

5+5 Water Strategy in the Western Mediterranean - Implementation of the Action Plan Capacity building - Training Programme

Draft Proposal

This draft proposal intends to serve as a **preliminary discussion document** to help draw up a **Training Program for capacity building** for the Mediterranean Region. It includes a list of proposed courses, prepared by the Secretariat (MENBO), account taken of the most pressing water challenges in the Mediterranean and as a means of progressing in the implementation of the Action Plan of the WSWM.

The promotion of capacity development and exchange of experiences is one of the cornerstones of progress in the Mediterranean Region. Indeed, the Water Strategy 5+5 clearly recognises its relevance enshrined, mainly, in its Priority number 4 – Capacity Building – representing also one of the main pillars of the Strategy and a cross-cutting priority, ancillary to all the others.

The Strategy rightly underlines that it is necessary to disseminate and promote the application of knowledge, tools and methodologies to improve water resources management and water related services by documenting and distributing good practices. It is also necessary to provide tailored capacity building programmes and build knowledge platforms for actors to share experiences, insights and perspectives on water management.

Therefore, we set out below a preliminary list of proposals and considerations to be discussed at the following Working Group of 10th March, foreseen to take place subsequent to the 5+5 Ministerial Meeting.

1. Format of the Programme: in order to follow a harmonised approach, it is suggested to define a **standard format** for each course, including the following proposals:

- Provide a **sample agenda** of the courses, which would be complemented with the specific description of each course.
- The courses would need to remain **standard and regular** (i.e. biannual, a 3-day duration of lectures and 1 day of technical side visits)

2. Organisational aspects: the following could be implemented:

- Set out of a **“Board of organisers”** composed of two or three countries tasked with the organisation of the course, which would attract course lecturers from different countries.
- Establishment of a **“Board of studies”** composed of representatives of **academic institutions** from the region, and tasked with ensuring the **quality** of the initiative. It would approve the course format and, where necessary, support countries in developing and delivering the course requirements.
- Involvement of an **academic institution**: this possibility would allow, inter alia, to implement the following quality aspects:
 - Issuance of a **certificate** and/or **diploma** for participants,
 - Participants should be able to quote these courses in their CVs for career progression, which would help creating a demand for the courses.

3. Financing of the Programme: the following considerations are put forward for discussion:

- The organisation of the course on site should be at the expenses of the host country, as a contribution to the 5+5 process;
- Travelling, grants and accommodation could be supported by donors;
- The management of finances could be taken up by MENBO

Moreover, the development of this Training Program could also represent an opportunity to turn it into a **Western Mediterranean Water Academy**, with a clear intention to develop a long-term project.



4. LIST OF PROPOSED COURSES

Note: the following classification corresponds to some of the main priority areas of the 5+5 Water Strategy in the Western Mediterranean.

WATER GOVERNANCE

Country/ Organisation	N°	Name	Location	Date/Duration	Financing institution	Comments
	1	Governance Frameworks for regulating the allocation of Water Resources				
	2	Cross-border management of water resources				

NON-CONVENTIONAL WATER RESOURCES

Country/ Organisation	N°	Name	Location	Date/Duration	Financing institution	Comments
	3	Wastewater reuse (agriculture, urban, stakeholders' concerns)				
	4	Desalination of seawater and brackish water: legal, technical and institutional aspects.				

INFORMATION SYSTEMS

Country/ Organisation	N°	Name	Location	Date/Duration	Financing institution	Comments
	5	Water management and use: Mediterranean Water				



INFORMATION SYSTEMS

Country/ Organisation	N°	Name	Location	Date/Duration	Financing institution	Comments
		Knowledge Platform				
	6	Monitoring networks and sampling techniques for water quality and quantity: surface and groundwater				

ENVIRONMENTAL ISSUES

Country/ Organisation	N°	Name	Location	Date/Duration	Financing institution	Comments
	7	Wetland Restoration				
	8	Nature-based solutions and eco-hydrology: flood mitigation and urban regeneration				
	9	Erosion and river sediment transport, social and environmental implications				
	10	Wastewater treatment technologies and discharge regulations: circular treatments				



CLIMATE CHANGE

Country/ Organisation	N°	Name	Location	Date/Duration	Financing institution	Comments
	11	Adaptation strategies in the face of climate change and extreme weather events				
	12	Scenario modelling for surface and groundwater on the impacts of climate change				

WATER-ENERGY-FOOD-ECOSYSTEMS Nexus - IWRM

Country/ Organisation	N°	Name	Location	Date/Duration	Financing institution	Comments
	13	IWRM and water planning				

ANNEX – Description of the courses

▪ WATER GOVERNANCE

1. “Governance Frameworks for regulating the allocation of Water Resources”:

This course addresses priority 1 of the WSWM, Developing and starting up clearly defined legal frameworks.

Water allocation is the process of distributing water supplies to meet the various requirements

of a community achieving a good balance between supply and demand. An appropriate Governance Framework for regulating the allocation of water resources, including legislative and administrative tools, is crucial for efficient resource management.

Steady progress on design and implementation of water governance reforms can be perceived in most of the Western Mediterranean countries. However, a more sustainable progress of governance approaches needs to be established at local, national and transboundary levels, inspired by appropriate and internationally accepted IWRM principles and practices, including management at the appropriate local (catchment, basin, sub-basin) level. In this respect, many Mediterranean countries still suffer from lack of planning capabilities, effective operational strategies, fragmentation of responsibilities between authorities including decentralisation concerns, weak policy implementation and law enforcement.

This course aims to strengthen the capacities of professionals in the governance and distribution of water resources and promote the exchange of experiences between the countries of the region.

2. “Cross-border management of water resources”:

This course addresses Priority 2 of the WSWM, Establishing governance adapted to Integrated Water Management.

In the Western Mediterranean countries, many water resources are shared between several countries. Therefore, it is necessary to promote equitable and cooperative development in transboundary water management, both in individual basins and globally. The management of transboundary basins requires the formalization of operational arrangements between the countries that share the resource and the articulation of organizations that manage it properly.

In this context, it is essential to put in place arrangements that allow the sharing of experiences, knowledge, perspectives and tools, to better equip managers and institutions of transboundary waters to collaborate effectively.

This course will train professionals on the main agreements and tools for the management of transboundary basins to facilitate the exchange of experiences in the Region.

▪ NON-CONVENTIONAL WATER RESOURCES

3. “Wastewater reuse (agriculture, urban, stakeholders’ concerns)”:

This course addresses Priorities 9 and 10 of the Strategy, Climate Change Adaptation and Increasing and mobilising the available resources.

Due to its strong sun exposure, in the Mediterranean there is a high demand of water for agriculture, as well as large population densities along the coast, extreme tourism-related pressures and elevated evapotranspiration. Moreover, the scarce precipitation is unevenly distributed in time and occurs with a high inter- and intra- annual variability. All these factors result in a water deficit in the Mediterranean region that cannot always be solved by an appropriate demand management.

In this context, non-conventional resources (NCWR) are an additional component of water plans, especially in semi-arid areas, and represent an important part of the inflows, as often without these resources it would not be possible to meet today's growing demands.

In particular, treatment and reuse of wastewater, be it for agriculture or urban purposes, stands as an essential opportunity to be fully seized in order to compensate for the lack of conventional resources in the Mediterranean when there are shortages to meet the demands. However, an uncontrolled use of insufficiently treated water may cause risks to users and the environment.

It is necessary to assess the possibilities and the risks of treating and using wastewater and mobilise the use of low-cost and low-maintenance wastewater treatment techniques so that they can be implemented in rural and peri-urban areas. In any case, they must meet the established quality standards and existing regulations on public health in regards to the use of non-conventional resources.

This course will address the key aspects of wastewater reuse, analysing the current legal framework and the standards developed at European and international level, presenting the advances in research and the best available technologies.

4. “Desalination of seawater and brackish water: legal, technical and institutional aspects”

This course also addresses Priorities 9 and 10 of the Strategy, Climate Change Adaptation and Increasing and mobilising the available resources.

The production of desalinated water represents a huge opportunity to mobilise resources in countries where chronic water scarcity strongly limits the availability of conventional resources. The most prevalent use is to produce potable water from saline water for domestic or municipal purposes, but use of desalination and desalination technologies for industrial applications is growing and the desalination of underground water is an opportunity that can help diversify

supplies.

The greatest concern regarding desalination is the need to ever reduce energy consumption in the plants, so that to address sustainability concerns. Moreover, technologies to deal with the rejection of brine are equally key in this regard.

Thus, in order to achieve a sustainable production of desalinated water, it is necessary to promote the use of more efficient technologies that also minimise environmental impacts as well as the utilisation of renewable energies in the desalination plants. This necessitates the development of desalination programs from a legal and political scope, allowing for private sector investments to adapt to the rapidly increasing demand.

This course will address the key aspects of seawater desalination, analysing the current legal frameworks and the standards developed at European and international level. Advances in research and the best available technologies, will also be presented.

▪ INFORMATION SYSTEMS

5. “Water management and use, Mediterranean Water Knowledge Platform”

Organising the access to the necessary data and information for water management is often challenging for many reasons. Often, the capital of data that already exists and produced at a high cost, is underexploited and the capacities for producing information necessary to an efficient water policy implementation, are limited. In many cases, this situation generates a negative economic impact mainly due to the lack of access to data and duplication of works, but it can be even more negative in case of wrong decisions taken due to lack of key information.

The efforts aimed to improve the knowledge on water management should be directed at:

- Ensuring the capacity building of water management and environmental protection administrations, technicians, users and all competent stakeholders in order to empower them to better fulfil their roles;
- Education and training on data production and exchange;
- Fostering water information systems and platforms on water that can provide a water status diagnose on the Mediterranean Region.

Accordingly, this course will provide the essential tools to help develop sound and robust information systems as well as strengthen existing ones. In this context, the Project on the “Mediterranean Water Knowledge Platform”, further aiming at the elaboration of a White Book on Water in the Mediterranean, will also be presented in this course.

6. “Monitoring networks and sampling techniques for water quality and quantity: surface and groundwater”

One of the basic premises to achieve an adequate management of water is the knowledge of data (we cannot assess what we do not know), their analysis and updating, as well as their accessibility. This requires the existence of measurement networks to monitor and supply the necessary data. On the one hand, the existing resources must be known and assessed, both in quantitative and qualitative terms. On the other hand, water uses must also be measured, i.e. consumption made by water users (agriculture, industry, urban...)

Implementing effective monitoring systems that provide essential qualitative and quantitative information, is one of the main levers of a sound and robust water management, as it contributes to offer a statistically sound and comprehensive picture of the status of the aquatic environment, as well as to identify and respond to law infringements on water use. Moreover, such monitoring systems are crucial in the run to achieve the ultimate objective of guaranteeing the good ecological status of water bodies required by the Water Framework Directive.

▪ ENVIRONMENTAL ISSUES

7. “Wetlands restoration”

This course addresses Priority 13 of the 5+5 Strategy, Protection of Water quality and biodiversity.

Wetlands play an important role in different parts of the river basin, influencing the status of the adjacent water body. They are one of the most productive ecosystems on Earth, the heart of food webs and of the rich biodiversity associated with them.

This course will go through the different techniques used for wetland restoration and those tested through different projects carried out in the Mediterranean and beyond. Its organisation will count, in particular, with the involvement of MedWet, the Mediterranean wetlands Initiative established in 1991.

8. “Nature-based solutions and eco-hydrology: flood mitigation and urban regeneration”

This course addresses Priority 13 of the 5+5 Strategy, Protection of Water quality and biodiversity.

Nature-based Solutions are defined as actions to protect, sustainably manage, and restore natural or modified ecosystems, addressing societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.

In general, Nature-based Solutions comprise 3 types of actions, that can be combined: 1. Preservation of functional ecosystems in a good ecological status 2. Improvement of ecosystems sustainable management 3. Ecosystem restoration.

The course will showcase existing NbS initiatives, addressing in particular flood mitigation and urban regeneration.

9. “Erosion and river sediment transport, social and environmental implications”

According to the Report on the State of the World's Soil Resources (FAO. 2015)¹, erosive processes constitute one of the ten main threats to soil. This phenomenon is due to a multitude of processes of different characterization that give rise to soil lamination and generation of fluvial sediments, altering the channels and increasing risks such as landslides and floods. According to the FAO², soil erosion decreases agricultural productivity, degrades ecosystems, amplifies hydrogeological risk, causes significant biodiversity losses, damages urban infrastructure and, in severe cases, leads to the displacement of human populations.

10. “Wastewater treatment technologies and discharge regulations: circular treatments”

Water treatment and reuse can provide solutions when there are problems to meet the demands. However, the use of insufficiently treated water may cause risks to users and the environment. Thus, it is necessary to assess the risks of wastewater treatments while also mobilizing the use of low-cost and low-maintenance wastewater treatment techniques. In addition, water treatment techniques must meet the established quality standards and the existing regulations on public health on the use of non-conventional resources.

Accordingly, the way forward as regards wastewater treatment includes the following

¹ <https://www.fao.org/3/i5126s/i5126s.pdf>

² <https://www.fao.org/about/meetings/soil-erosion-symposium/key-messages/es/>

requirements:

- Set up legal and national political frameworks,
- Establish quality standards and use-guidelines to protect public health and the environment, taking into account national policies.
- Consider grey water recycling systems as a potential and easier option to implement on a low-cost small-scale basis.
- Establish upstream discharge controls to reduce the pollutant loading in the sewer systems in order to reduce the level of treatment needed to ensure the quality of supply required for re-use. This will ensure that treated water is produced at the lowest possible cost.
- Promote upstream technologies for industrial wastewater treatment through a water reuse system, to obtain regenerated water with health guarantees..
- Set up an action plan for mud management with and sludge processing, to develop treatments for the recovery of sludge.

This course will go through the state-of-the-art technologies of wastewater treatment.

▪ CLIMATE CHANGE

11. “Adaptation strategies in the face of climate change and extreme weather events”

Climate change adaptation constitutes Priority 9 of the Water Strategy in the Western Mediterranean (WSWM, march 2015), which highlights the serious impact of climate change on the Mediterranean Region and the necessity to strengthen institutional and technical instruments to improve the adaptation strategies. This requires the development of methods, data sets and prediction models in order to acquire early-warning tools and vulnerability indicators, and the improvement of capacities of professionals in the different fields.

12. “Scenario modelling for surface and groundwater on the impacts of climate change”

As recalled in Priority 9 of the WSWM Strategy, the Mediterranean region faces aggravating climate-related impacts on water resources, including in both, surface and groundwater. Thus, it is urgent to develop and improve technical tools to enhance the knowledge of climate change effects and build accurate prediction models in order to facilitate decision-making and prevent extreme effects of climate change.

This course aims to train professionals in scenario modelling for surface and groundwater on the

impacts of climate change, providing theoretical and practical training in the discipline and promoting the exchange of experiences among the attendees.

- **WATER-ENERGY-FOOD-ECOSYSTEMS Nexus – IWRM**

13. “IWRM and Water Planning”

This course addresses priority 2 of the 5+5 Strategy. Moreover, SDG 6.5 of the Agenda 2030 of the United Nations, calls for the implementation of integrated water resources management (IWRM) at all levels, including through transboundary cooperation, as appropriate

Sectorial approaches have been dominant in the past in regards to water resources management. Yet, such approaches result in a fragmented and uncoordinated development and management of the resource. The lack of inter-sectoral relations leads to conflicts, waste and unsustainable systems. On the contrary, IWRM allows for the coordination and collaboration amongst individual sectors and promotes stakeholder participation, transparency and a profitable local management.

Conversely, Integrated Water Resources Management is the practice of making decisions and taking actions bearing in mind multiple points of view on how to manage water in order to harmonise demand satisfaction and the definition and achievement of environmental objectives for water bodies.

This course will focus on the necessary regulatory frameworks, planning and management tools used to ensure that water resources are governed in a sustainable, equitable, effective and efficient manner, promoting effective coordination between the management of water and other natural resources to maximise economic and social progress in a fair and environmentally sound way.

An effective implementation of IWRM systems will contribute to the achievement of SDG 6 in an equitable and sustainable manner, helping to strike a balance between meeting the water demands needed to promote growth and economic progress, but also to preserve ecosystems and protect the environment, two cross-cutting goals of the 2030 Agenda for Sustainable Development.