

# Tools to sustain wetland restoration efforts in the Mediterranean

Information Update - May 2022



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Wetlands are the most productive ecosystems in the world, providing essential ecosystem services both for people and nature. In particular, they are crucial for climate change adaptation and mitigation. But their loss and degradation are three times faster than forests, and in the Mediterranean Basin, one of the major global biodiversity and climate change hotspots, wetlands are disappearing at an alarming rate. Since 1970, 50% of Mediterranean wetlands have disappeared, severely compromising the resilience of human populations, natural ecosystems and economies. Partly as a result of this degradation, the socio-economic and political stability of the region is at stake.

Conserving the remaining wetlands is therefore no longer sufficient. Urgent actions to restore Mediterranean wetlands by all concerned stakeholders at the local, national and international levels are now required to reverse this trend.

The restoration of natural ecosystems is to be enshrined in the EU Nature Restoration Law, following the Biodiversity Strategy to 2030. The restoration of Mediterranean wetlands is now recognised on the ground as essential, with nature-based solutions (NbS) offering both valuable services to sustain people's livelihoods and economic opportunities that will support the societal transformation envisioned by the European Green Deal. These restoration initiatives need to be supported by ambitious implementation.

Wetland restoration encompasses two different scenarios:

- Rewet and restore wetlands that were fully or partially drained
- Improve the quality of wetlands that are degraded by pollution, excessive nutrients, barriers, water abstraction, etc.

The Wetland-Based Solution programme (M3), financed by the MAVA Foundation, has developed pragmatic tools to support and upgrade wetland restoration in the Mediterranean. These are targeted to assist restoration efforts on the ground, but also to underpin appropriate decision-making processes at the local, national, regional and international levels.

Various tools have been developed over the past years by the partner organisations to enhance restoration efforts in the Mediterranean and improve their prospects for long-term success. These tools aim to provide better:

### **Knowledge**

On the wetland areas in need of restoration and the threats affecting them and costs of restoration

### **Restoration**

Information on how to improve restoration outcomes

### **Awareness**

On the ecosystem services provided by wetlands as nature-based solutions and the economic opportunities created by sustainable use

### **Monitoring**

Effective monitoring to assess conservation status and restoration efforts over time



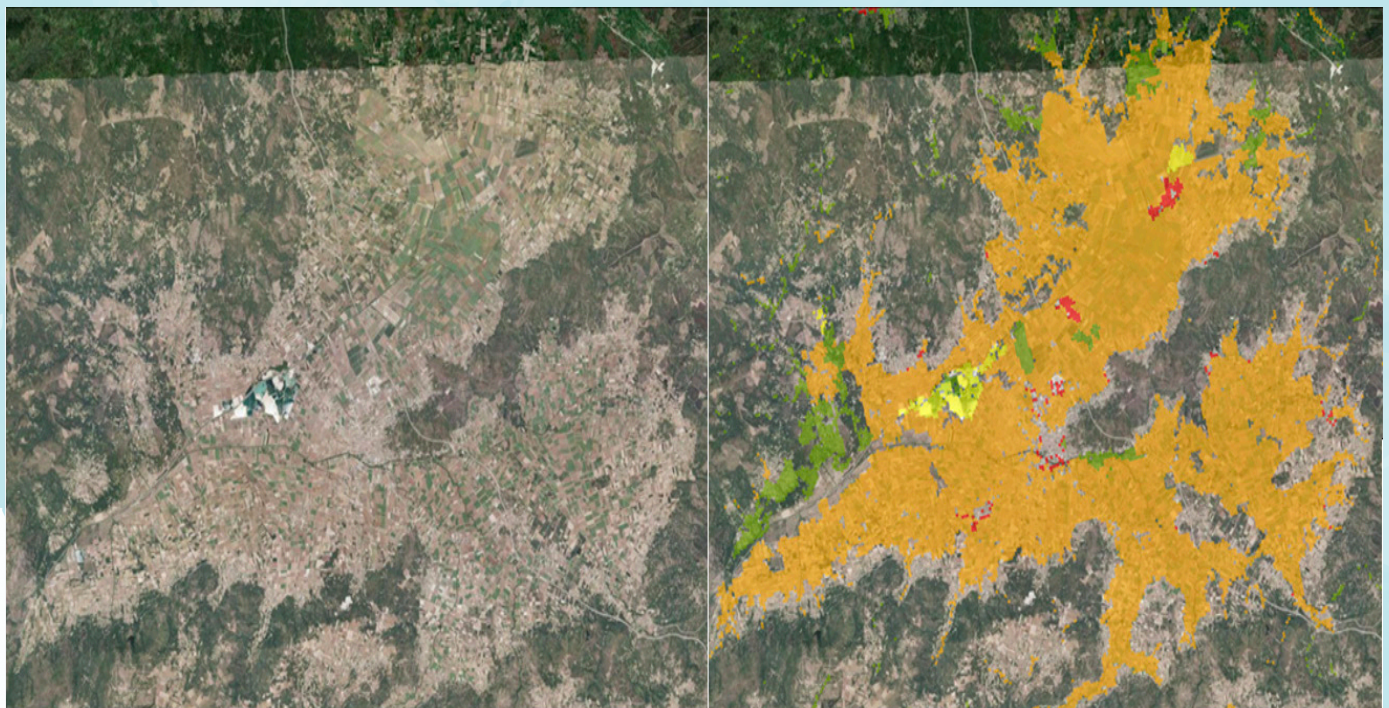
# I. Better knowledge to guide restoration

## 1 - Mapping potential areas for wetland restoration at a pan-Mediterranean scale

The overall objective is to locate and delineate the main “transformed” wetlands that could be restored (built-up areas will be excluded for instance), and to qualitatively estimate the needed effort for their restoration. This approach, developed by Tour du Valat, aims to produce a comprehensive pan-Mediterranean map representing areas where wetland habitats could potentially be restored and/or recovered.

This map is mainly based on the surface hydro-ecological characteristics of wetlands (including topographic, hydrological and climatic parameters), combined with the current land use, the conservation status of the existing wetlands and the main management policy frameworks in place (e.g. protected areas). This map and all derived indicators will be available at the scale of the entire Mediterranean Basin, but also downscaled at national levels.

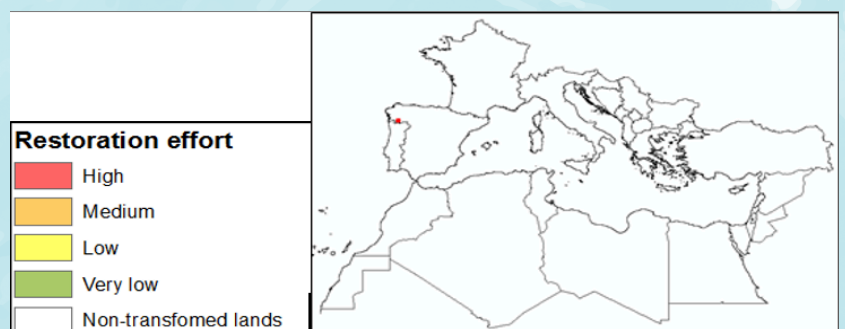
The following maps provide some examples of the information that could be provided by this approach:

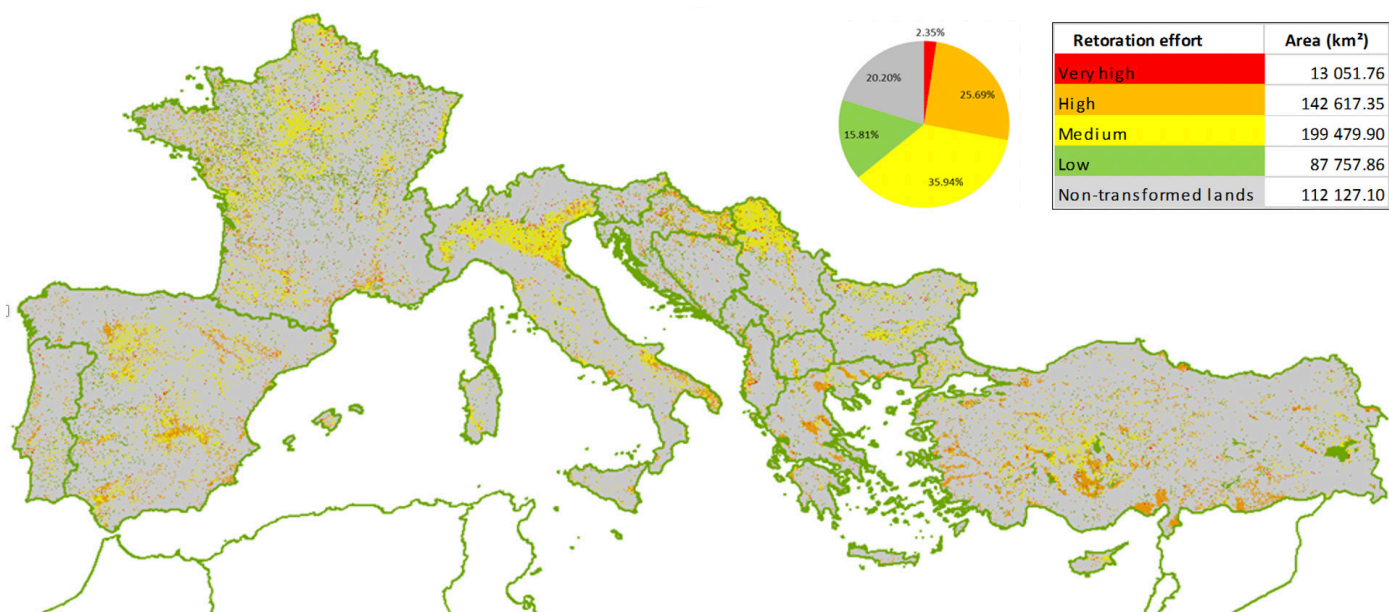


*Fig: Antela (Spain).*

*Source: Mediterranean Wetlands*

*Observatory, 2022*

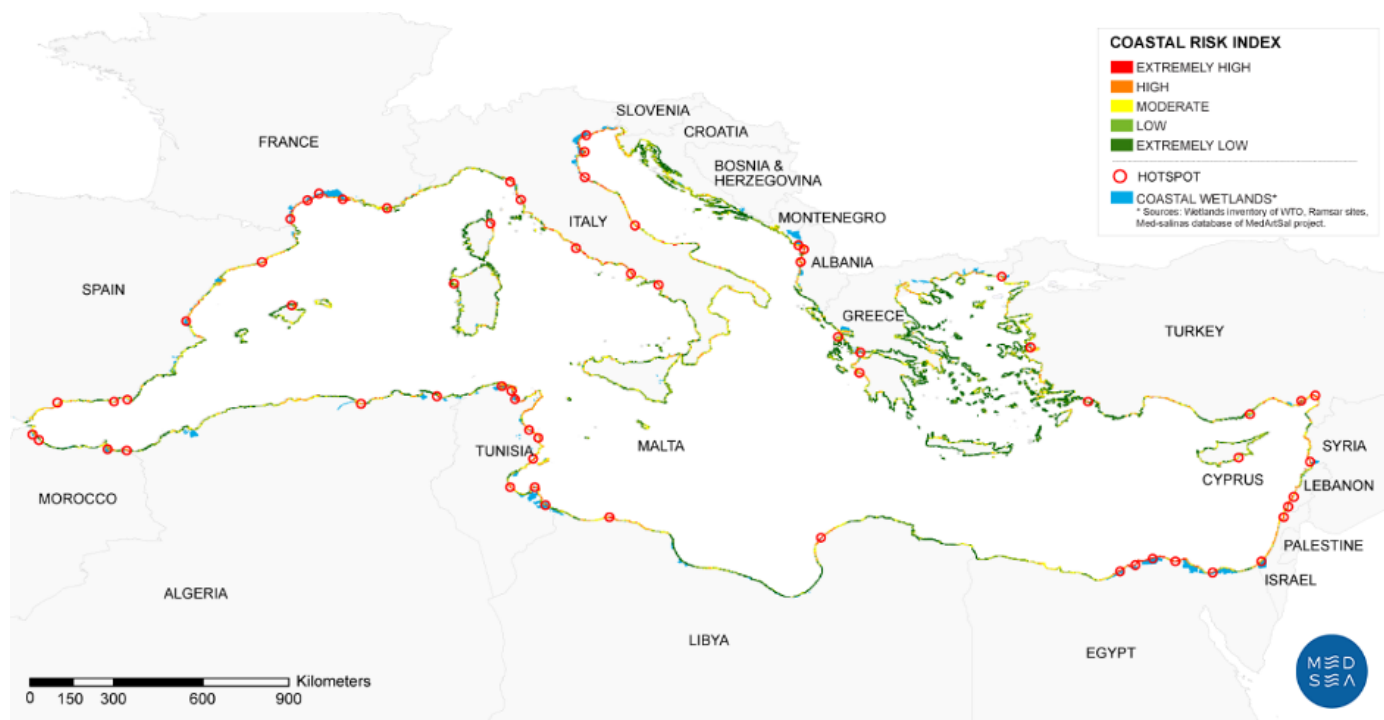




*Wetlands restoration effort for the European Mediterranean*

## 2 - Mapping of coastal risks at the Mediterranean scale

Mediterranean coastal wetlands are under extreme pressure due to the impacts of climate change. A map of the vulnerability of coastal areas in the Mediterranean, highlighting the role of healthy coastal wetlands to increase the resilience of coastal areas to climate change (in particular sea level rise), has been produced. It highlights the need to restore coastal wetlands to mitigate risks associated with climate change.



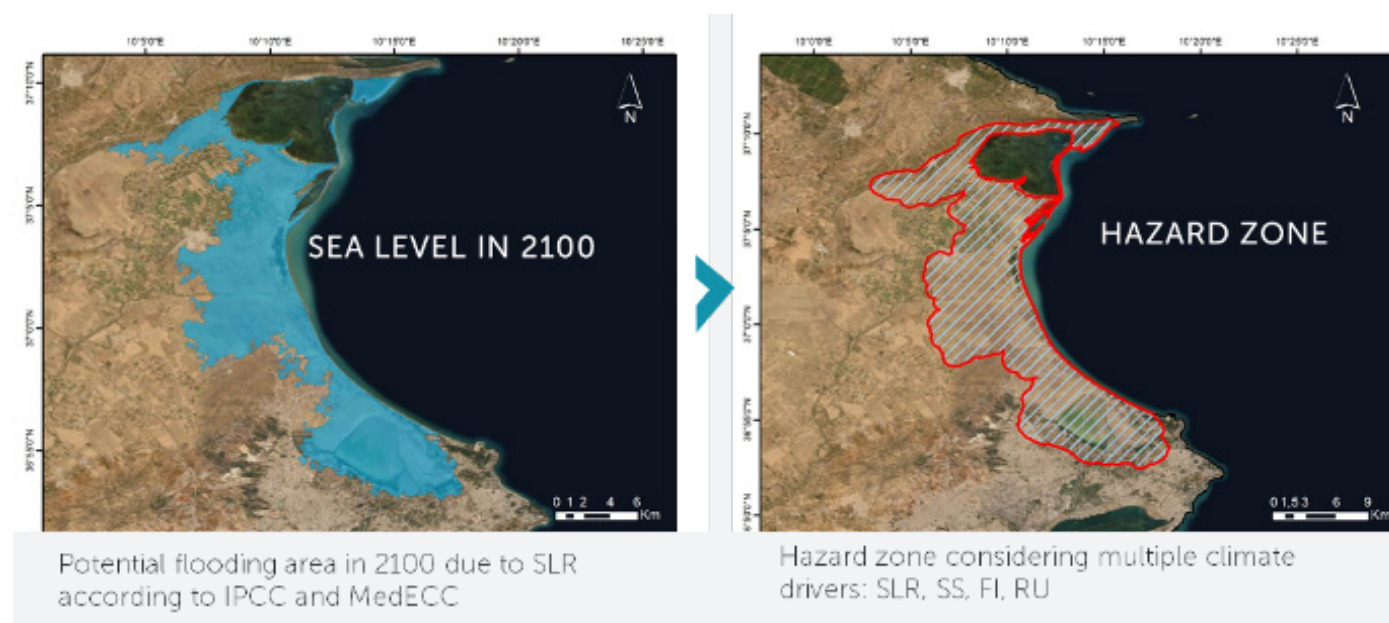
*Map illustrating the coastal climate hotspots and coastal wetlands at risk*



The map shows:

- Coastal climate hotspots
- Areas where local populations and ecosystems will be particularly affected (Gulf of Venice, Gulf of Lyon, and Nile Delta)
- Priority areas for restoration to increase coastal resilience

The results of a more detailed site-level analysis are available for Oristano (Sardinia), Buna (Albania), Ulcinj (Montenegro), and Ghar El Melh (Tunisia). These site maps can help assess climate risks and integrate outcomes into local management planning.



*Maps on potential flooding in 2100 Ghar El Melh and Buna/Ulcinj*

### 3 - Assessment and identification of wetland sites to be restored

To organise an effective wetland restoration at the Mediterranean scale, identifying sites that are being restored or that need to be restored in the Mediterranean Basin was needed. To that aim, an online expert survey was developed and received 265 responses corresponding to 224 wetland sites from 24 countries. The total wetland area identified is 399,912 ha.

The survey was structured with a few clear questions to support a future restoration (e.g. types of wetlands, type and cause of degradation, possible restoration actions).





## The main conclusions are:

Nearly **400,000** ha

**47,2%**

The highest priority for restoration in the Mediterranean region is coastal wetlands.

is the total area of wetlands identified as needing restoration or being restored, with sites ranging from **0.06** to **46.000** ha. So far, **373** ha are reported as having already been restored.

Wetland habitats most in need of restoration:

**40%** salt marshes  
**30%** freshwater marshes  
**26%** coastal lagoons  
**22%** seasonal/temporary ponds and marshes

There is a large number of small wetlands in need of restoration:

**37** sites are under 10 ha  
**32** sites are between 10 and 50 ha

The main degradation factors are:

**61%** destruction of habitat  
**52%** changes in the water regime  
**40%** disturbance of the fauna  
**18%** the different forms of water

**41%**

The main causes of degradation are deficient or inadequate management, followed by urban and tourist development and farming (**30%** each), while dumping of non-toxic waste, groundwater abstraction or reduced water inflow to the wetland, and introduced and/or invasive species is highlighted by **25%** of the respondents.

**84%**

of the responses referred to wetlands that are protected, many of them are suffering degradation and are in need of restoration despite legal protection.

**61%**

of the wetlands identified are within Natura **2000** and **30%** are Ramsar sites.



The survey report and the app are available at the following link:  
[https://www.wwf.es/nuestro\\_trabajo/agua/humedales/potential\\_wetlands\\_to\\_be\\_restored\\_in\\_mediterranean\\_countries/](https://www.wwf.es/nuestro_trabajo/agua/humedales/potential_wetlands_to_be_restored_in_mediterranean_countries/)





## 4 - Criteria for the prioritisation of wetlands in need of restoration

### Developed by WWF-Spain, MedSea, Tour du Valat, PIM Initiative and MedWet

Resources for restoration are limited and insufficient to address the scale of restoration needed in its entirety. It is therefore important to ensure that existing funds are efficiently used.

To assist wetlands managers, restoration experts and local authorities, a set of criteria for the prioritisation of wetlands in need of restoration were designed and run for 106 wetlands at the pan-Mediterranean, national (France and Spain) and island (Corsica, Sardinia and Balearic Islands) levels. The criteria were based on the:

- wetland environmental potential
- feasibility of restoration activities
- potential for ecosystem services.

As umbrella principles, the indicators were designed to give higher scores to less degraded wetlands, prioritising the easier, simpler, and more cost-effective restoration actions.

The criteria, in Excel file format, are composed of six sections:

- Descriptive items
- Indicators about the environmental values

- Indicators about the ecosystem services
- Indicators about the feasibility /sustainability of the restoration in the long term
- Final scoring (with weighted average)





# II - How to restore wetlands

## 5 - Portfolio of potential wetlands to be restored across the Mediterranean

A portfolio highlighting wetlands that need priority restoration was developed. It is based on information from the map of potential areas for restoration (activity 1) and the survey (activity 3). It also comprises actions and projects that could be implemented to improve the conservation status of these areas. The portfolio is presented in the form of project proposals to potential donors interested in investing in the restoration of wetlands for nature and people.



*Fig: Potential sites to be restored*

## 6 - Mediterranean wetland handbook for ecological restoration

A handbook will provide decision-makers and wetland managers with clear information on the legal and technical tools to perform effective wetland restoration. The content is based on real experiences and is geared towards improving restoration techniques. Particular attention is to identifying threats, and the potential for carrying out multi-objective interventions to maximise wetland ecosystem services. The goal is for the handbook to inspire at least 100 decision-makers and wetland practitioners around the Mediterranean to promote restoration activities.

*The handbook will be published in April 2022*



## 7- Training webinars on wetland restoration

A series of webinars to share the contents of the handbook will include both a theoretical framework and examples of hands-on best practices. They will be delivered by wetland restoration experts from various disciplines who have successfully dealt with wetlands issues in the field. The webinars are primarily intended for wetland managers and decision-makers, and aim to increase their willingness to promote wetland conservation and restoration in the context of a green economy. The detailed content could include sections on “how to restore”, and “where to restore” using the data collected and show successful cases. At least 100 people are expected to attend the webinars. *To be organised throughout 2022*

More generally, a hub of tools for wetland managers and decision-makers on Mediterranean wetlands is taking shape, gathering all the recorded technical webinars organised through the M3 projects by the partner organisations. Some are already available on the MedWet Academy at the following link:  
<https://medwetmanagers.net/medwet-academy/>

## 8- Restoration experience fact sheets

This publication aims to summarise at least 10 successful restoration initiatives as case studies carried out in different types of wetlands across the Mediterranean basin. They describe not only fully finished and successful projects, but also particular actions of projects still in progress (i.e. a specific system for successful vegetation replanting, a participatory stakeholder process or governance approach model). For each case-study, the general characteristics of the restoration will be described, and best practices and lessons learned will be identified and shared. A storytelling map will also be created for illustrating spatial relationships, adding visual appeal and making technical content more accessible. This awareness-raising product is aimed at a diverse audience.

*The factsheets will be available in April 2022*

## 9- Ecological wetland restoration training workshop

Participants at a four-day workshop will include 20 wetlands managers and technical experts from MENA countries and at least 5 from EU countries, drawn from the Mediterranean Wetlands Managers Network ([www.medwetmanagers.net](http://www.medwetmanagers.net)). A field visit will be organised in Camargue.

*The workshop will be held online and streaming with virtual visit due to sanitary restrictions from 20 to 22 June, 2022*

## 10- Citizen science app to identify wetlands in need of restoration

A free app will be launched so citizens across the Mediterranean can identify and report wetlands that need to be restored. The app allows users to report temporary or long-term degradation situations (e.g. pollution, fires, litter), in addition to the location of the wetland and other general ecological information. As well as providing useful and wide-ranging data (including observations of protected habitat, invasive and protected species). The app aims to raise awareness of wetland issues and foster public involvement in restoration and management. The goal is to obtain at least 5,000 observations from app users. *The app will be launched in June 2022*



Select WetLand from the list:

3 WetLands found. If the wetland you are looking for is not in the list add a new one tapping on NO MAPPED Wetland.

# III - Ecosystem services assessment and restoration as NbS

## 11 - Ecosystem services assessments – addressing climate and societal challenges

Ecosystem services assessments of coastal wetlands are being undertaken at three sites in Spain (Bahía de Cádiz) and Sardinia (Corru S'Ittiri and S'Ena Arrubia), by a collaborative partnership: MEDSEA, SEO/BirdLife, and Vertigo Lab, to showcase the effectiveness of NbS, especially in regulating floods, reducing coastal erosion, and purifying water. This assessment uses a cost-benefit analysis of NbS versus business-as-usual scenarios (and for the Sardinian partner, an additional traditional infrastructure scenario). These scenarios will provide crucial information on the financial investments needed to implement and maintain these NbS so they provide these ecosystem services respectively in 2040 (Sardinia) and 2070 (Spain); this will bolster climate mitigation and adaptation.

The results of these studies aim to: influence decision-making (policy and businesses) towards the most appropriate NbS to implement at site level, and also the financial streams needed from different channels of investors to support the restoration of key coastal wetlands.

These assessments are meant to be replicated elsewhere in the Mediterranean. For this purpose, guidelines will be created for wetland managers, the private sector, and land planners to:

1. enable a uniform understanding of what NbS are
2. why cost-benefit analysis is important to demonstrate the effectiveness of NbS and their impact on climate-related services
3. how to conduct cost-benefit analysis
4. provide case studies from around the world (including the Spanish and Sardinian cases).

*A third product will be a business case for investment in NbS that will be released in September 2022.*

### The Economics of NbS in three webinars

Secondly, a series of three online webinars on the Economics of NbS is being organised by BirdLife and VertigoLab. Today, no common framework exists to highlight and assess the multiple interests of such solutions. Deciding to restore is not sufficient, and with the upcoming global conservation strategy, there is a crucial need to demonstrate:

- the impacts of restoration versus any man-made solution, or, business-as-usual scenario;
- the opportunity created by healthy coastal wetlands at the economic, social and cultural levels

The series of webinars is meant to help coastal wetland managers, practitioners and decision-makers to understand and implement solutions where nature and socio-economic aspects can live in harmony and thereby trigger investment and decision-making towards restoration activities.

#### > Webinar 1 - December 2nd, 2021

This first webinar introduced the concept of NbS and ecosystem services, and the purpose of assessing the economics of those solutions through cost-benefit analysis. The recording can be found [here](#).

#### > Webinar 2 – April 5th, 2022– 2pm to 5pm CET

This second webinar detailed the methodology to perform a cost-benefit analysis.

More information [here](#).

#### > Webinar 3 - June 14th, 2022 – 2pm to 4pm CET

This third webinar will summarise the first two webinars and offer the means for policy decision-makers and businesses to communicate about the results of cost-benefit analysis on NbS.

Registration link [here](#).



# IV- Monitoring wetland conservation status and restoration

## 12 - Wetland Index to assess the conservation status of the sites

A wetland index has been developed to assess the condition of wetlands over time, the pressures affecting them and what should be done to restore them to healthy conditions. It is an essential tool for wetland managers and decision-makers to adapt actions over time.



## Monitoring the health of our coastal wetlands

the Wetland Index: Case studies across the Med



### Examples of Wetland index assessment:

