

POLICY BRIEF

# "Water, Wetlands and Nature-based Solutions in a Nexus Context in the Mediterranean"

OFF  
YOUR  
MAP

Life  
begins in  
wetlands



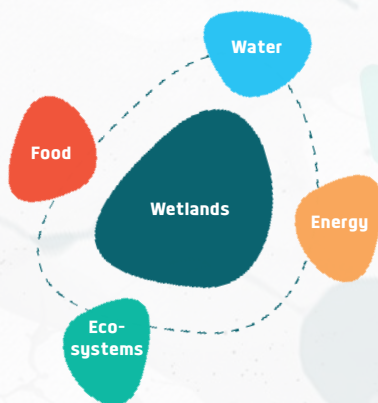
**Wetlands are among the world's most productive environments. At the crossroads of key economic sectors, wetlands are wellsprings of biological diversity and provide vital natural resources as well as valuable services to mankind, representing a significant opportunity for "nature-based solutions". Yet, the Mediterranean region has already lost up to 50 percent of its wetlands since 1900.**

## Introduction

Wetlands are at the **interface of land and water (including seas)** and they allow for important exchanges between terrestrial, freshwater and marine ecosystems. The geographic location and use of wetlands – e.g., river estuaries, coastal zones – positions them at the crossroads of various economic activities, such as farming, fisheries, energy production and tourism. For all of these activities, water is required.

Taking a **Water-Energy-Food-Ecosystems (WEFE) Nexus** perspective increases the understanding of the interdependencies between wetlands and the water, energy and food sectors. It shows that these sectors are inextricably linked and that actions in any one of them usually have impacts in one or both of the others as well as on ecosystems.

The **Nexus approach** helps to overcome 'silo' mindsets and explicitly addresses trade-offs resulting from choosing particular development paths and investments. It seeks interdisciplinary solutions increasing opportunities for mutually beneficial responses and synergies between sectors and eventually resource efficiency, in a world where pressure on precious resources and ecosystems, including wetlands, is steadily increasing.



**In the Mediterranean, 397 sites have been designated as Wetlands of International Importance covering more than 6.7 million hectares. Yet, not all are adequately managed.**

Source: Tour du Valat / Mediterranean Wetlands Observatory, 2018



## What are wetlands?

The term "wetlands" refers to a broad variety of water-based ecosystems, and more than 50 definitions of wetlands are used worldwide.

The **Ramsar Convention** defines wetlands as: *"areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres".*

In addition, its **List of Internationally Important Wetlands** "may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands".

**Five major natural wetland types** are generally recognized:

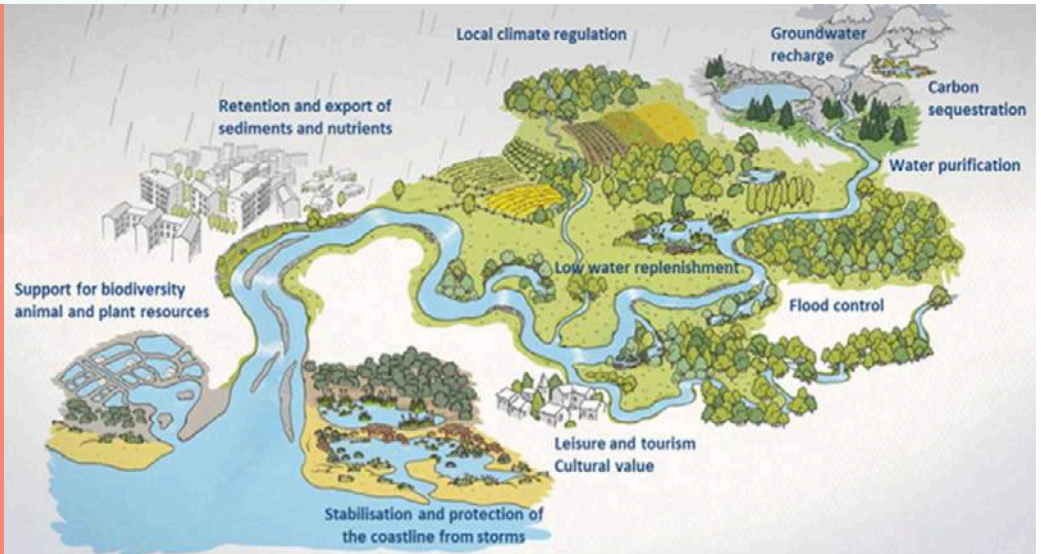
- **estuarine** (incl. deltas, tidal marshes and mudflats, mangrove swamps)
- **lacustrine** (wetlands associated with lakes)
- **riverine** (wetlands along rivers and streams)
- **palustrine** (marshes, swamps and peat bogs)
- **marine** (coastal wetlands including coastal lagoons, rocky shores, seagrass beds and coral reefs)

In addition, there are **human-made wetlands** such as fish and shrimp ponds, farm ponds, irrigated agricultural land including rice paddies, salt pans, reservoirs, gravel pits and wastewater treatment ponds.



## Main ecosystem services provided by wetlands

*"Global progress on water and sanitation cannot be achieved without healthy ecosystems such as wetlands. They are key for water supply, quantity and quality," said Martha Rojas Urrego, Secretary General of the Ramsar Convention, during her intervention on the SDG 6 on Water at the High-level Political Forum on Sustainable Development held in New York, from 9 July to 18 July 2018.*



Source: Plan Bleu, adapted from an illustration by the Rhone-Mediterranean and Corsica Water Agency

### Why are wetlands important? What services do they provide?

Wetlands are among the world's most productive environments. Wetlands provide food (e.g., fish, rice), water regulation and other services (e.g., water purification, protection from floods and storm surges, recreation) that are crucial for human kind. They also are wellsprings of biological diversity, providing the water and primary productivity upon which countless species of plants and animals depend for survival.

### What key threats are Mediterranean wetlands facing?

While agriculture is the sector that has the greatest impact on wetlands and water, there is also growing pressure due to urbanisation, infrastructure development, and tourism as well. These human impacts reduce wetland functions and services, making them less able to contribute to sustainable human development.

### Direct causes of wetland degradation in the Mediterranean include:

- diffuse and point-source pollution and littering
- over-use of water resources
- poor wastewater treatment
- hydropower infrastructure
- urban sprawl and tourism development
- drying and conversion to farm land

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### The Wetlands of Oristano, Sardinia – A complex 'Nexus' case

The Oristano area in Sardinia (Italy) is rich in wetlands, including the 6 Ramsar areas of the MARISTANIS project ([www.maristanis.org](http://www.maristanis.org)). Wetlands have strongly modelled the area's culture and economy, but linkages between Nexus sectors are negatively affected by a complex and poorly coordinated management system. Water and Food sectors are strongly linked, with traditional fisheries/productive aquaculture based on wetlands. Meanwhile, agriculture and livestock farming are a source of water pollution. Conflicts affect relations between ecosystem conservation and food sector, since birds feed on fish and crop seeds, including rice).

However, Nature-Based Solutions, such as growing reeds, could improve water quality and enhance food production, reducing release of nutrients from agriculture and mining pollutants into wetlands. Reeds could be used as a component in biogas production with agricultural waste. The MARISTANIS project aims at reinforcing the positive linkages between the WEF Nexus sectors by supporting administrations in adopting relevant international, national and EU policies and eco-friendly practices in relevant economic sectors.



### Wiped off the map:

The Mediterranean region has lost up to 50% of wetlands that existed in 1900.

In some countries figures are even higher:

- in **Italy**, of the **3 million hectares of wetlands** existing at the time of the Romans, only 190,000 hectares remain today;
- in **Tunisia**, **28% of the wetlands** were lost during the past 100 years;
- and in **Spain**, **60% of its natural wetland surface areas** have been lost, mostly during the past four decades.

## How do wetlands relate to the Nexus?

The table below provides a brief, non-exhaustive analysis of wetlands' interlinkages with the three main sectors of the **Nexus** and a few suggestions for their improved management in a Nexus context.

Wetlands-Nexus Interlinkages	Water	Energy	Food	Ecosystems
<b>Positive contribution or adverse impacts of wetlands → Nexus sector</b>	<ul style="list-style-type: none"> <li>• Water reservoirs (supply/recharge)</li> <li>• Water purification</li> <li>• Flood buffer zones</li> <li>• Disaster risk reduction (e.g., protection from storm surges)</li> <li>• Water-borne diseases (e.g., malaria)</li> </ul>	<ul style="list-style-type: none"> <li>• Carbon sequestration (carbon 'sinks')</li> <li>• Fuel wood</li> <li>• 'Obstacle' to infra-structure development</li> </ul>	<ul style="list-style-type: none"> <li>• Fisheries</li> <li>• Aquaculture (incl. fish, molluscs, shrimps, etc.)</li> <li>• Farming (e.g., rice, cattle breeding)</li> <li>• Salt production</li> <li>• 'Under-developed' valuable arable land or fisheries area</li> </ul>	<ul style="list-style-type: none"> <li>• Biodiversity hotspots (fish, birds, turtles, etc.)</li> <li>• High landscape value</li> <li>• Recreation</li> <li>• Spiritual/cultural values</li> </ul>
<b>Positive contribution or adverse impacts of Nexus sectors → wetlands</b>	<ul style="list-style-type: none"> <li>• Water provision</li> <li>• Drought and/or flood management</li> <li>• Water over-abstraction or diversion</li> <li>• Water pollution from point or diffuse sources, incl. solid waste disposal</li> <li>• Water infrastructure development (dams, canals, etc.)</li> <li>• Sediment extraction for construction</li> </ul>	<ul style="list-style-type: none"> <li>• RES reduce the need for fuel wood and other combustibles</li> <li>• Flood management</li> <li>• Hydropower (change in water and sediment flows, fragmentation of rivers)</li> <li>• Solar PV (sand abstraction from river beds and coastal areas)</li> <li>• Wind turbines (impacts on birds)</li> <li>• Soil/coastal erosion</li> </ul>	<ul style="list-style-type: none"> <li>• Source of income/livelihoods for local communities</li> <li>• Habitat destruction, incl. drying out for agriculture</li> <li>• Irrigation infrastructure and practices (e.g., irrigation canals)</li> <li>• Poaching/hunting</li> <li>• Pollution from agro-chemicals and waste</li> <li>• Eutrophication from fertilizers</li> </ul>	<ul style="list-style-type: none"> <li>• Cultural/spiritual value</li> <li>• Public awareness</li> <li>• Education</li> </ul>
<b>Possible Nexus-related approaches/solutions for wetlands</b>	<ul style="list-style-type: none"> <li>• IWRM/IRBM</li> <li>• ICZM/Marine Spatial Planning</li> <li>• Environmental flows</li> <li>• Sustainable water infrastructure development</li> <li>• Water saving and efficiency measures</li> <li>• Improved management of land-based sources of pollution</li> </ul>	<ul style="list-style-type: none"> <li>• Sustainable hydropower</li> <li>• Climate change mitigation policies</li> <li>• Sustainable energy policies (e.g., SE4All, incl. RES, energy efficiency and reduction of energy use)</li> <li>• SEAs and EIAs for infrastructure development (e.g., hydropower dams)</li> </ul>	<ul style="list-style-type: none"> <li>• Sustainable fisheries management</li> <li>• Organic agriculture</li> <li>• Sound land use planning</li> <li>• SEAs/EIAs for aquaculture and other major developments</li> </ul>	<ul style="list-style-type: none"> <li>• Ecosystem-based approach</li> <li>• Conservation through setting up terrestrial and marine PAs</li> <li>• Ecosystem services valuation</li> <li>• Nature-based solutions</li> <li>• Sustainable tourism practices</li> <li>• Public awareness raising, education</li> </ul>



## What is the governance framework relevant to Mediterranean wetlands and the Nexus?

Mediterranean wetlands are covered by a plethora of international and regional policies and legal frameworks, which however are not integrated. Moreover, the term “wetlands” is not used in all documents. Sometimes, as in the EU Water Framework Directive, they are referred to either as “transitional” and “coastal” waters or in specific terms (marsh, lagoon, lake, estuary, etc.).

Since 2015, with the adoption of the UN 2030 Agenda, there are now 17 Sustainable Development Goals (SDGs) countries have to seek to achieve by 2030, such as Goal 6 on Water, Goal 7 on Energy, Goal 15 on Terrestrial Ecosystems, etc. In addition, there are EU policies and legal frameworks addressing energy, water management and agriculture, which are also very relevant for wetlands in the Nexus context.

## Who are the key Nexus stakeholders relevant for wetlands?

Stakeholders and decision-makers attribute values to wetlands and their benefits to people in diverse ways. Policy-makers within and across all ‘sectors’ must recognize and take into account these multiple wetlands values and their interdependencies if wetlands’ wise use and sustainable development are to be achieved. The **key players** officially involved in the management of wetlands usually are:

- River basin management bodies
- Protected areas management bodies
- Ramsar site managers/focal points

In the context of a **Nexus approach** and in light of the objective of achieving the universally agreed upon **Sustainable Development Goals (SDGs)** by 2030, it is important also to involve **stakeholders from other ‘sectors’** in the decision-making and management of wetlands, as well as to be inclusive in terms of representation of the **civil society, women, local communities, the private sector, elected representatives** and other potential interest groups that have a stake in a specific wetland and/or issue, so as to obtain **optimal**

## Key international policies relevant to Mediterranean wetlands

### At international level:

- UN Sustainable Development 2030 Agenda (SDGs), in particular Goals No. 2, 6, 7, 13, 14, 15
- Ramsar Convention on Wetlands
- Convention on Biological Diversity (CBD)
- UN Water Conventions (Helsinki, 1992; New York, 1997)

### At regional level:

- Barcelona Convention and its most relevant protocols:
  - ICZM Protocol
  - SPA and Biodiversity Protocol
  - LBS Protocol
- Medit. Strategy for Sustainable Development (MSSD)

### At sub-regional (EU) level:

- EU ‘Nature’ Directives (Birds and Habitats)
- EU Water Framework Directive
- EU Marine Strategy Framework Directive
- EU Maritime Spatial Planning Directive
- EU Renewable Energy Directive
- EU Common Agriculture Policy (CAP)

**results in terms of trade-offs, sustainability, good governance and equity.**

Hence, the need is crucial to **conduct dialogues at local, national and regional level** and to **promote participatory approaches and the involvement of stakeholders** from different sectors – e.g., **water agencies, energy utilities, farmers’ associations, Non Governmental Organisations (NGOs), women’s groups, local communities, Members of Parliament (MPs), and businesses.**

## References:

- An Introduction to the Convention on Wetlands. Ramsar Convention Secretariat, Gland, Switzerland, 2016.
- Nature-Based Solutions for Water Management: The Quick Guide. UN Environment–DHI, UN Environment and IUCN, 2018.
- Wetlands and the SDGs. Ramsar Convention Secretariat, Gland, Switzerland, July 2018.
- Hoff, H., Understanding the Nexus. Background Paper for the Bonn 2011 Conference: The Water, Energy and Food Security Nexus. Stockholm Environment Institute, Stockholm, 2011

## How can Mediterranean wetlands serve and benefit as “nature-based solutions” in a Nexus context?

Protecting, restoring or constructing wetlands can help provide clean water for drinking water, agriculture, ecosystems, energy production and other uses. The economic value of wetland services and functions has now also been recognized. They are often more cost-competitive and sustainable than conventional infrastructure solutions and associated with a wide range of socio-economic co-benefits.

Wetlands hence have a combined economic, social, ecological and cultural value that should not be underestimated.

## How can wetlands’ “nature-based solutions” be financially supported?

The conventional sources of financing for wetlands’ protection and their services are public, and mostly in the shape of State funding for protected areas. However, incentives are needed for innovative means of financing, such as “payment for ecosystem services” schemes and special funds (e.g., the Coca-Cola Water Fund) with the engagement of the private sector, to kick off “green solutions”. Recently, some countries have also provided debt swaps to developing countries willing to invest in their ecosystems’ protection (e.g., Seychelles’ sovereign blue bond for the management of their MPAs).

## In a Nexus context, “nature-based” services of wetlands could include:

- **Water regulation/purification:** Wetlands contribute to water quality through their natural ability to filter effluents and absorb pollutants. Wetlands, in particular artificially created, “constructed” wetlands, can simulate the hydrological processes of natural wetlands and function as biological wastewater treatment facilities, either as a supplement or a substitute to conventional treatment plants.
- **Water storage/recharge:** The ability of wetlands to store large amounts of water, and release it slowly, plays a key role in the regulation of water quantity during periods of droughts and floods. This could also be relevant for hydropower facilities management up- and down-stream.
- **Food provision:** Wetlands are also used as fish or shrimp ponds, salt pans or rice paddies, supporting the livelihoods of local communities.
- **Disaster risk reduction:** Wetlands can “slow down” and absorb flood waters, reducing potential damage downstream, and increase resilience to storms of grey infrastructure and people. In drought periods, they may function as “retention basins” instead.
- **Aesthetic/cultural services:** Wetland landscapes are often of great beauty and areas with natural wilderness, which attract visitors/tourists. Ecotourism activities (e.g., bird-watching) can be a sustainable source of income for local communities.

## What are our “take home” messages?

- **Wetlands are where life begins.** Either natural or artificial, they provide a variety of crucial services to people - e.g., food, water supply, flood protection - beyond being biodiversity hotspots and sensational landscapes.
- **Don’t wipe wetlands off your map!** They need a lot more recognition and support from you since they are being degraded and getting lost at alarming rates and their unique natural features will soon be gone, forever, too.
- **Wetlands have an economic value and can compete as “nature-based solutions”** with more conventional services and “grey” infrastructure (e.g., waste water treatment plants).
- **Wetlands need you. They don’t have a voice, you have. You can turn the tide!**

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