



Hutovo Blato wetland (Bosnia-Herzegovina) (Courtesy of Z. Mateljak)

Management and protection of Mediterranean groundwater-related coastal wetlands and their services

AT A GLANCE

The Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem (MedPartnership) is a collective effort of leading environmental institutions and organizations together with countries sharing the Mediterranean Sea to address environmental challenges that Mediterranean marine and coastal ecosystems face. The project's 78 demonstration and the promotion and replication of good practices will maximize impact and ensure the sustainability of the project beyond its lifespan.

Total budget: 48 millions USD.
13 million USD: Global Environment Facility
35 million USD: Participating countries, executing agencies, and donors.

ABSTRACT

Coastal wetlands display a wide range of natural typologies such as springs, seepage areas, dune slacks, coastal lagoons, marshlands, abandoned stream courses, deltaic lagoons and ponds, etc., which are mostly the result of the geological processes originating the wetland. They are one of the most productive worldwide ecosystems and provide to humans a wide range of services. Besides, groundwater related coastal wetlands in arid and semiarid areas such as the Mediterranean produce and provide especially valuable services to the humans in the surroundings, as often they are the main or the only water source for all uses, from drinking to economic uses. Coastal wetlands in general, and those in the Mediterranean coastal areas in particular, are subject to many pressures. The preservation of these groundwater related wetlands depends largely on land and water management, not only in the coastal area but in the whole basin contributing water to the wetland, which is often much larger than the wetland area itself, and this often ignored.

ACTIVITY DESCRIPTION

Three chart forms were designed and distributed to the national experts to compile the necessary data related to particular coastal wetlands in their countries. Based on these results two reports were prepared: a regional report including Guidelines and recommendations for the evaluation and integrated management of groundwater related coastal wetlands, and a technical report on the Main hydrogeological characteristics, ecosystem services, and drivers of change of 26 representative Mediterranean groundwater-related coastal wetlands. The wetlands are also represented on a map.

THE EXPERIENCE

Wetlands deliver a wide range of ecosystem services such as food and water, regulation of floods and droughts or cultural. In groundwater related coastal wetlands many ecosystem services are supported by the presence of groundwater inflow. The capacity of many wetlands around the world of offering ecosystem services has been diminished due to anthropogenic and natural causes.



Korba/Cap Bon wetland (Tunisia) (Courtesy of N. Gaaloul)



Wadi Gaza wetland (Palestine) (Courtesy of K. Qahman)

Methodology

To develop the activity related to coastal wetlands, UNESCO-IHP has relied on the expertise of the university researchers and professors given their experience on groundwater and groundwater-surface water relationships with emphasis in wetlands, in coastal areas, and in wetland classification. The team in charge thought that, further to the due emphasis in coastal wetlands- groundwater dependence and relations, the incorporation of the ecosystem services point of view was necessary. This ecosystem approach (EA) is a highly valuable framework to analyze the relationships between humans and the environment, as well as the related action.

The EA is based on the application of scientific methods to characterize and evaluate i) which services a given ecosystem provides to human wellbeing, ii) which is the state of functioning of those services when the evaluation is performed, iii) which are the factors that produce changes in these ecosystems functioning and their services, iv) how these changes will affect human wellbeing in the coming decades, and v) which actions can be adopted at local, regional, national and global scale to improve ecosystem management and consequently contribute to human wellbeing and poverty reduction.

The sample of wetlands evaluated in the frame of the activity covers a wide area but is short for significant quantitative statistical treatment and thus qualitative treatment is used. However, they are fully representative of the most common types of groundwater-related wetlands existing along the Mediterranean coast.

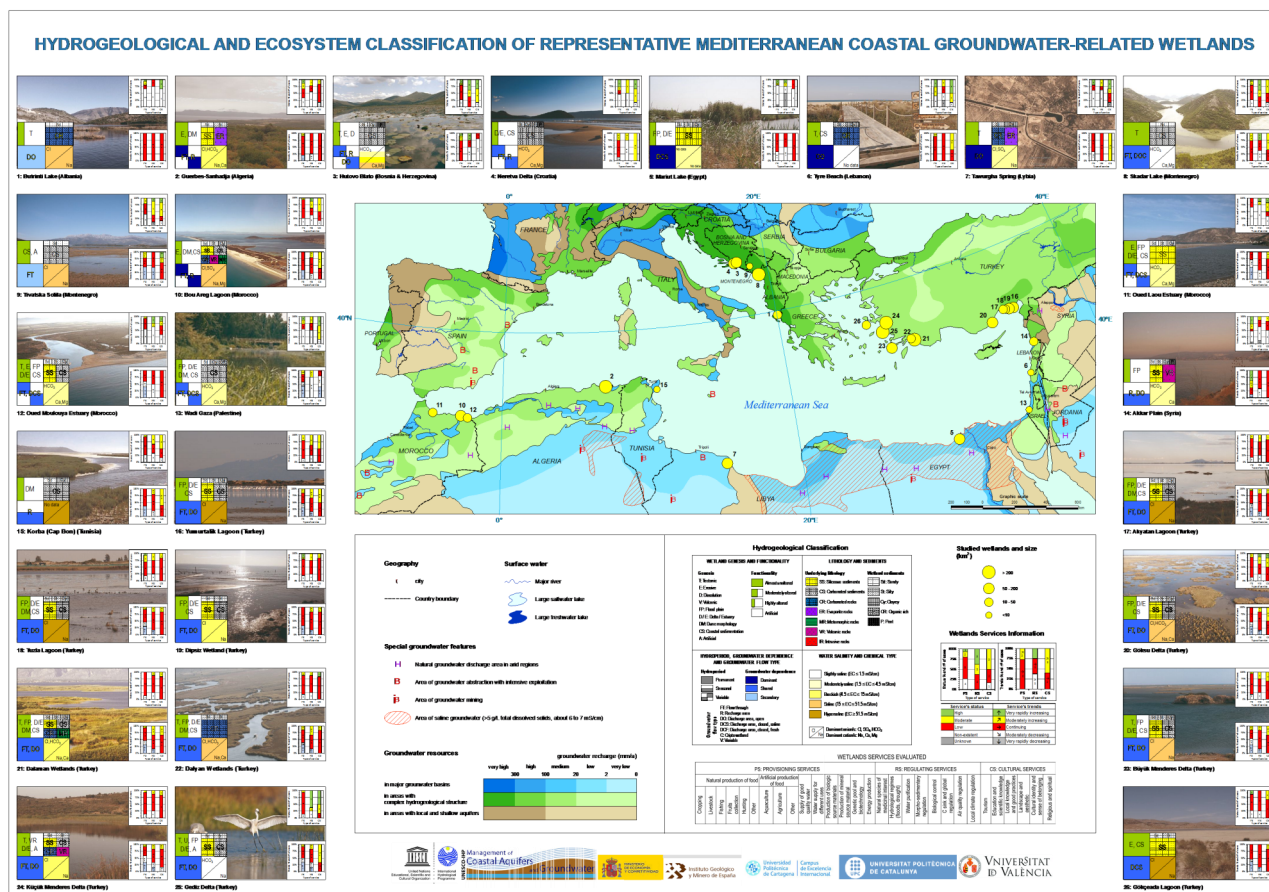
RESULTS

The activity resulted with three products:

1. Regional report on the Management and protection of Mediterranean groundwater-related coastal wetlands and their services: it includes a compilation of the existing knowledge about groundwater related wetlands in the Mediterranean coast provided by the national experts. Its goal is to try to introduce the relevance and potential usefulness of the EA for the preservation, fostering and restoration of Mediterranean groundwater-related coastal wetlands services offered, or that were offered in past times, to the wellbeing of the human societies living around and near them.

2. Technical Report on the Main hydro(geo)logical characteristics, ecosystem services, and drivers of change of 26 representative Mediterranean groundwater-related coastal wetlands: The aim of this report is to perform a preliminary assessment in the 26 Mediterranean groundwater-related coastal wetlands reported by the National Experts from the participating countries: i) the general geological and hydrogeological characteristics, ii) the status and evolution trends of the ecosystem services, and iii) the drivers that induce changes in wetlands functioning.

3. A map with the assessed coastal wetlands and providing a classification system and representation of the ecosystem services provided by coastal groundwater related wetlands as an appropriate tool to strengthen the capacity of water management institutions in the Mediterranean region as a step to implement sustainable management and protection of groundwater resources.



Draft map of selected wetlands in the Mediterranean area

LESSONS LEARNED

A main lesson learned from the work carried out is that even though nowadays there is abundant and good quality technical and scientific information easily available, it is necessary that the persons in charge of performing evaluations have a sound training about the background aspects related to ecosystem services, driver of changes to ecosystems, and their respective assessment.

Taking into consideration that groundwater is one of the water sources feeding most of the coastal wetlands reported within this project, and knowing the relevant role that groundwater plays in supporting wetland habitats and vegetation in times of low rainfall or permanently, as well as human needs of food, energy, building materials, etc., it seems clear that Earth scientists and technicians involved in works devoted to characterize coastal wetlands functioning and/or to design wetlands management plans should have an adequate understanding and knowledge on what refers to ecosystem services, as well as on the strong relationships existing between groundwater flows, wetlands services, and human wellbeing.

This points to the necessity of elaborating and using methodological guides, as well as to teach dedicated courses on ecosystem services and the methodologies to assess them, in order to build capacity in the professionals that would involucrate in the mentioned projects and tasks. Those capacity-building activities should develop both at the national level and at the international one.

IMPACTS

The activity resulted with useful tools for a proper management of coastal wetlands at the intention of decision makers: a visual tool : the wetlands map, showing a relevant but also simple classification of the coastal wetlands dependent on groundwater according to the hydrogeology but also to the services provided and their trends.

Guidelines and recommendations for the evaluation and integrated management of groundwater related coastal wetlands

A web-based geo-referenced information system integrating all wetlands data

These tools as well as all the activity products will be disseminated at the regional and national level.



2nd meeting on the management and protection of groundwater related coastal wetlands, June 2014, UNESCO HQ, Paris.

(Courtesy of Jose Gaona)

REFERENCES

Report, Management and protection of Mediterranean groundwater-related coastal wetlands and their services, 2015

Technical Report, Main hydro(geo)logical characteristics, ecosystem services, and drivers of change of 26 representative Mediterranean groundwater-related coastal wetlands, 201

Map of selected wetlands in the Mediterranean area; Hydrogeological and ecosystem classification, 2015

KEYWORDS

Mediterranean, Wetlands

EXECUTING PARTNER

UNESCO-IHP, the International Hydrological Programme (IHP) is the only intergovernmental programme of the UN system devoted to water research, water resources management, and education and capacity building. Since its inception in 1975, IHP has evolved from an internationally coordinated hydrological research programme into an encompassing, holistic programme to facilitate education and capacity building, and enhance water resources management and governance.

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Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem

Together for the Mediterranean Sea

MedPartnership



Executing partners: FAO, UNESCO/IHP, UNIDO, GWP-Med, MIO-ECSDE, WWF MedPO, UNEP/MAP's MEDPOL programme and regional activity centres (SCP/RAC, SPA/RAC and PAP/RAC).

Participating countries: Albania, Algeria, Bosnia and Herzegovina, Croatia, Egypt, Lebanon, Libya, Morocco, Montenegro, Palestine, Syria, Tunisia and Turkey.