Mediterranean wetlands management and restoration as carbon sinks
LIFE Wetlands4Climate

Coordinating Beneficiary: FUNDACIÓN GLOBAL NATURE

Associated Beneficiaries:

Financers:
• LIFE Program EU;
• Ministerio Transición Ecológica & Reto Demográfico through Fundación Biodiversidad;
• Agencia Estatal de Investigación del Gobierno de España;
• Conselleria de Agricultura Desarrollo Rural, Emergencia Climática y Transición Ecológica de la Generalitat Valenciana;
• Regidoria de Conservación de Áreas Naturales Devesa-Albufera Ayuntamiento de València;
• Ayuntamiento de Torreblanca
• Naturgy

Total Budget: 2,165,389 Euro (55% financed by EU)

Period of implementation: October 2020 to June 2024

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OBJECTIVES & SCOPE

• To establish management guidelines for Mediterranean wetland so that they function as carbon sinks while maintaining their ecological integrity, and providing ecosystem services of a healthy ecosystem, through the design of an experimental protocol in pilot wetlands (management actions: for vegetation, soil and water).

• To transfer results to other wetlands through, political advocacy, communication, awareness and training campaigns.

• To involve the private sector in financing mitigation to climate change through the development of a specific methodology for Voluntary Carbon Market.

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Process step by step:

1) Selection of wetlands for testing restoration and their mitigation potential
2) Field actions developments and measurements
3) Protocol for the verification and certification of credits
4) Transfer (policies, networks; training)
5) Education, communication and awareness

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1) Selection of wetlands for testing restoration and their mitigation potential

Castilla La Mancha
3. Laguna de Tirez (Toledo)
4. Lagunas Grande y Chica de Villafranca de los Caballeros (Toledo)
5. Laguna de Manjavacas (Cuenca)
6. Laguna de Alcahozo (Ciudad Real)

Comunitat Valenciana
7. Prat de Cabanes-Torreblanca (Castellón)
8. Marjal dels Moros (Valencia)
9. L’Albufera de València (Valencia)
10. Marjal de Pego-Oliva (Alicante y Valencia)
1) Selection of wetlands for testing restoration and their mitigation potential

**Freshwater wetlands of Castilla y León**
- La Nava
- Boada

**Saline Wetlands of Castilla-La Mancha**
- Grande
- Tirez
- Alcahizo de Pedro Muñoz
- Manjavacas

**Coastal Wetlands of C. Valenciana**
- Marjal de Pego-Oliva
- Mallada Mata del Fang
- Marjal del Moro
- Prat de Cabanes-Torreblanca
2) Field actions development and measurement: linking measures to management methods; drawing up guidelines, inspiring management procedures and policies, and training managers (implementation and replication)

- Management actions: vegetation, soil and water management
  - FGN
  - ~ 7 ha

- Characterization and Carbon cycle measurement
  - UVEG
  - ~ 53 ha
  - ~ 85 ha

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3) Protocol for carbon credits verification and certification

National voluntary carbon Market
MITECO/OECC, CO2 Absorption projects

VCS Program Guide

Requirements Documents
- VCS Standard
- AFOLU Requirements
- JNR Requirements
- ODS Requirements
- Program Definitions
- Program Fee Schedule

Procedural Documents
- Registration and Issuance Process
- Methodology Approval Process
- AFOLU Non-Permanence Risk Tool

Templates and Forms
- Project Description
- Registration Representation
- Validation Report
- Validation Representation
- Monitoring Report
- Issuance Representation
- Verification Report
- Verification Representation
- Methodology
- Listing Representation
- Non-Permanence Risk Report
- Other Templates and Forms
4) Transfer, replication (training)

Transfer National, Regional and European level: MITECO, OECC, IPCC (LULUCF) Networks (Wetlands International, RAMSAR, MedWet ...)

Training of Wetlands managers

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5) Education, communications and awareness

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Social Networks; Exhibition (12 panels), videos (14) environmental education workshops (500) and participation in conferences (50) with more than 15,000 attendees + scholars + visits to exhibition
Why are wetlands so important as carbon sinks?

The importance of wetlands for long-term carbon sequestration is particularly significant when compared to terrestrial ecosystems.

Carbon stored in the soils can remain there for centuries.

Considering Mediterranean Wetlands in carbon sequestration?

Well preserved wetlands are important habitats in terms of carbon sequestration and storage.

Wetlands (mainly peatlands) have the highest carbon stocks of any terrestrial habitat making them a key ecosystem for carbon storage. They contain 30% of total organic soil carbon despite covering only around 5-8% of the world’s area.

Comparison of the carbon sequestration rates per hectare of different wetlands:

- Permanent Freshwater and brackish marshes, typical wetland type of the Mediterranean Spanish coast, show a high capacity for C capture, especially in the restored sites (maximum 950 g C m⁻² yr⁻¹) (9.5 t ha⁻¹ yr⁻¹) with a paramount role of helophytes.

- Some global estimates indicate that salt marshes rank among the most effective ecosystems in carbon sequestration with an average of 242.2 g C m⁻² yr⁻¹.

- While long-term carbon sequestrations rates in peatlands are on average 26.6 g C m⁻² yr⁻¹.
INFLUENCE OF CONSERVATION STATUS ON CARBON BALANCES AND MITIGATION

Lessons learnt and transferability

- **Restoring the biodiversity value** of the wetland should be the primary objective.
- It is important to assess the **factors affecting the success of restoration for carbon benefits**, including site conditions, the time needed to achieve restoration, the costs and benefits of restoration actions, the permanence of carbon gains, and how to monitor carbon flows.
- The **feasibility of restoration** considering the current state of the ecosystem, its context, and potential to recover.
Lessons learnt and transferability

- **Site condition or conservation status**: the degradation or restoration level influence the C balance and GHG exchanges and, consequently, determine the mitigating/warming role of Mediterranean wetlands on a short to medium time scale. Hydro-morphological alterations and water pollution may convert healthy ecosystems contributing to C sequestration and climate change mitigation into C emitting ecosystems.

- **Wetland management measures** could significantly influence the carbon balance, being able to strengthen the carbon retention capacity, but also reverse this function and increase carbon emissions into the atmosphere.

- There is a general lack of information on carbon stocks and flows in managed systems and the effects of management measures on carbon fluxes are not well documented. This lack of information is covered by LIFE Weltands4Climate, results will be available at the end of 2023.