

Wetlands: The Hidden Resource for Climate Change Mitigation and Adaptation



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AWARENET - LEBANON

Climate Change Adaptation in the Economic Development
Sector using IWRM Tools Amman, Jordan 2016

Key Messages

1. Global Climate Change is occurring more rapidly than in the past
2. Climate variability is natural and projected to increase under global climate change
3. Many wetlands (watersheds/waterbodies/inland waters...) are under immense pressure – high level of loss and degradation globally
4. Climate Change will increase these pressures...Expected Further Loss



Key Messages

1. Weak Cooperation between National Government and Local Authorities (Cities, Municipalities...) and non-existent integration of the latter in decision-making process
2. Data and Information Sharing for assessing responses are inadequate or not available
3. Local Authorities and sub-national authorities (Cities, Municipalities and Provinces) are the most effective governance level for the sustainable management of “Natural Resources – Water, Energy, Biodiversity...etc)



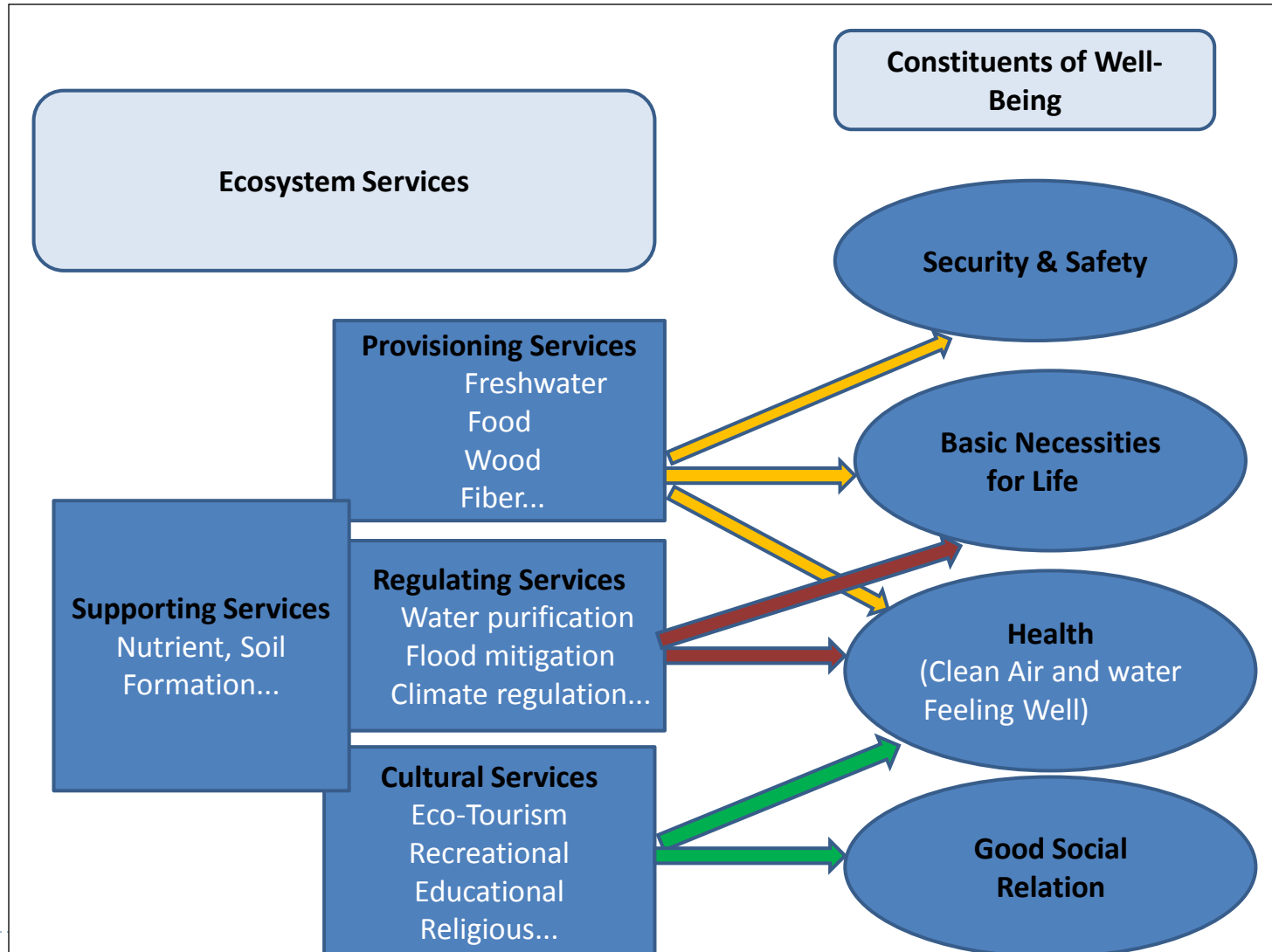
Ecosystem and Wetlands Overview

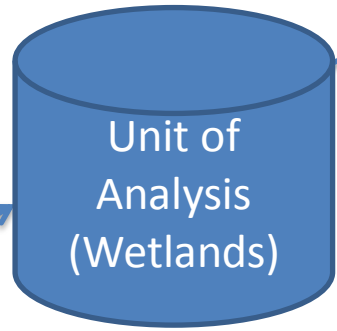
- ▶ Ecosystem: “A dynamic complex of plant, animal and micro-organisms communities and their non-living environment , interacting as a functional unit”(Article 2, CBD)
- ▶ Wetlands: “ Areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tides, does not exceed 6m” (Ramsar Handbook, 2010)



Inland Water (Wetlands) Ecosystem Services

We never know the worth of water till the well is dry (T. Fuller)



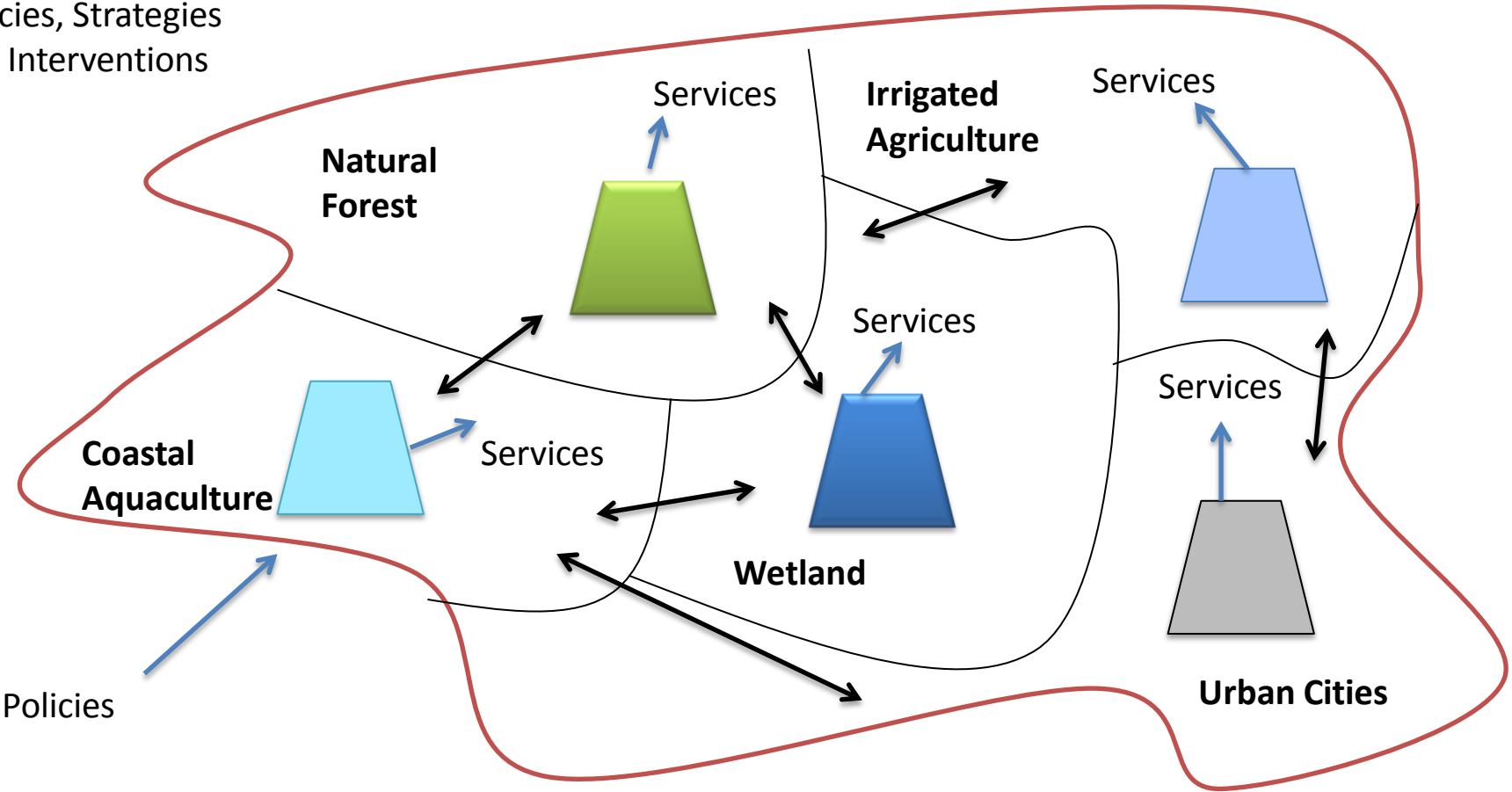


Ecosystem Services

Impact on Human Health and Well-Being

Fluxes/Flow: Water, Carbon, Nutrients, Pollutants, Species, Migration, Dispersal

Policies, Strategies and Interventions



Region of Ecosystem Assessment

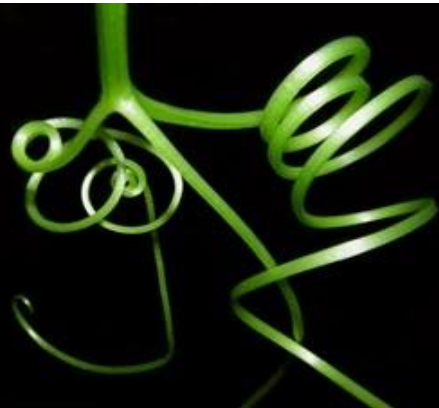
Policies

Climate Change and Sea Level Rise

Between 1900-2000, sea levels rose by 10-20cm:

1. Major changes to wetlands/water regimes (Flooding/Drying)
 2. Further salinization – Loss of freshwater wetlands
 3. Loss and change of habitat (migratory birds and animals)
 4. Loss of ecosystem services and livelihoods
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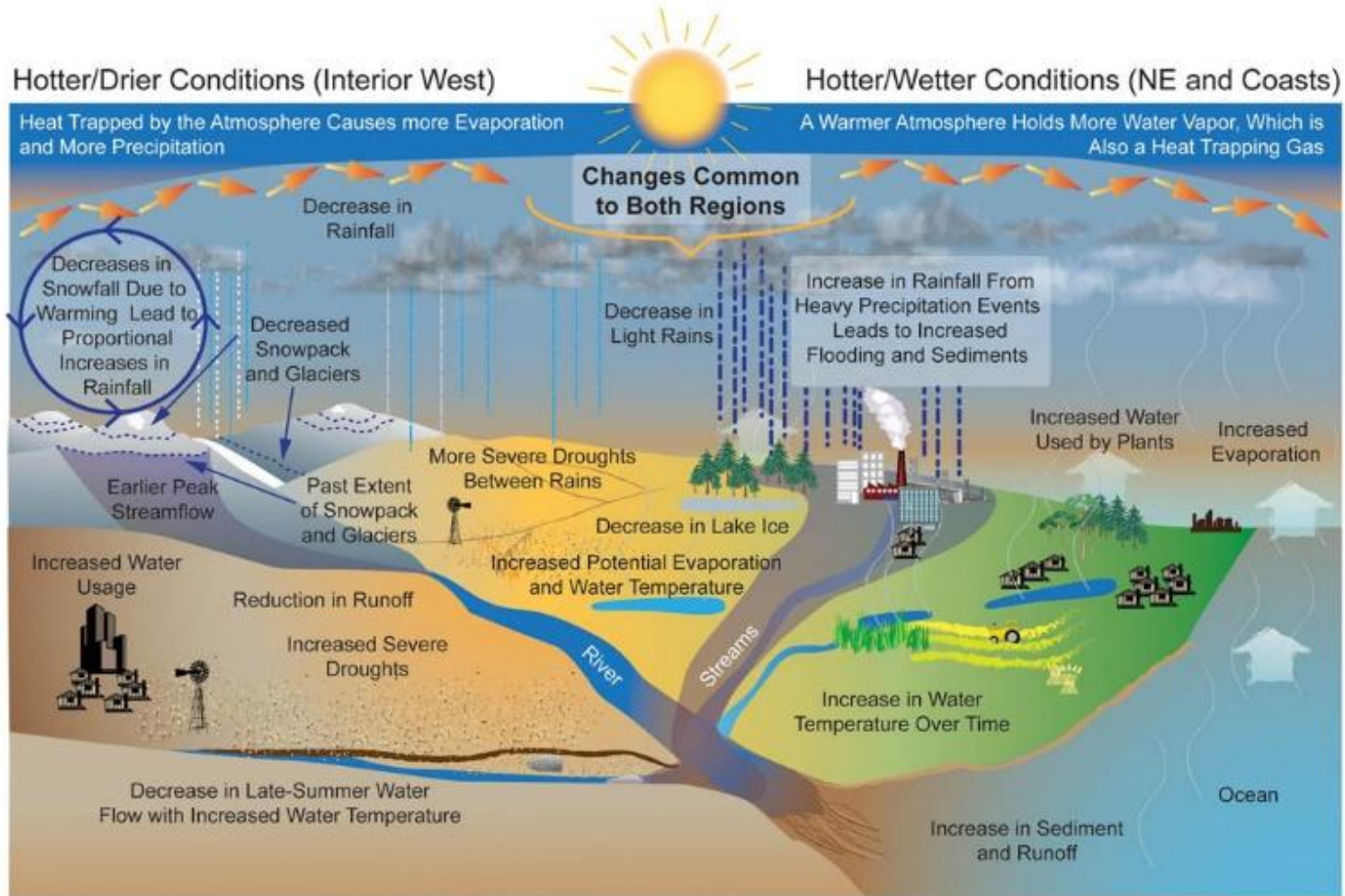


Biodiversity for a Livable Climate

Restoring Ecosystems to Reverse Global Warming



Climate Change Affects Water Affects Wetlands



Source: USGCRP (2009)

Managing the avoidable and avoiding the unmanageable

Adaptation: *Wetlands provide resilience to the harmful effects of climate change. Wetlands lessen the impact of extreme weather events due to climate change; for example:*

- ▶ Healthy wetlands absorb winds, decreasing the incidence and severity of catastrophic flooding
 - ▶ Coastal wetlands protect ecosystems and communities from storms and sea-level rise
 - ▶ Wetlands are crucial freshwater reservoirs in regions where climate change increases drought
 - ▶ These responses are very often more sustainable and cost-effective than traditional engineering approaches
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Managing the avoidable and avoiding the unmanageable

Mitigation: *Improved wetlands management is a means of naturally combating the onset of climate change*

- ▶ The significant current emissions of CO₂ from increasing areas of unsustainably managed wetlands must be curtailed
- ▶ Rehabilitation of wetlands can significantly mitigate CO₂ emissions from existing degraded wetlands.



Interesting Facts about Wetlands and Carbon Storage

- ▶ Wetlands only cover about 6% of the Earth's surface, but contain about 35% of global terrestrial carbon (UNEP and SCBD, 2012).
- ▶ Peatlands, only one wetland type, are the most efficient carbon stores of all terrestrial ecosystems; they store twice the carbon present in the forest biomass of the world and the storage is much longer-term.
- ▶ Peatland emissions in South-east Asia far exceed the fossil fuel contributions of greenhouse gases from major polluting countries



Wetlands – The “Nexus” Linking Water, Food & Energy

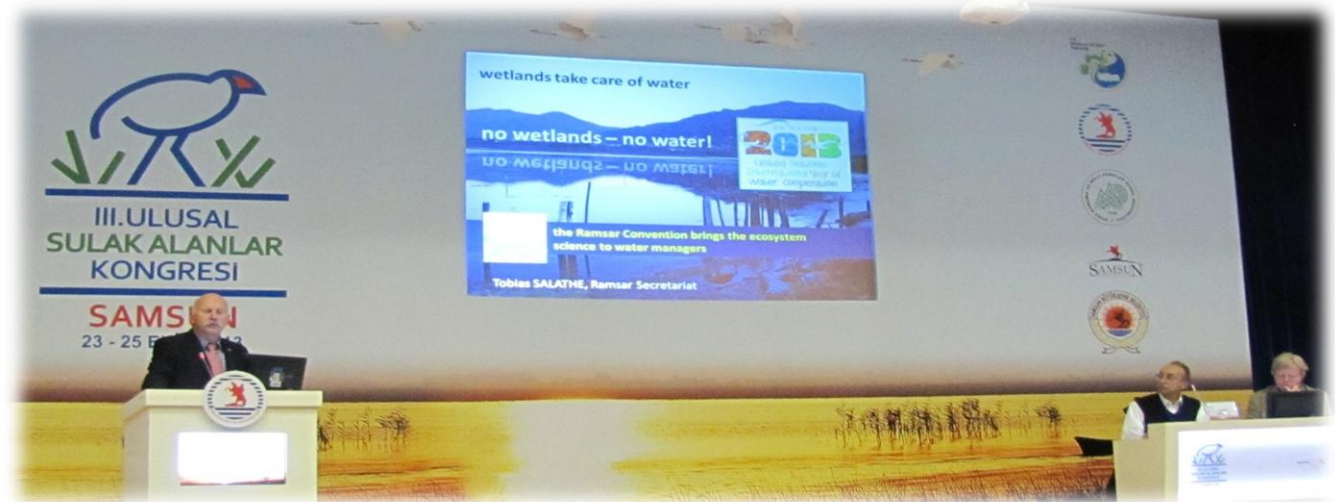


- ▶ Wetlands provide the link between water, food and energy. To maintain our supply of water, food and energy, we need to maintain the relevant wetland ecosystem services and cooperate with our counterparts in the water, food and energy sectors.
- ▶ “Nexus” approach could drive integrated land and water use planning in many river basins during the coming years.
- ▶ Nexus is a connection, and wetlands are the connecting element through which the water needed for our food and energy production flows



Wetlands Takes Care of Water and Climate Change

- ▶ It is obvious that water security is becoming increasingly urgent for human security and well-being, and natural water infrastructure are solutions for this security
- ▶ Wetlands constitute the “Heart of Water” – wetland conservation and management are about to become mainstream political concern



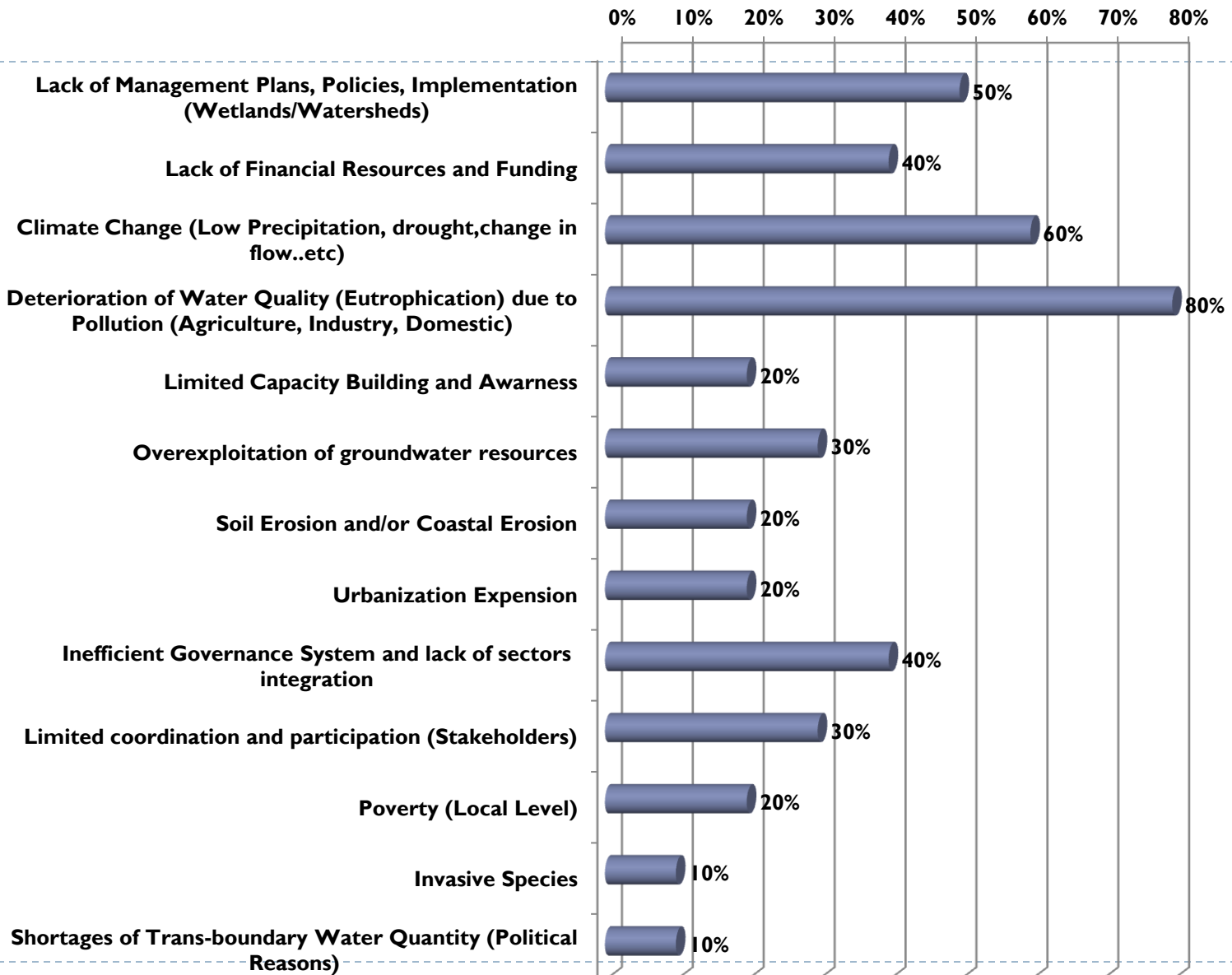
“Wetlands take care of water” is Ramsar’s message for the international year of water cooperation

Inland Water Biodiversity: Problems

- ▶ It becomes crystal clear that the problems of our planet are highly interlinked - without combating climate change we will fail to stop the loss of biodiversity, without protecting ecosystems with their carbon storing capacity it will be extremely difficult to meet climate change targets
- ▶ And without both of them we will fail in our efforts to fight hunger in the world
- ▶ Climate change is indeed a problem, and biological diversity is part of the solution and is therefore a full component of the multilateral political ecology.
- ▶ Worldwide, political decision-makers are increasingly recognizing that biodiversity protection is immensely important for human well-being, global economic development and combating poverty



Major Constraints and Challenges



What needs to be done?

- ▶ Implementation is the critical issue. But because of the demands placed upon water by multiple stakeholders, this is not an easy task.
- ▶ A critical hurdle to overcome is for those sectors/interests/activities that impact wetlands to recognize that the sustainable use of inland water biodiversity is their responsibility also.
- ▶ Good governance and institutions, and the political and legal mandates they provide, underpin the successful implementation of all response options.
- ▶ The effective management of inland waters will require improved arrangements for river (or lake or aquifer) basin–scale management, integrated marine and coastal area management and integrated water resources management.
- ▶ The [ecosystem approach](#) has been developed as an overall strategy for integrated environmental management promoting conservation and sustainable use in an equitable way.



There Are Solutions

- ▶ KEEP the carbon stored in wetlands where it is
- ▶ REHABILITATE wetlands to reduce carbon emissions, restore biodiversity, and sustainable livelihoods
- ▶ RAISE AWARENESS of water-wetlands-biodiversity linkages
- ▶ ENGAGE the full range of public (national , sub-national, local level) and private sector stakeholders and promote multi-convention cooperation
- ▶ PROVIDE POSITIVE INCENTIVES for sustainable wetlands management that promote their full potential in climate change adaptation and mitigation (i.e. create a funding mechanism to rehabilitate and preserve wetlands; finance the incremental costs to local communities of improved wetland management as a response to climate change).



Case Studies Analysis

- ▶ Case studies are an important source of knowledge information and data crossing worldwide borders (*Global Biodiversity Outlook GBO3 & Biodiversity Outlook*)
 - El-Haswa Wetland Protected Area, Yemen
 - Lake de Banyoles, Catalonia, Spain



Case Study: El-Heswa Protected Area Wetland- Yemen

- ▶ Location: Aden, South Yemen
- ▶ Humid Climate
- ▶ El-Heswa Wetland is a Protected Area

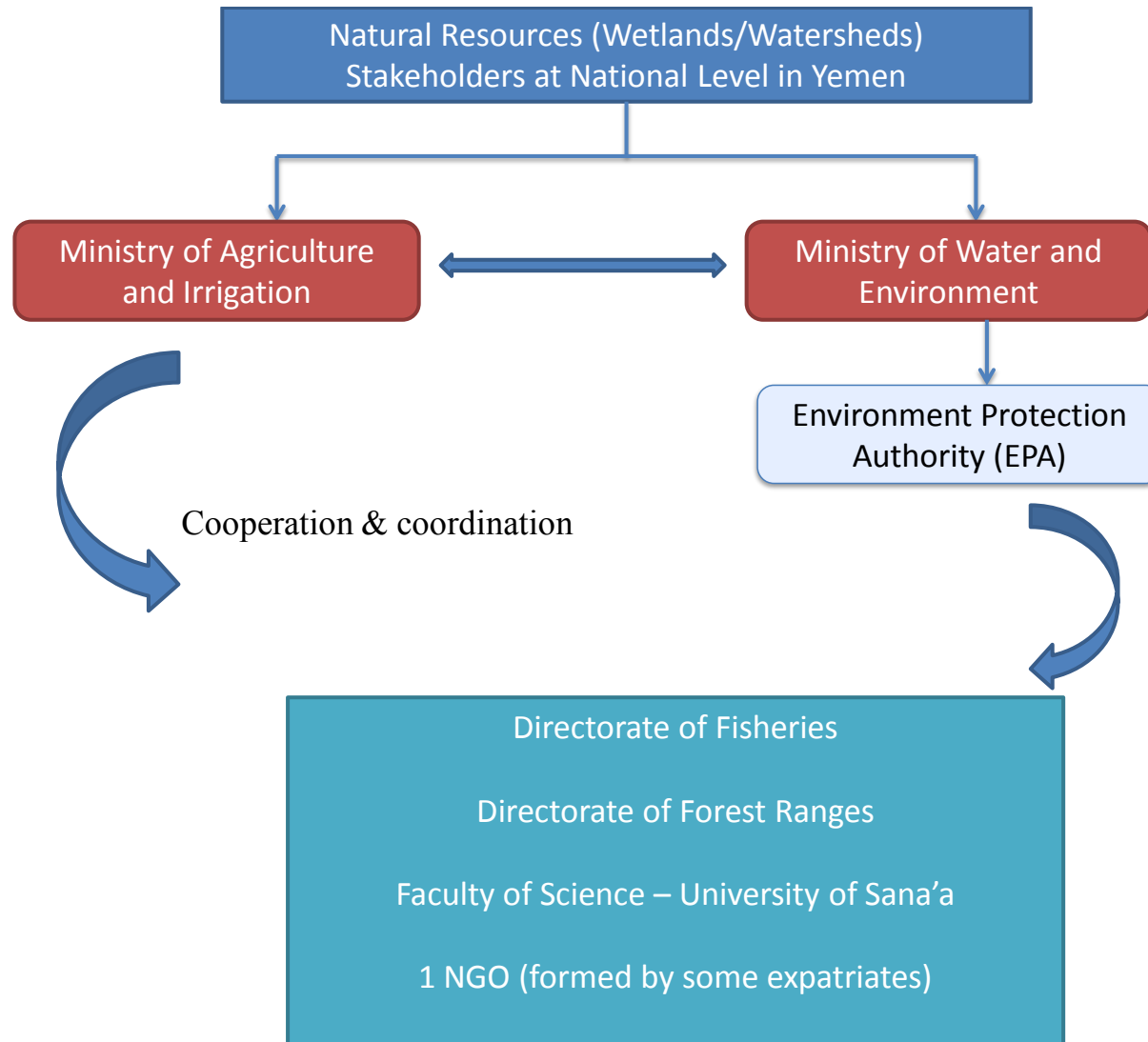


Case Study Components

- ▶ Implementation of a UNDP Project Sustainable Natural Resources Management Program (2004) → Project succeeded to put the wetland as a Protected Area in Yemen
- ▶ Strategies and Action Plans were developed in details with awareness and capacity building and environmental campaign (UNDP)
- ▶ Yemen National Government, has developed a Management Plan for it's wetlands (2011)
- ▶ The analysis of the Management Plan and Strategies 2011 was done in compliance with the Strategic Plan – Aichi 20 Targets 2011-2020



Stakeholders & Policy Analysis



Gap Analysis

- ▶ There is no role of local government/authority level (municipalities) in the management plan of the Yemeni National Government
- ▶ The main policies and legislations that promote sustainable use of wetlands and watersheds in Yemen barely exist
- ▶ Few laws and regulations used to exist before unification of Yemen in 1990
- ▶ This case study, showed how restoration process is very problematic and complicated to meet the standards of ecosystem conservation
- ▶ The program of work is facing challenges of all kinds and the above mentioned plan is compiling with many aspects of sustainable development goals and the CBD strategic plan.

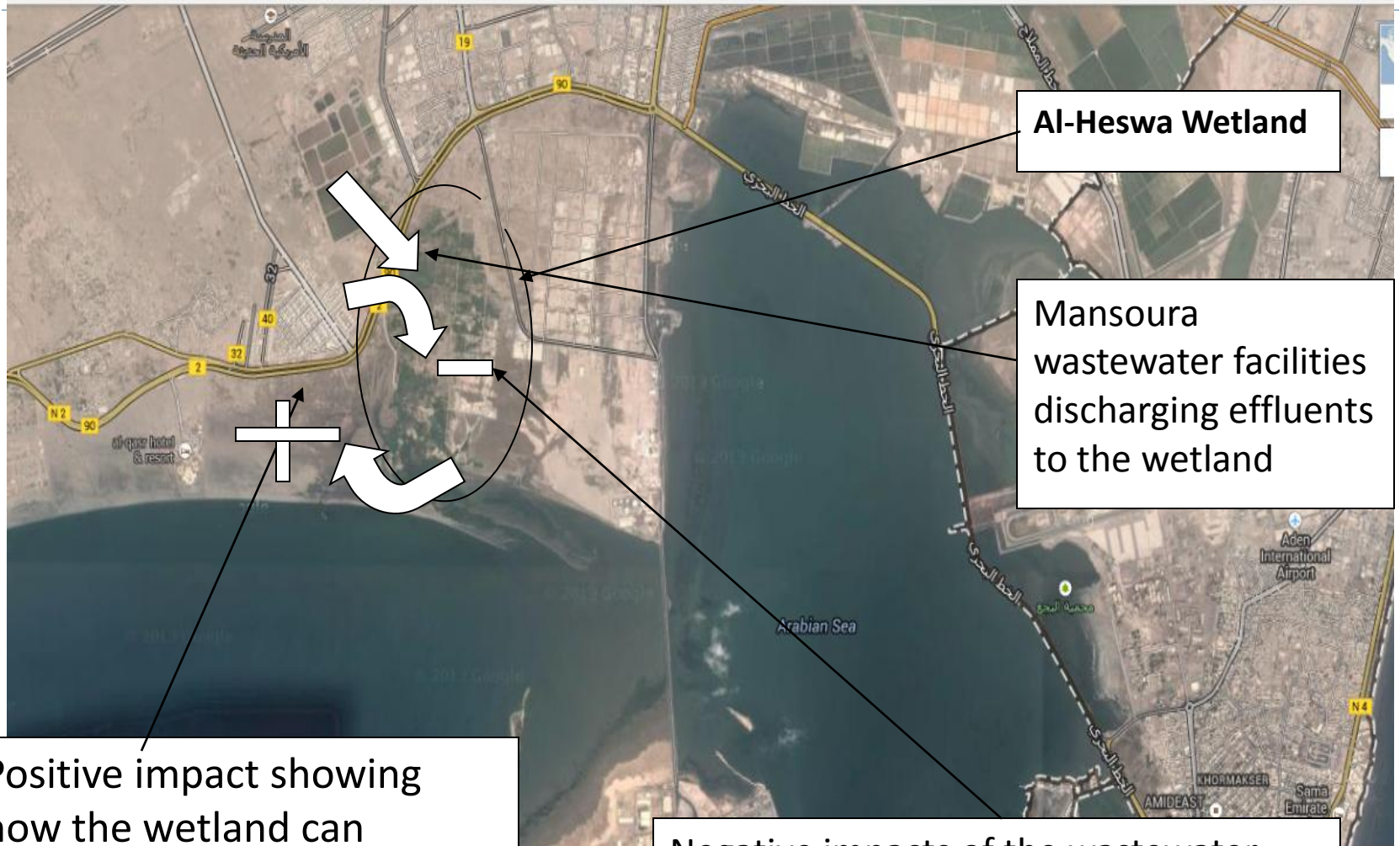


Gap Analysis

- ▶ This management plan is missing very imperative elements of successful policy which we can understand in the context of the difficulties facing Yemen presently.
- ▶ The management plan did not introduce any action plan on resource mobilization to ensure the sustainability of the program;
- ▶ The Mansoura wastewater facilities will keep on discharging the effluents to the protected area which is controversy with the ecosystem equilibrium.
- ▶ The negative incentives are present in some activities such as establishment of a new nursery without any consideration to some offensive subsequent like introducing new invasive alien species.



Gap Analysis



Al-Heswa Wetland

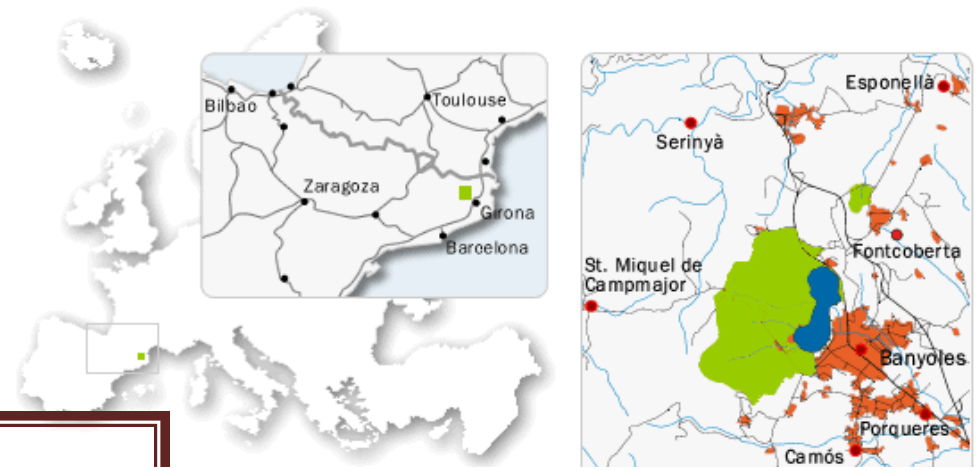
Mansoura wastewater facilities discharging effluents to the wetland

Positive impact showing how the wetland can provide ecosystem services to the neighborhood

Negative impacts of the wastewater facilities and the urbanization should be reduced in compliance with goal B of the strategic plan.

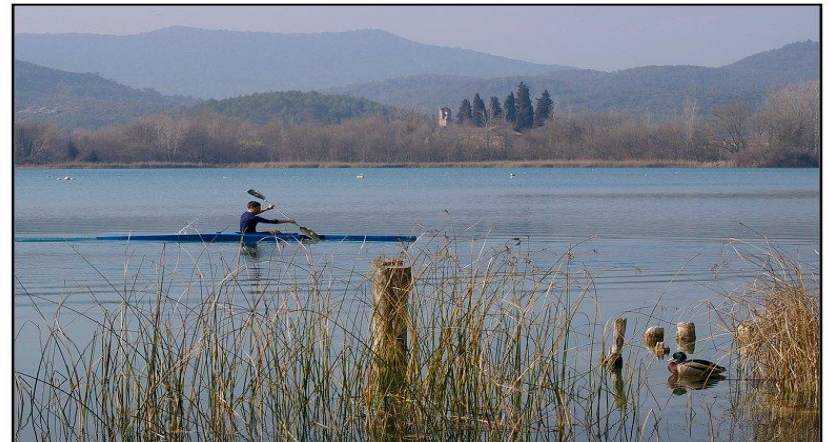
Case Study II: Lake de Banyoles, Spain

- ▶ Location: Girona, Catalonia, Spain
- ▶ 2nd Largest Lake in Spain
- ▶ The Lake consists of a set of 6 catchments and 13 points of underground water



The Lake is a very popular site for eco-tourism and variety of sports and water games. It was a sub-headquarters for the 1992 Barcelona Olympic Games and during 2004, the headquarters of the World Rowing Championship.

(Source: en.costabrava.org)

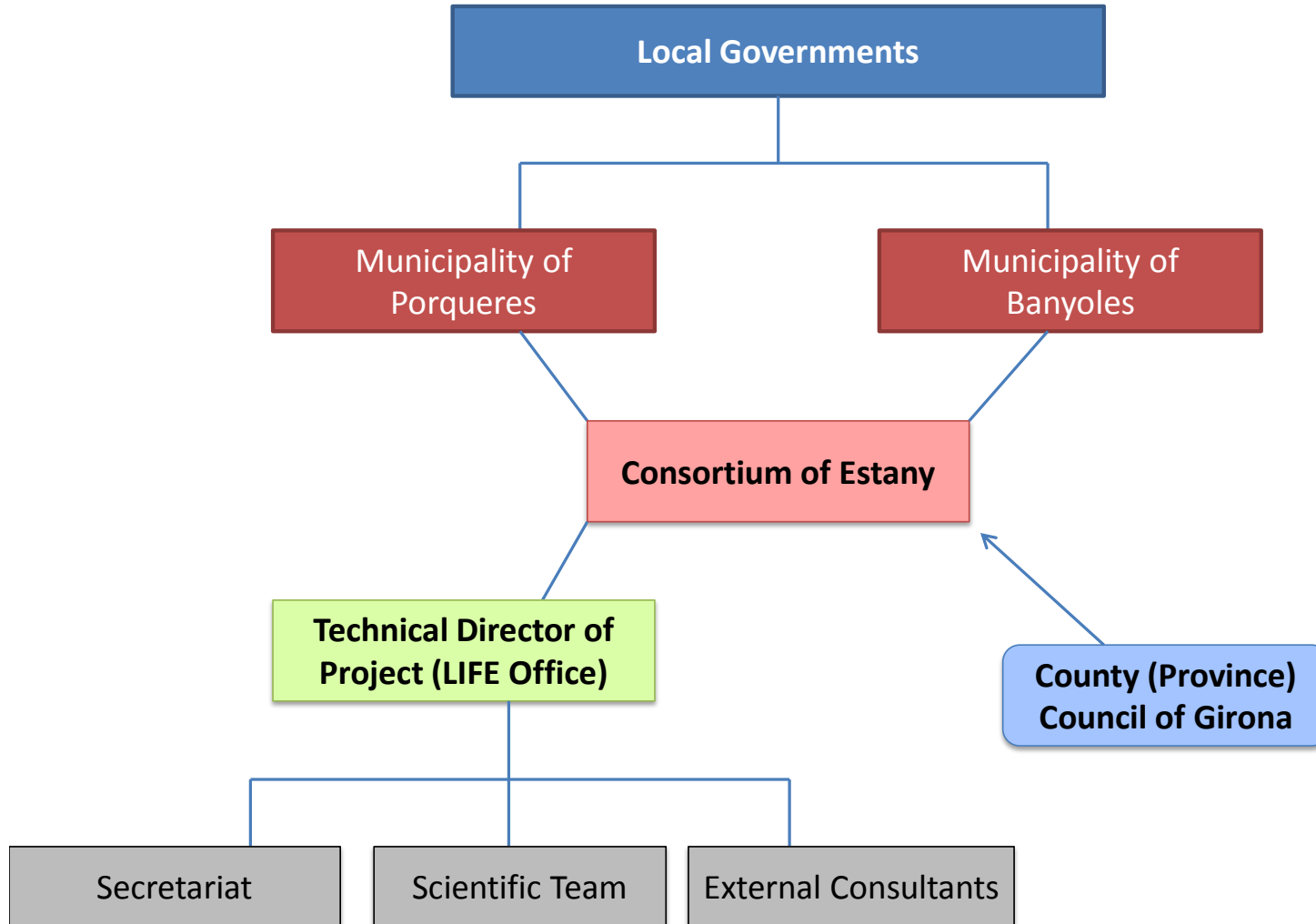


Management Plan

- ▶ Management Plan funded by EU and European Commission
- ▶ Management Authority of the Wetland Lake is through a partnership with two towns (municipalities): Poqueres and Banyoles
- ▶ The Management Plan was analyzed in accordance and compliance with the Strategic Plan and 20 Aichi Targets of the UNEP/SCBD/Montreal
- ▶ Few threats exist on the wetlands from agricultural practices, and eco-tourism (sports) (literature review and discourse analysis with the Manager of the Wetland)



Governance and Stakeholders Analysis

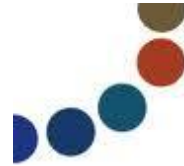


MediverCities Network: Case Study of Wetland Networks at Local Level

- ▶ In response to support local authorities by integrating them into decision and policy making, and in application of Decision X/22 “Biodiversity for poverty eradication and development, adopted at the COP 11 in 2012(UNEP/CBD/COP/DEC/XI/22)
 - ▶ The City of Montpellier in France, suggested to establish a network of Mediterranean local authorities and sub-national government’s with other close partners such as the national government, the academia represented by scientific institutions, the conservation networks and the international organizations to promote development through sustainable biodiversity management (SCBD, 2013).
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International, National and Local Level Stakeholders



UNITED NATIONS ENVIRONMENT PROGRAMME
MEDITERRANEAN ACTION PLAN
for the Barcelona Convention



MediverCities Network: Case Study of Wetland Networks at Local Level

- ▶ The Mediterranean Basin Network- MediverCities- was launched in May 2013 at the Sarajevo in Bosnia & Herzegovina, with initiation and support from the Local Authority (Municipality of Montpellier), the SCBD, and the Local governments for sustainability- (ICLEI).

1- Reinforce Environmental Governance at local level
(action plans such as LBSAPs – local biodiversity strategies and action plans)

2- Facilitate Information/Data Sharing...



Best Practices from Local Authorities

Curitiba: The Green Capital – Brazil

Curitiba is a city in the state of Parana in Brazil, with an area of around 430,9 square kilometer (sq.km) and a population of about 1,851,215 as of 2009 (CIA WorldFactbook).



In 1970: the local people had less than 1 square meter (m²) of green area.

A project “**Green Exchange Program**” was actively launched by the city government in the 1990’s.



Curitiba: The Green Capital – Brazil

- ▶ Improvement of the situation and increase the green landscape to 52 m² by 2007
- ▶ According to the American magazine Grist (www.grist.org) in 2007, the city was 3rd on the list of “15 Green Cities in the World” and it is considered now the greenest capital in South Brazil with a complex ecosystem of about 30 natural green park.



Curitiba: The Green Capital – Brazil

- ▶ **Green Exchange Program** encouraged inhabitants to improve sanitation and public health, by cleaning up their neighborhood in exchange of fresh fruits, vegetables and public transportation tickets for garbage and waste removal from surrounding streets.
 - ▶ Moreover, the local markets and shops accepted public transportation (buses) tickets in exchange of food; and since 1991 the poorest area exchanged around 11,000 tons of garbage for almost 1 million ticket of public bus, and 1,200 tons of food, and more than 70% of inhabitants have participated in the exchange program.
 - ▶ Also, the program allowed school children to exchange recyclables for school supplies; and in a 3 year period, more than 100 schools traded around 200 tons of waste and garbage for 2 million notebooks.
 - ▶ Furthermore, to conserve the local and green vegetation in the city, the local authority department of Environment produced 150,000 endemic cuttings, 16,000 fruit trees and 260,000 flower seeds, during the time where 350,000 seedlings were nursed in a botanical garden and in 3 greenhouses.
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Curitiba: The Green Capital – Brazil

- ▶ The entire natural parks in the city are surrounded with water forming wetlands and beautiful ecosystem and landscape,
- ▶ They function as a flooding basin reducing flooding area and regulating large precipitation and water quantity.
- ▶ The wetlands and green areas in the city have several purposes, and not just leisure ones.
- ▶ The local government policies in protecting and conserving the lake and river banks by preventing unauthorised housing and improving the green landscape and wetlands values for the inhabitants.



Recommendations

- ▶ Method and process to give and transfer “Authority” to local governments (Cities, Municipalities...etc.) mainly in natural resources management (Decentralization)
- ▶ These case studies should help in promoting networking as an important tool to strengthen the policies/strategies of these networks such as MediverCities Network.
- ▶ National governments should offer good sustainable incentives/benefits at local level
- ▶ ESCWA member countries (national governments) should start supporting local authorities and “promote” them as being the only sustainable managers of water resources/natural resources...



Recommendations

- ▶ Integration of wetlands as a natural capital and infrastructure solution for water security in water management plans and acts at the national level, and in water policy tools such as IWRM – with full integration of local governments in decision- and policy making process
- ▶ Workshops could be organized to enhance capacity building for Parties to implement the tools and policies.

