





## Managing and restoring Mediterranean Ecosystems for water services and biodiversity

Session introduction

Monday 19 March 16h30-18h00

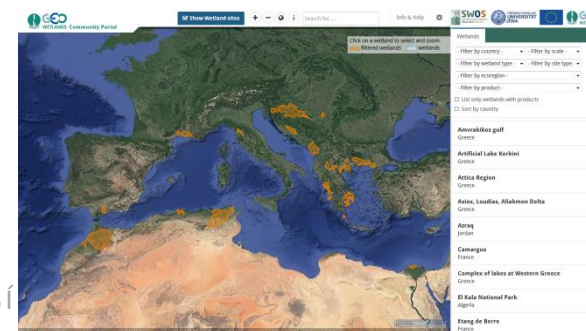
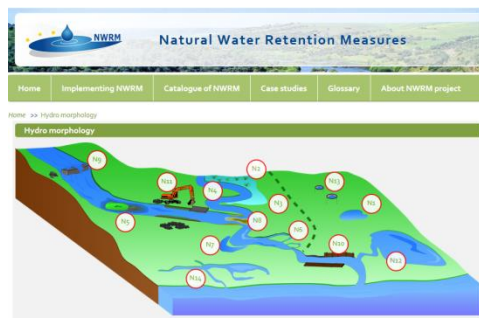
**Eric Mino** - SEMIDE – EMWIS “Euro-Mediterranean information system on know-how in the water sector” – [e.mino@semide.org](mailto:e.mino@semide.org)

**Jaime L. Fraile** : Confederación Hidrográfica del Segura Ministry of Agriculture and Fisheries, Food and Environment



# Preparatory activities

- A new topic for the Mediterranean Water Forum
- Preparatory workshops:
  - Monaco 11 July, 2017
  - Cairo, 22-24 January 2018
- Case studies and relevant initiatives:
  - About 10 discussed during and between workshops
  - EU Natural Water Retention Measures
  - Mediterranean Wetland Observatory
  - SDG 6.6: protect and restore water-related ecosystems
  - Satellite Wetland Observation Service



# Importance of ecosystems

- Most wetlands in the Mediterranean basin are at low altitudes and are predominantly coastal.
- Wetlands provides a wide range of services for free (fresh water, food, recreational, flood protection, biodiversity)
- But are in great danger due to human activities as well as climate change
- The Millennium Ecosystem Assessment gave wetlands a value of US\$15 trillion in 1997 ([http://wwf.panda.org/about\\_our\\_earth/about\\_freshwater/intro/value](http://wwf.panda.org/about_our_earth/about_freshwater/intro/value))



# Status in the Mediterranean

## Mediterranean Wetlands Observatory (MWO)



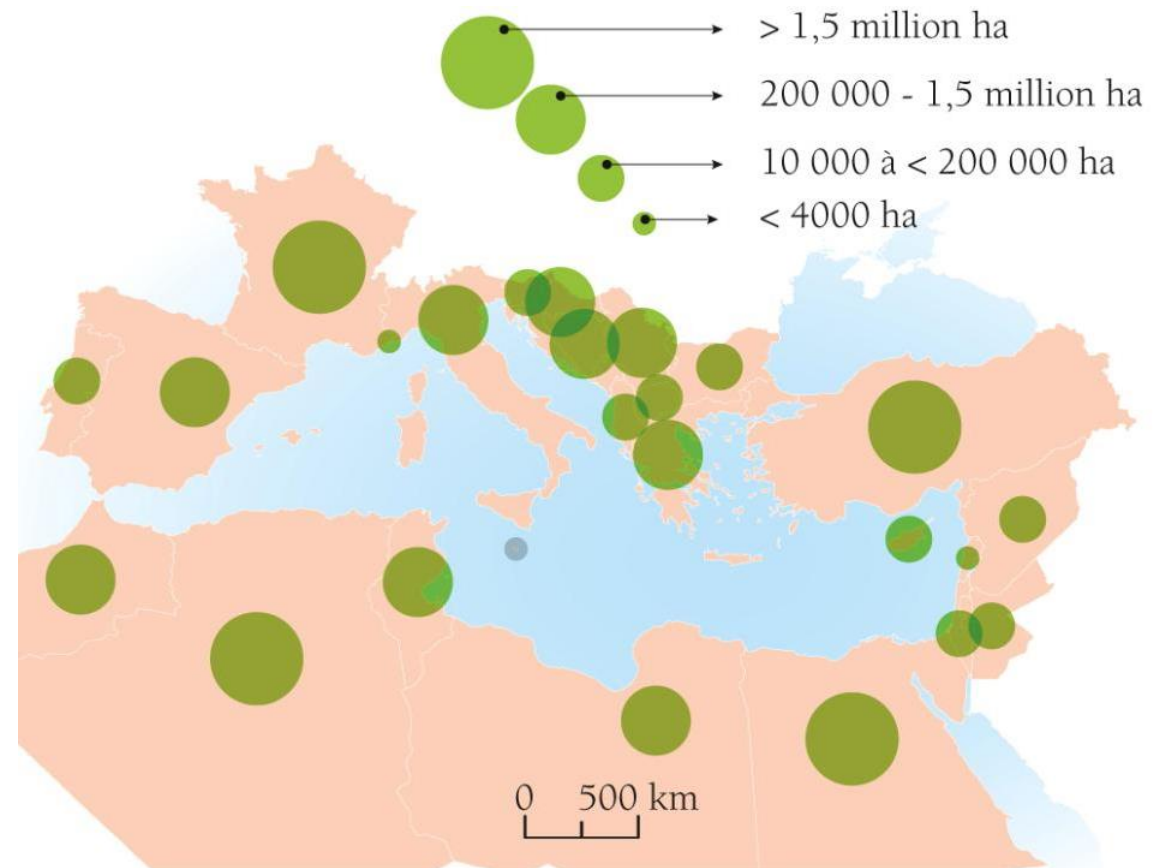
WORLD WATER FORUM | BRASÍLIA-BRASIL, MARCH 18-23, 2018

[www.worldwaterforum8.org](http://www.worldwaterforum8.org) | [secretariat@worldwaterforum8.org](mailto:secretariat@worldwaterforum8.org)



# Surface area of Mediterranean wetlands

The Mediterranean hosted, by year 2000, **c. 15 – 22 million ha. wetlands** (1.5% of the *World's wetlands*)



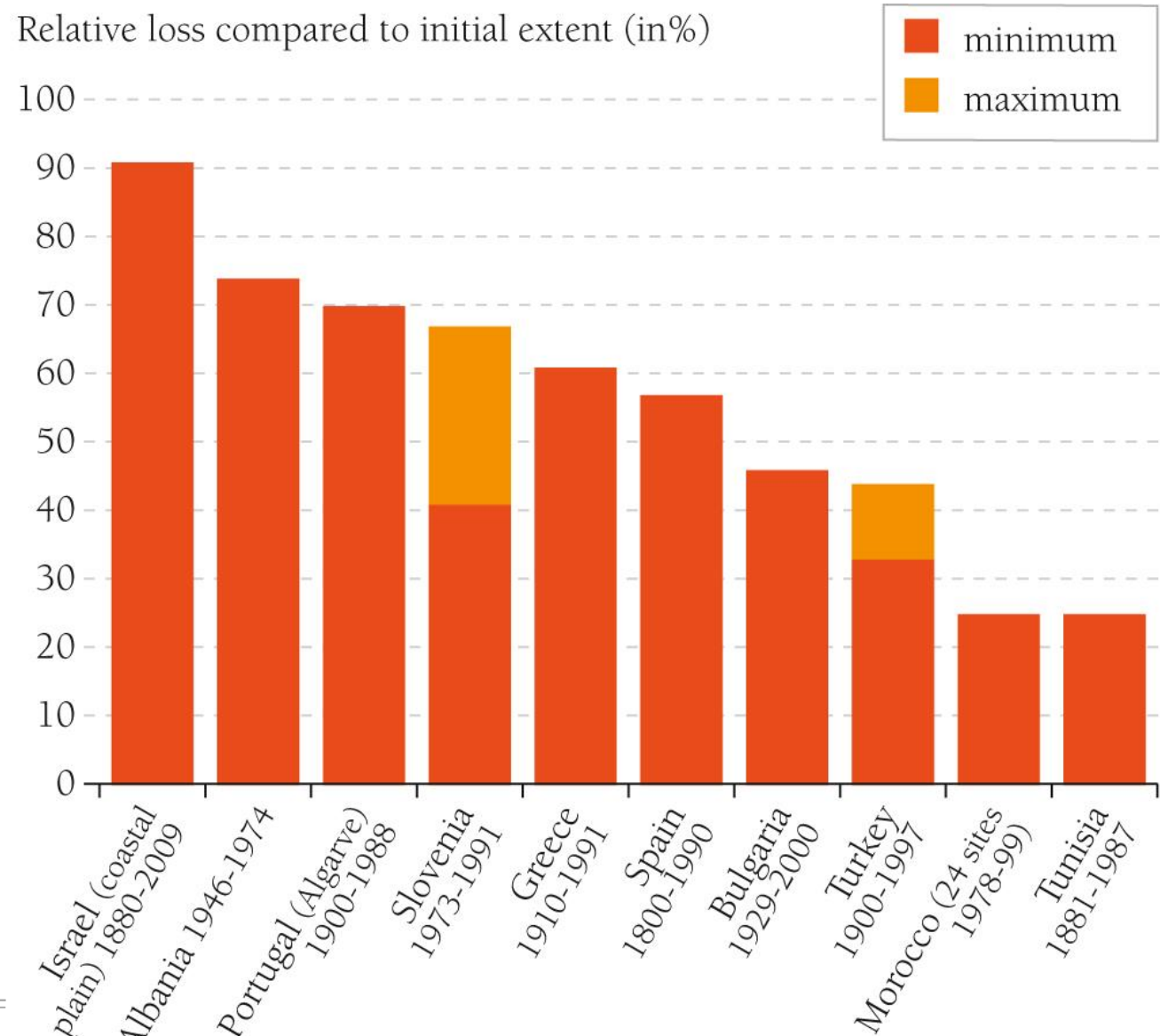
# Wetland losses & transformation

Wetland **loss of c. 50%** over XXth Century:

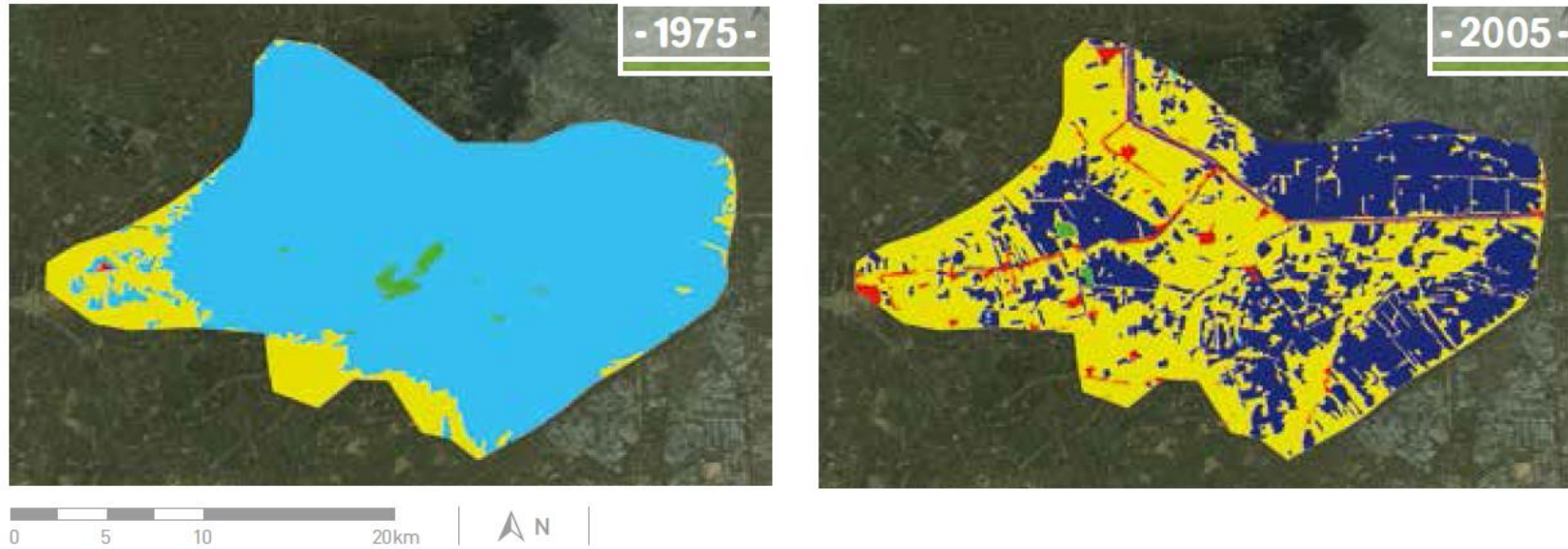
Transformations due to:

- Agricultural areas
- Urban areas
- Hydro-morphological changes (reducing rivers discharges)
- Increase of artificial wetlands (+102% between 1975-2005)

Relative loss compared to initial extent (in%)



# Monitoring transformation



- Urbanized areas
- Agricultural areas
- Natural non-wetland habitats
- Natural wetland habitats
- Man-made wetland habitats



<http://swos-service.eu/>

**Changes in wetland habitats between 1975 and 2005**  
*(Sinnéra & Sanel Hagar, Nile Delta, Egypt)*



# Water ecosystem services

- *“Benefits that humans derive from ecosystem functions”\**

- Shore protection
- Soil retention
- Flood protection
- Water supply
- Water quality
- Carbon sequestration
- Produces: fisheries, game, foraging
- Tourism, recreation, research
- Cultural , spiritual, heritage values

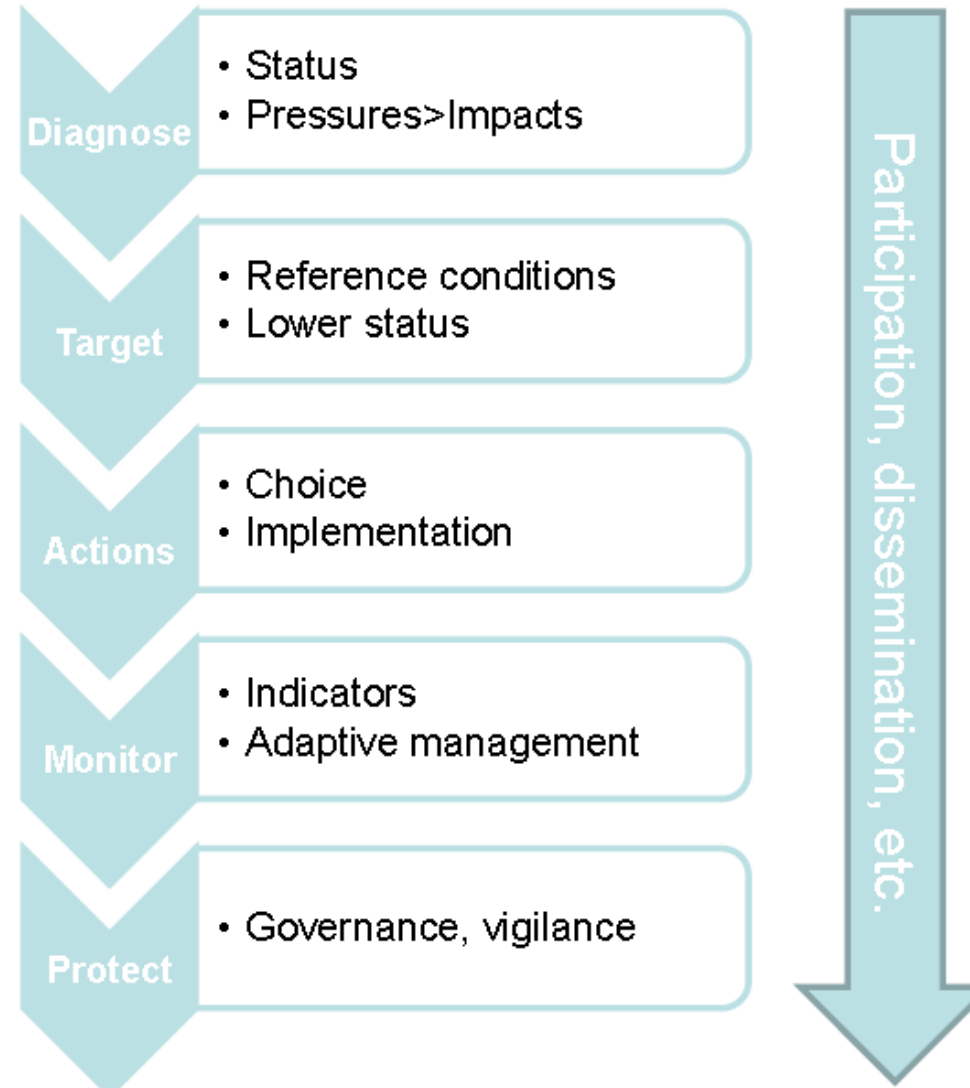


\* The handbook for management and restoration of aquatic ecosystem in river and lake basins, INBO, 2015.

# Restoration measures

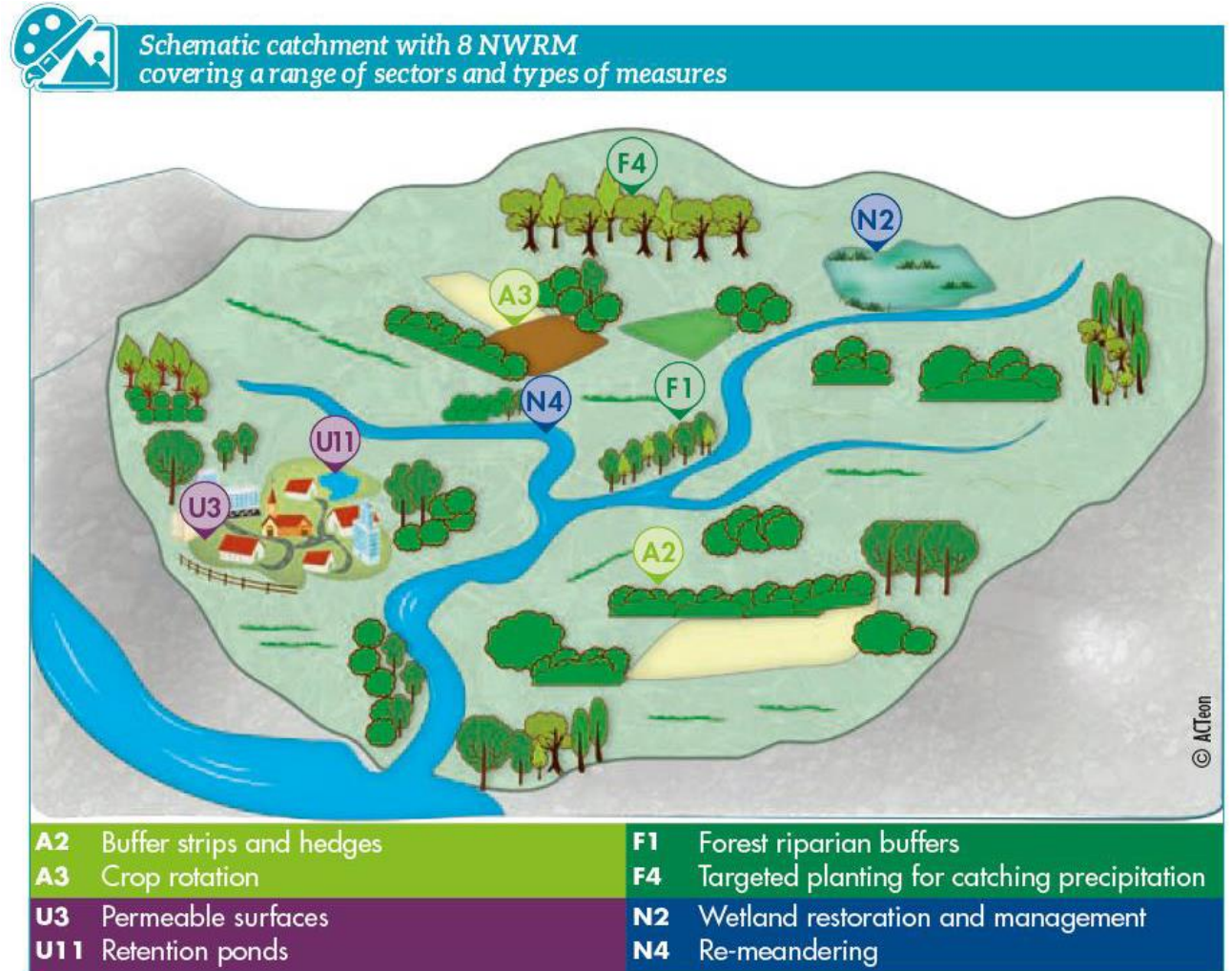
*To restore the ecosystem close to its natural status and functioning*

*if possible, remove the source(s) of alteration(s)*



# Examples of restoration measures

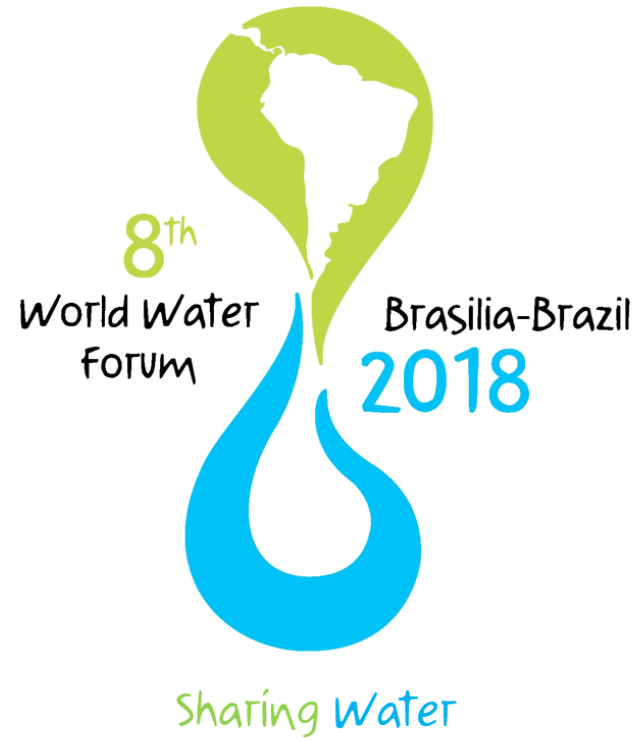
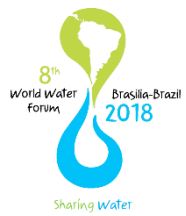
- Dam removal. Water flow regime naturalization. Environmental flows. Artificial flash floods. Sediment flushing. Fish passages. Friendly infrastructures...
- Remeandering, reconnecting riverbeds
- Water quality: WWTP, bioremoval, artificial wetlands, Green filters, buffer strips, riparian forest plantations...



Source: <http://nwrn.eu/>

# Session agenda

- **CASE STUDIES (40 mins)**
  - Lake Manzala Engineered Wetland - Egypt
  - Gafsa oasis: a resilient ecosystem for irrigation management, Tunisia
  - Ecological flows in Sebou river basin, Morocco
  - Albufera de Valencia, semi-urban wetland, Spain
- **Panel and public debate (30 mins)**
  - How can we enforce an allocation of water for the ecosystems?
  - Are Natural Based Solutions an alternative to traditional, grey infrastructure solutions?
  - How to assess the value of ecosystems restoration measures?
- **Conclusions (5 mins)**



Organization



MINISTRY OF THE ENVIRONMENT



Support

