter: Coordinates the collection of good practices and learning from NbS projects, drives policy influence and promotes dissemination, scaling up and replication of the project.

Experts: Knowledgeable about the IUCN NbS Standard and applicable policy frameworks, as well as contributing to effective project communication.

Target audience: Technicians, public authorities, local associations, Tourism service providers, Tourism business associations, citizens, researchers, educational institutions and students.

Local associations: Act as loudspeakers and nodes for communicating and disseminating information on NbS projects, facilitating citizen participation and identifying good practices and lessons learned for dissemination

Public institutions: They represent the applicable legislation, facilitate the success and sustainability of the project, and provide economic and technical resources, involving civil society.

Academia: Educational institutions that incorporate learning from NbS projects, improving and optimising processes and results.

Companies or private entities: including here the tourism sector as well, entities that are interested in learning about NbS results and good practices, as they play a key role in communication and political influence, with special attention to the Tourism sector.

International agencies and donors: International organisations, such as development agencies and bilateral and multilateral donors, can provide funding, technical assistance and coordination for the implementation of NbS projects at the national level.

Technical experts and consultants: Professionals with expertise who can provide specialised technical advice on NbS implementation.