



Sustainable Water Integrated Management (SWIM) - Support Mechanism

Project funded by the European Union

ANNEX 2

CONCEPT NOTES ON THE FOUR THEMATIC PILLARS



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1. Introduction

During the inception phase, which is still in progress, the SWIM-SM team of experts has been undertaking fact finding missions in order to inform the Partners Countries (PC) about the objectives and the context of the SWIM-SM Project, while at the same time seek their support and collaboration in implementing the project. All the countries visited thus far, have shown interest and expressed their commitment in participating actively in the project. Moreover, the stakeholders met, recognized that the project's orientation and five work packages provide a useful and appropriate framework that can assist them with the implementation of an integrated water resource management (IWRM) approach for the sustainable use of their country's water resources.

The five work packages proposed in the SWIM-SM scope of work – namely, improved water governance and mainstreaming of water considerations into non-water sector policies; institutional empowerment; application of water management plans; identification and dissemination of good practices; and communication and awareness raising - were not designed to be implemented in isolation, nor as discrete “horizontal” activities. Rather, and in order to strengthen the momentum of policy and institutional reforms as called for by the IWRM framework, there is a need “to cut across” these work packages and **develop outcome-oriented pillars of priority, under the PCs’ guidance, for the better use and management of their water resources.**

After consultations with the countries visited so far, the expressed needs and priorities and a review of the regional water programmes in the Mediterranean, the SWIM-SM team of experts has identified four key thematic pillars around which to centre the project's activities. These pillars may extend or shrink in scope and number, pending on the outcome of the inception missions to the remaining PCs; nonetheless they solidly seem to constitute themes of common interest requiring urgent action for the whole Mediterranean region. The pillars identified so far include:

- A. Non Conventional Water Resources
- B. Economic Evaluation of Water Pollution Abatement Interventions
- C. No Regret Actions for the Adaptation of the Water Sector to Climate Change
- D. Water Governance at the Local Level: Sharing Experiences from Water Users' Associations

Each and all these four pillars were selected because:

- a) They reflect the baseline for the technical proposal and the spirit of the draft Strategy for Water in the Mediterranean as an instrument towards the implementation of the European Neighbourhood Policy (ENP) objectives.
- b) They address the fundamental IWRM issues confronted by the PCs, on policy and institutional weaknesses, inadequate water supply and demand management, potential risk to climate change vulnerability and lack of economic and environmental analysis of the externalities impacting on the water sector, and prepare the grounds for replication in the course of future involvement by donors.
- c) Whenever possible, they prepare convergence of water related legislation towards EU standards as requested by the ENP.
- d) They could contribute to the policy dialogue between the EC and the PCs on proposed reforms that may be studied and analysed under SWIM-SM, as well as on the development of regional and national programmes and projects that could be subsequently funded by the EC and/or by international financing organisations.
- e) They provide an added value and/or fill in gaps to existing regional and national activities in the water sector within the IWRM platform.
- f) They have not, to the best of our knowledge, been addressed in a comprehensive manner across the Southern Mediterranean Countries.



- g) Based on the elaboration of each of these pillars, they will assist the PCs in project (s) preparation that is financially, socially and environmentally sound and sustainable. To this end, the role of the private sector is expected to be enhanced in designing, financing and implementing priority projects.
- h) They provide flexibility to each PC a range of options to select the pillar (s) that is (are) consistent with their national water priorities and therefore attribute ownership towards the SWIM-SM objectives. As each pillar responds well to the elements of the five work packages, the PCs will contribute to the implementation of all SWIM-SM packages irrespective of the pillar (s) selected.

2. Proposed approach

In order to proceed with the design and implementation of the four pillars, and subject to the approval of the EC, the SWIM-SM team has prepared four comprehensive concept notes, which are presented in detail in the following sections. The exact and final context of these concept notes may change based on the input received from national and regional stakeholders. Nonetheless, the purpose of the concept notes is three-fold:

- (a) To describe conceptually the objectives, components/tasks and output of each pillar to the PCs;
- (b) To serve as background materials to be discussed with the PCs bilaterally or during sub regional/regional consultation workshops;
- (c) To enable the PCs to select which is (are) the pillar (s) that is (are) consistent with their priorities in the water sector so that the appropriate level of resources (human and financial) can be allocated by the SWIM-SM project, also based on their ability/intention to contribute;

It is anticipated that “no one size fits all” with regard to any of the four pillars. It is therefore expected that for each pillar, tasks will be either tailored to a particular country or group or countries and/ or be designed based on the specific needs and priorities of the PCs. Therefore each pillar includes a number of tasks, from which each PC would be expected to select in order to achieve the overall objective of the pillar.



A. The Non- Conventional Water Resources Initiative Concept Note

I. Introduction

Water scarcity in the Southern Mediterranean Region, comprising the SWIM Partner Countries¹ (PCs) Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, the occupied Palestinian territory, Syria and Tunisia, is among the highest in the world. At present, only Lebanon has renewable freshwater above the annual threshold of 1000 cubic metres per capita, which is considered the demarcation line for water scarcity. Water consumption in the PCs is expected to increase, while the water deficit is expected to rise. Waste water reuse is limited in many countries, and groundwater overuse is increasing.

The water deficit is also expected to increase over the next century due to effects of climate change. According to the International Panel for Climate Change (IPCC), rainfall will decrease by 10-25%, runoff will decline by 10-40 % and evaporation will increase by 5-20%². However, most of this impact is expected to be felt after 2025.

II. Supply side Approach to Integrated Water Resources Management in the SWIM PCs

All PCs are in principle committed to Integrated Water Resources Management (IWRM), and have taken measures towards both water supply and demand management though tangible results are missing in many cases. From the demand side, there are four major reforms that should be considered; namely water reallocation from agriculture and irrigation to municipal and industrial sectors, capping on the utilisation of conventional water resources, water pricing and water consciousness among the population. These reforms are slow in their implementation as they are largely influenced by the particularities of each socio-political economy.

From the supply side, two major measures are considered namely (a) leak and loss minimization through the rehabilitation of the water, waste water and irrigation networks, and (b) enhancing the use of non-conventional water resources, namely through recycling of agricultural runoff, treated waste water re-use and storage, and desalination using renewable energy. Other non-conventional water resources contemplated by SMCs include inter-basin transfer, rainwater harvesting, cloud seeding, grey-water reuse, etc.). Network rehabilitation in the PCs has been slow and ineffective because of past neglect in the networks' operation and maintenance and the rapid and unplanned urbanization and agricultural expansion. The potential of non-conventional water resources has not been fully explored by the PCs although it can assist with bridging the gap between supply and demand within an integrated water resources management framework. Within the supply side approach and after careful examination of the economical, social and environmental impacts, development of treated waste water for reuse including aquifer recharge and as a last resort desalination –with renewable energy and minimisation of the related environmental impacts - should be considered as a major instrument for increasing the supply of water resources in the PCs. It should be however noted that given the environmental and financial aspects of desalination, desalination would be considered as a last resort after exhausting all other means of water conservation, reuse, recycling, reallocation, etc.

The use of non-conventional water resources is not new in the PCs; Egypt, Syria, Israel, Jordan and Tunisia are among the twenty countries in the world with the largest volume of wastewater used for irrigation, treated and untreated as shown in Table 23:

¹ hereinafter abbreviated and being referred to as „PC“

² In *Water in the Arab World: Management Perspectives and Innovations*, ed. V.J. Jagannathan, A.S. Mohamed, and A. Kremer, 447-77. Washington, DC: Middle East and North Africa Region, World Bank.

³ Scheierling, SM, Bartone C, Mara D, and Dreschel P, "Improving Waste Water Use in Agriculture, an Emerging Priority, Policy Research Working Paper # 5412,, The World Bank, September 2010.,



Table 2: Waste water used for irrigation in PCs

Countries	Mm3/day	Approximate Irrigated Areas ⁴ with treated and untreated waste water in ha
Egypt	1.92	38,000-45,000
Syria	1.18	36,000-38,000
Israel	0.767	41,000
Jordan	0.225	9,000
Tunisia	0.118	5,000-7000

Aquifer recharge has major benefits such as little evaporation, and limited pollution contamination. It is less expensive than conventional water storage and could prevent seawater intrusion in coastal areas and thus the salinization of coastal aquifers. Tunisia, Algeria and Morocco are undertaking artificial recharge of the over exploited aquifers with surface and rain water and to a lesser extent with treated waste water.

In order to bridge the water deficit, especially in the urban and peri-urban areas, many PCs have also installed desalination plants for drinking water. Desalination is used in Algeria, Israel, Tunisia, Egypt, and Jordan, and Morocco is planning desalination plants in Tangier for domestic water and irrigation water. (At the current cost of production – average \$1.2/m³ and if we include environmental externalities and societal cost are included, desalination for agricultural purpose will be very expensive). All these plants are powered by fossil fuel and consume large amounts of energy. Fossil fuel is the primary sources of greenhouse gases, as well as SO₂ emissions in case high sulphur fossil fuel is used. Desalination has both positive and negative impacts. Desalinated water could contribute to surface water conservation, preserve the ecosystem and prevent groundwater depletion and saline intrusion. On the other hand, desalination is linked with CO₂ emissions, with thermal pollution, brine discharge and chemicals for pre-treatment purposes, alteration of nearby marine ecosystems, noise and visual pollution. Among others, feasibility studies on the techno-economical potential for desalination with Concentrating Solar Power (CSP) are underway in Morocco, Egypt and the Palestinian National Authority under the MED-CSD5 project funded by the European Commission – DG Research under the 7th Framework Programme (FP7). The results of this project can be incorporated into the proposed SWIM Initiative as described below.

III. Constraints to Non- Conventional Water Resources

SWIM PCs face the following constraints for the use of non- conventional water resources:

- a) Policy constraints: Non- conventional water resources are usually not part of national water policies for addressing water scarcity in the PCs. Instead, waste water reuse is associated primarily with waste water treatment and desalination with potable water supply. There are no clear national strategies and action plans to consider the non- conventional water resources as part of the national water allocations. A policy decision framework needs to be developed that will act as the clearing house for the supply and demand alternatives in order to optimize water balance decisions.
- b) Institutional constraints: There is a multiplicity of ministries and agencies (irrigation and agriculture, energy, environment, interior and municipal affairs, health) involved in treated wastewater use, re-use

⁴ Estimation from the following sources: Scott *et al.*, 2010; Jiménez and Asano, 2008; Xianjun *et al.*, 2003; Xie *et al.*, 2009.

⁵ Combined Solar Power and Desalination plants (MED-CSD Project Grant Agreement 213824)



including its reuse in artificial recharge, desalination, sometimes with conflicting objectives and overlapping responsibilities. Stakeholder involvement, particularly of farmers on waste water re-uses including reuse in artificial recharge is largely absent. Furthermore, no agency or ministry has the capacity to carry out cost/benefit and opportunity cost analyses for all water uses (domestic, industrial, energy, agriculture in conjunction with climate change and ecologic systems) to derive the alternative interventions that will bring the highest return on investment in both the demand and supply sides of water resources development options and therefore help prioritize and sequence interventions over the next 20 years.

c) Legal constraints: There is lack of an appropriate legal framework to institutionalize the use of non-conventional water resources in a comprehensive manner. Some PCs have a regulatory framework and guidelines for waste water reuse such as in Tunisia, however there is a need to develop guidelines for artificial recharge, for mitigation of the negative impacts of desalination, and for strengthening the enforcement capacity for controlling the misuse and the pollution due to the mismanagement of treated waste water and the sludge and potential pollution of the aquifers. Furthermore the legal framework can be enhanced and improved by efforts towards alignment/adaptation of several EU directives such as the Water Framework Directive (WFD) (2000/60/EC - WFD) , the Groundwater Directive; 2006/118/EC , Sewage Sludge Directive; 86/278/EEC , Drinking Water Directive 80/778/EC revised with 98/83/EC, Nitrates directive (91/676/EEC) and the Urban Waste Water Treatment Directive (UWWTD) in order to fill the regulatory gaps in the national legislation. This will require examination of the relevant EU Directives' elements to ensure their adaptability to the PCs, a careful assessment of national legislation and substantial training in the application of the different EC directives.

d) Technical Constraints: The technical functions related to programming, planning, financing, implementation and operation of non-conventional water resources projects; particularly for waste water reuse and desalination, need strengthening. Management of Aquifer recharge is poorly understood. New technologies related to waste water re-use (30 technologies)⁶ and desalination using renewable energy⁷ have been introduced in the market, and need to be technically and economically assessed by trained staff from ministries and universities. Guidelines should be designed to support the involved ministries and local governments in carrying out technology assessments for desalination in rural communities, and selecting the most appropriate technologies in terms of adaptation to local conditions, sustainability and affordability. The MAP guideline of Sea Water Desalination in the Mediterranean of 2003 will be updated taking into consideration the UNEP/WHO resources and guidelines manual for environment impact assessment, the results of the SWIM technological assessment of Best Available Technology (BAT) for desalination to be undertaken as well as the upgrading of production capacities and the legal aspects of the brine discharge.

e) Social Constraints: The social dimension for acceptability by users has been neglected. Too often, decisions on investments in wastewater reuse including its use in recharge of groundwater are taken by the central government and water sector institutions without a social assessment and appropriate consultation with the farmers and water users. Furthermore, weak communication with the users on the socially acceptable and sanitary practices, particularly for treated waste water reuse has fuelled lack of trust, social tension and non- acceptance. There is an urgent need to carry out a social survey and social assessment taking into consideration religious beliefs, and to involve the community of users from the conception to the implementation stages of any investment related to the use of non-

⁶ Holt,P, and James, E Wastewater reuse in the Urban Environment: Selection of technologies, Ecological Engineering, February 2006

⁷ <http://www.dlr.de/tt/aqua-csp>



conventional water resources. Currently, farmers in Egypt, Lebanon, Syria, are using untreated wastewater for irrigating their crops including vegetables.

f) Environmental Constraints: The environmental and health impacts and associated risks have not been carefully studied and mitigated in many of the PCs. Sector guidelines and standards, terms of references for the environmental impact assessment and health risk assessments of waste water reuse, recharge of aquifers and desalination have not been prepared. The revised WHO guidelines on the Safe Use of Wastewater and Excreta in Agriculture and Aquaculture in 2006 consider wastewater use as one component of an integrated risk management strategy⁸. The 2006 Guidelines now require health-based targets expressed in Disability-Adjusted Life Years (DALYs)⁹ for measuring the 'tolerable' burden of disease that would result from agricultural wastewater use and the capacity to carry out a DALY analysis is practically non-existent. Monitoring and enforcement of environmental and health regulations are weak because of limited financial and human resources. In addition, there are no guidelines on how to monitor and ensure compliance with these regulations.

g) Economic Constraints: Water pricing in the PCs does not reflect true economical values and opportunity costs. Waste water treatment and reuse are subsidized and in countries like Lebanon, there is no cost recovery yet. Furthermore, there are no economic or financial incentives in place to encourage waste water reuse including the reuse in aquifer recharge. Financing models based on a combination of users' fees and government subsidies have not been considered and cost of environmental and health mitigation, as well as sludge treatment (for waste water) or brine disposal (for desalination), have not been included in the financial and economic analysis of investment projects.

IV. A New Paradigm: A Regional Non- Conventional Water Resources Initiative for the SWIM Partners Countries

Given the scarcity of water resources, a new paradigm is required that will consider non-conventional water resources as an asset to be managed as part of the country's integrated water resources management framework. This asset would not only increase the water availability for specific purposes that are hygienically safe, ecologically sustainable and beneficial for the society as a whole, but will also contribute to adaptation to climate change and mitigation of its impacts through the reduction in greenhouse gases.

A. Proposed Regional Technical Assistance Initiative with duration of 18 months in selected SWIM countries will focus on:

1. The development of the elements of national policies/strategies or actions plans for the planning, production, and monitoring of (the use non-conventional water resources within the IWRM framework.
2. Planning procedures and regulations, pricing structures, technology applications, and institutional capacity for promoting the use of non-conventional water resources;
3. Promoting stakeholders' awareness and social acceptance on the use of non- conventional water resources also by strengthening the creation of a related water culture

⁸ WHO, 2006, WHO Guidelines for the Safe Use of Wastewater, Excreta and Grey-water, Vol. I: Policy and Regulatory Aspects. Vol. II: Wastewater Use in Agriculture. Vol. III: Wastewater and Excreta Use in Aquaculture. Vol. IV: Excreta and Grey-water Use in Agriculture. Geneva: World Health Organisation

⁹ DALYs are a measure of the health of a population or burden of disease due to a specific disease or risk factor. DALYs attempt to measure the time lost because of disability or death from the disease compared with a long life free of disability in the absence of the disease,



4. Capacity building and dissemination of best practices

A. Objective of the Initiative:

The objective of this Initiative is to assist the SWIM Partners Countries in (a) enhancing the policy, institutional and legal framework for the management of non-conventional water resources, within the IWRM context, and (b) strengthening the institutional capacity and public participation for the planning and management of these resources.

B. Components of the Initiative

In order to achieve these objectives, the following five tasks can be undertaken. Selected countries will not be required to conduct all the tasks described below. They can choose any of the tasks that are necessary to complete the activities they already undertook as part of their national programmes

Task A: Strategy Formulation.

The purpose of this component is to assist selected SWIM PCs in developing the strategic elements and/or the action plan for the use of non-conventional resources as part of the water balance of the country. This task will include:

- a) Reviewing and summarizing the policies, strategies, and investment priorities in the irrigation and agricultural sectors from the demand management and water conservation perspectives.
- b) Conducting an assessment on the best available technologies, and the technical and economic potentials related to waste water reuse, its reuse in aquifer recharge, demineralisation of brackish water, and desalination using renewable energy at the rural and community levels, and minimising environmental impacts with focus on rural areas and recommend suitable technology options to the SWIM countries, based on proven international best practices for their cost effectiveness
- c) Developing a set of policy options for the use of non-conventional water resources and carrying out a cost /benefit or cost effectiveness analysis for each option in order to optimize water balance decisions.
- d) Based on the results obtained from (a) and (b) above, prioritizing and sequencing interventions to increase the efficiency, effectiveness and equity of water supply management and augmentation over the next 10 years taking into consideration climate change impacts.
- e) Formulating the elements of the strategy and/or action plans for integrating non-conventional water resources in the national water plans.
- f) Preparing comprehensive best-practices policy notes on planning, managing, tariff strategies for cost recovery and regulations for wastewater reuse and artificial recharge of aquifers.

Task B: Improving the legal framework.

The purpose of this component is to propose changes and modifications in the regulatory framework in order to anchor the use of non-conventional water resources in the national water and environmental laws and regulations. This task will include:

- a) An assessment of the legal and regulatory framework for the use of non-conventional resources of treated waste water including its reuse in aquifer recharge, presently in force, and of the regulatory and enforcement capabilities of the existing governmental institutions.
- b) The use of EC directives on water, groundwater and wastewater reuse as potential basis for developing/adapting the necessary legal elements to be included in national laws and regulations.



- c) The review and/or development of the necessary standards and guidelines for treated waste water reuse based on the WHO guidelines of 2006 and the EC directives
- d) The identification and development of monitoring and enforcement manuals and legal measures for their implementation to ensure adherence to public health regulations.

Task C: Developing the institutional framework for non-conventional water resources.

The purpose of this component is to develop an institutional mechanism for managing non-conventional water resources with stakeholders' participation. This task will include:

- a) An assessment of the organization and management of implementing agencies involved in waste water reuse including its re-use in artificial recharge and propose changes as necessary on the basis of the recommended modifications of the legal framework.
- b) Clarification of the roles and responsibilities at the national and local levels for the supply and management of treated waste water including its reuse in artificial recharge, and development of a procedural manual to this effect.
- c) The development of consultative mechanisms giving all interested parties an opportunity to participate in management of their water resources and define the roles/responsibilities of each party in such a consultative process
- d) The development of financing models for private sector participation or private-public partnerships in the financing and/or management of waste water treatment plants and water reuse. Financing models for desalination using renewable energy will also be considered.

Task D: Enhancing the environmental and social safeguards for the non-conventional water resources.

The purpose of this component is to develop the necessary tools and guidelines for mitigating the adverse environmental and social effects of non- conventional water resources. This task will include

- a) Preparation of sector guidelines and terms of reference for the environmental impact assessment of waste water and sludge reuse, artificial aquifer recharge with surface and treated waste water, and desalinated water. These guidelines are already developed and available and will be adapted to the SMCs.
- b) Preparation of guidelines for undertaking social analysis and social assessment of treated waste water reuse. Application of the methodology for the development of health based targets as required by the WHO guidelines of 2006 for the "Safe Use of Wastewater and Excreta in Agriculture and Aquaculture".
- c) Development of an environmental monitoring and enforcement manual on waste water reuse, sludge disposal, brackish water and brine disposal.
- d) Contributing to the review and adaptation of the MAP guideline of Sea Water Desalination in the Mediterranean of 2003 taking into consideration the UNEP/WHO resources and guidelines manual for environment impact assessment , the results of the SWIM technological assessment of Best Available Technology (BAT) for desalination to be undertaken as well as the upgrading of production capacities in SMCs and the legal aspects of the brine discharge

Task E: Capacity and Awareness Building.

The purpose of this component is to strengthen the capacity of the water, energy and environmental institutions and other stakeholders in the management of non -conventional water resources and increase the awareness of the stakeholders in order to promote social acceptance. This task includes:

- a) Training on technologies assessment of waste water reuse, including the reuse in recharging aquifers, and desalination as well as on cost/benefit analyses of all water uses (domestic, industrial, energy, agriculture in conjunction with climate change and ecologic systems)



- b) Training on environmental impact assessment, social assessment, and health risk assessment, as well on the WHO guidelines of 2006 for the safe use of wastewater, excreta and grey water.
- c) Undertaking field visits to selected agricultural areas irrigated with treated waste water to learn about the technologies, the advantage and disadvantages of the treated waste water in irrigation and encourage feedback.
- d) Conducting sub-regional workshops to present the results of the different tasks and facilitate the exchange of ideas and gather inputs and comments on the results and deliverables of the tasks.
- e) Organizing 1-2 public awareness and public outreach campaign in selected basins aimed at target groups such as farmers and consumers on health safety and practices to foster acceptance of treated wastewater use.
- f) Arranging and participating in a regional symposium in collaboration with other international financial institutions and the private sector on best international practices and applications of non-conventional water resources.

C. Initiative Outputs

The outputs will consist of a series of reports and documentations catered for SMCs which include:

- a) A technology assessment and techno-economic options for the use of non-conventional water resources.
- b) Best-practices policy note on developing strategies, tariff for cost recovery and regulations for wastewater reuse and artificial recharge of aquifers.
- c) Proposed modifications for incorporating the legal elements and regulations in water and environment-related laws on waste water reuse, including the reuse for artificial recharge
- d) A procedural manual on the role and responsibilities at the national and local levels for the supply and management of treated waste water and artificial recharge
- e) A report on the role of private sector participation or private-public partnership in the financing and/or management of waste water treatment plants and water reuse as well in desalination using renewable energy
- f) Terms of reference and sector guidelines for environment, social and health risk assessments
- g) Report/ Recommendations of the Regional Symposium.

D. Initiative Benefits

This is the first regional initiative to tackle holistically the non conventional water resources in the Southern Mediterranean Countries .This initiative will have several benefits:

- a) Providing the necessary strategic and technical tools for the decision makers to make informed decisions on the use of non-conventional water resources based on economic, environmental and social justification.
- b) Influencing policies in favour of reducing freshwater withdrawals based on regulated water allocations and demands
- c) Providing the necessary rules and regulations for the protection of both surface and groundwater resources and reduce health exposure and hazards
- d) Establishing institutional and consultation mechanisms for the management of these resources in a transparent, and accountable manner



- e) Presenting the appropriate financing and management models for private sector participation and public-private partnership within the non-conventional water resources framework.
- f) Sharpening the skills and expertise of water and environment related institutions on the technical and economics of the non-conventional water resources
- g) Providing state of the art knowledge and informing the public on the risks and benefits of non-conventional water resources.

E. Relationship of this activity with the SWIM work packages

This Initiative is related directly to the five SWIM work packages namely:

- Work package 1: Water Governance and Mainstreaming, using the integration of new water resources in the water, environmental, agricultural and irrigation policies (Task A) and improving the governance in the management in these resources (tasks B and C)
- Work package 2: Capacity building in techno-economic evaluation techniques and methodologies (task E)
- Work package 3: Application of water management plans through the use of methodologies and analyses among southern Mediterranean countries, and the exchange between institutions inside and outside the water sectors particularly in terms of integrating non conventional water resources in the water management plans. (Tasks A and D)
- Work Package 4: Identification and dissemination of good practices on wastewater reuse including artificial recharge and desalination (tasks B and E)
- Work package 5: Development of a Communication & Awareness Raising Strategy. This initiative will raise awareness of stakeholders and users on the risks and benefits related to non-conventional water resources production and use (task E)

F. Composition of the team

The team would include:

- Mr. Sherif Arif SWIM-SM Team leader
- Mr. Hosny Khordagui, SWIM-SM Environment Expert
- Ms. Suzan Taha, SWIM-SM Water Expert
- Ms. Barbara Tomassini, SWIM-SM Communication Expert
- An Environment Economist (non- key expert)
- A Water Economist (non- key expert)
- A Waste Water Engineer (non- key expert)
- A Hydrologist (non- key expert)
- A Mechanical/ Chemical Engineer in desalination (non- key expert)
- An Agricultural Specialist (non- key expert)
- A Research Assistant (non- key expert)
- A training specialist (non-key expert)

G. Next steps

The following steps are proposed in order to proceed with the implementation of this activity:

- Collect Partners Countries comments on the concept note and identify areas of interest/participation for each country



- Organize a regional roundtable discussion on wastewater reuse, and the preparation and management of this initiative.
- Assuming that the process for elaborating the Action Plan of the Strategy for Water in the Mediterranean is launched, contribute to the development of the related Chapter on Water Demand Management with an emphasis on Non-Conventional Water Resources Management
- Prepare an implementation schedule with each PC that expressed interest in participating in this activity.



B. Economic Valuation of Water Resources : Concept Note

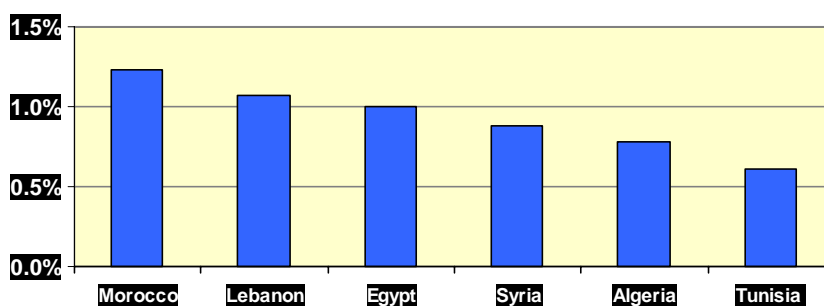
I. Introduction

The Southern Mediterranean Region, comprising the Partner Countries¹⁰ (PCs) of Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, the occupied Palestinian territory, Syria and Tunisia are faced with the issues of water scarcity, salinity, water logging, bacteriological and chemical contamination, and dam sedimentation. These issues affect directly and indirectly all water and land uses, namely agriculture, fisheries, domestic use, sanitation, health, industry, hydropower, tourism and biodiversity.

The water and soil concerns are at the heart of the water policies in the PCs and the mainstreaming of water resources and land use. Governments have invested considerably in building an increasingly integrated hydraulic infrastructure (dams, wells, installations to recharge aquifers, desalination, treatment of wastewater, water transfer). During the last decade, significant progress was made in the decentralization of water resource management, mainly focused on participatory management methods, accompanied by technical and financial support by the State. However, much of the past focus has been on investments without a systematic evaluation of the benefits achieved, and without consideration of other investments alternatives that would generate both economic and environmental benefits (win-win solutions)

The World Bank, through the Mediterranean Environmental Technical Assistance Programme has estimated the cost of environment degradation (COED)¹¹ to range from 2.1% of GDP in Tunisia to 4.8% of GDP in Egypt with Syria, Lebanon at 3.4% of GDP and Morocco at 3.7% of GDP. Cost of water degradation ranges from 1.3% in Morocco to 0.6% of GDP in Tunisia.

Cost of Water Degradation in MNA



These estimates - although approximate; being based on limited available information - were useful to alert policymakers about the seriousness of the problem. The estimates, however, cannot be used directly to provide an operational response as they did not consider the costs and benefits of possible solutions to the watershed degradation problems.

The proposed activity to be conducted under the SWIM-SM project extends the analysis of the original cost of environmental degradation study by: (i) improving the estimates of the cost of watershed degradation; (ii) analysing the benefits of alternative responses; and (iii) examining alternative market-based approaches to implementing these responses. The proposed study would thus bridge the gap between the previous cost of environmental degradation work that focused on identifying problems, and operational work required to address these problems.

¹⁰ hereinafter abbreviated and being referred to as "PCs"

¹¹ Sarraf et al, Cost of environmental degradation, METAP/The World Bank, 1999-2005



II. Objectives of the Activity

The overall objective of the activity is to identify with national decision makers concrete actions to improve the investment opportunities of the government at sub-national or basin level in order to effectively curb environmental degradation.

The specific objective of this activity is five-fold:

- (a) To update the estimate on the annual costs of water degradation in selected PCs. Valuation will use the most recent available data and estimates from the METAP/World Bank studies and the on-going project funded by the European Commission on Social and Economic Benefits of Enhanced Environmental Protection covering 17 ENPI countries as well as relevant data from UNEP/MAP and the SEIS project.
- (b) Estimate the cost of water degradation in one major basin in each of the three PCs
- (c) To identify in the selected basin, two priority remedial actions in specific geographic areas affected by highly polluted water, and formulate several intervention scenarios for these areas that have a high cost of water degradation and for which governments are not considering remedial actions. This would lead to the preparation of a water /waste water investment plan in which the costs (including the capital, operating and maintenance costs, etc.) related to interventions needed to reduce water pollution will be estimated. The remediation costs will be further useful to undertake an ex-ante Cost-Benefit Analyses of potential investments in protection of water supply and water quality.
- (d) To build capacity in PCs on environmental valuation. This objective will be achieved by involving a team of national experts in the preparation of this activity. This will allow a transfer and sharing of knowledge and expertise that will enable nationals in the PCs to replicate this type of cost analysis in other sectors of the economy. During the course of this activity, national and regional training workshops will also be organized to explain the methodologies used to undertake the analysis
- (e) To involve stakeholders in the particular basins through consultation to build consensus, the dissemination of results at the watershed /basin level and draw policy guidance for the replication.

III. Tasks

This activity consists of four tasks:

Task 1 Cost of Water Degradation Update at the national level and Estimate the cost of water degradation in a selected basin

Estimating the cost of water degradation involves placing a monetary value on the consequences of such degradation. This often implies a three-step process:

- quantifying water degradation (e.g. monitoring water quality).
- quantifying the impacts of degradation on different water uses (e.g. reduced agricultural production due to water salinity and water logging)
- estimating the impacts in monetary terms (e.g. estimating the cost of soil productivity losses)

The valuation will be based on available information concerning water degradation in the PCs. Also a review of the COED results obtained for the PCs from the project on the Social and Economic Benefits of Enhanced Environmental Protection will be assessed. In limited cases for which no information is available, primary research will be conducted during the course of the study. In other cases, expert opinion or Benefit Transfer Method from areas with similar context will be utilized. Calculation of each damage cost will be expressed in national currency and as a percentage of GDP for the year 2010. Since damage costs will reflect order of



magnitude and only an indication of actual costs, a range will be provided to reflect the uncertainty of the estimates.

Task 2 Cost Benefit or Cost Effectiveness Analyses of Remedial Actions and Preparation of Investment Plans for 1-2 basins in 3 PCs

The objective of this task is to perform a Cost /Benefit (CB) analysis or Cost /Effectiveness (CE) analysis of remedial actions at the watershed/basin level based on data input from previous work and studies presented under task 1.

Each sub-task consists of four activities:

- i) carry out a data collection and analysis survey,
- ii) determine the cost of the various investment alternatives,
- iii) determine the most appropriate enabling environment that will underscore the various scenarios, and
- iv) prepare investment plans.

The analysis will be based on the estimated annual water degradation costs connected to the watershed/basin in question. These will be compared to the annual operational and investment costs for the various abatement investment alternatives, to single out those with a positive benefit-cost ratio. In the cases when no full CB analysis is possible because of data constraints, a CE analysis will be implemented. Based on this, several scenarios will be established that would result in decreasing the water degradation by 25%, 50% and 75% respectively. This analysis will provide estimates in monetary terms for the overall social, economic and environmental benefits linked to these alternatives in the selected watershed.

A 3-year investment plan will be prepared in consultation with government departments including the ministry of finance, to assist decision-makers in making informed public choices based on a menu of calibrated interventions over time, and which will be designed to achieve marginal levels of outcome. The investment plans will be associated with their relevant enabling environment in terms of level and share of investments, financing mechanism, private sector participation (PSP), an appropriate institutional set up and a capacity building component. An implementation schedule will also be developed with each investment plan including and policy guidance covering technical, financial, institutional and market aspects will be drawn from the investment plans.

Task 3 Building the Capacity of the Decision makers at the subnational/basin level sand the Universities

This task will involve training of selected planning officials, and high-level staff and senior students from the universities, especially the departments of economics, to transfer the capacity, especially with regards to the methodologies used and the investment plan. A training manual as well as training materials and workshops will be prepared to enhance their knowledge.

Task 4 Validation and Dissemination of the Investment Plans at the Watershed/Basin Level

The objective of this task is to build consensus on the investment plans, seek the Government support to implement and replicate the investment plans. Public consultations will take place in each governorate/water shed/basin during this activity to validate the results, build consensus on both the investment plans and implementation. Each public consultation will be attended by the relevant parties, especially those who were concerned in or targeted by this activity. Results of the activity as well as the investment plans will be presented, discussed and distributed.



IV. Outputs

The output will consist of a series of report which includes:

- (a) an overview of the economic aspects of watershed management problems in selected PCs;
- (b) a valuation of the overall benefits linked to different response alternatives (in the selected watershed);
- (c) an economic analysis of these response alternatives;
- (d) concrete recommendations in the form of investment plans to internalize environmental benefits and improve watershed management.

V. Benefits

By assigning monetary values to environmental degradation and to remediation, this activity will:

- (i) provide a useful mechanism to rank the relative social costs of various forms of degradation and cost of remediation
 - (ii) offer policymakers an instrument to integrate environment into economic development decisions;
 - (iii) allow comparison of degradation costs with other economic indicators by expressing water degradation costs as a % of GDP;
 - (iv) give the environment and water ministries a tool for discussing the importance of environmental protection in economic terms, in the same “language” used by ministries of finance or economy.
- (i) improve the investment opportunities of the government at the governorate/watershed/basin and sub-national levels to effectively curb environmental degradation
 - (ii) associate the stakeholders and interest groups in the identification of the water issues, definition of remediation plans and preparation of investment plans

VI. Relationship of this activity with the SWIM work packages

This activity is related directly to the four SWIM work packages namely:

- Work package 1: Water Governance and Mainstreaming through the consideration of forgone benefits and win-win interventions in the agricultural, industrial and urban and rural sectors
- Work package 2: Capacity building in economic evaluation techniques and methodology
- Work package 3: Application of water management plans through the use of methodologies and analyses among southern Mediterranean countries, and the exchange between institutions inside and outside the water sectors particularly in terms of taking decisions based on economic benefits and,
- Work package 5: Development of a Communication & Awareness Raising. This activity will closely involve the stakeholders in the development of investment plans. It will also raise their awareness concerning the impacts of water pollution on health, and the costs necessary to remediate the degradation of their ecosystem.

VII. Composition of the team

The team would include:

- Mr. Sherif Arif SWIM-SM Team leader



- Mr. Hosny Khordagui , SWIM-SM Environment Expert
- Ms. Suzan Taha, SWIM-SM Water Expert
- Ms. Barbara Tomassini, SWIM-SM Communication Expert
- An Environment Economist (non key expert)
- A Water Economist (non key expert)
- An Agricultural Specialist (non key expert)
- A Research Assistant (non key expert)
- A training specialist (non key expert)

VIII. Next steps

The following steps are proposed to proceed with the implementation of this activity

- Collect Partners Countries comments on the concept note and identify areas of interest/participation for each country.
- Prepare an implementation schedule with each PC that expressed interest in participating in this activity



C. No Regret Actions for the adaptation of the Water sector to Climate Change Concept Note

I. Introduction

The impacts of CC on water resource in South Mediterranean Countries (SMCs) might affect a wide range of socio-economic and environmental sectors including agriculture, health, food security, public safety, biodiversity, eco-tourism and hydropower production. SMC will be required to carry out more adjustment of its water resources than in other region of the World, as over the three quarters of its resources are being used for human purpose. In general, the impacts of CC on the water sector in the SMCs will undermine national development plans, and affect human security and livelihoods)

The situation is further complicated by the heavy reliance of some SMCs on international fresh waters resources from upstream countries. Water scarcity might trigger international conflicts and disputes among SMCs sharing water resources at inter- and intra-regional levels. Furthermore, CC scenarios for the water sector in SMCs cannot be discussed in isolation from fast population growth in some countries (such as Egypt, Syria, Palestine and Jordan); industrial development; urbanization and the need for irrigation water to feed an ever growing population.

At present, many SWIM counties such as Morocco, Tunisia, Egypt, Lebanon, Jordan and Israel have either prepared strategic documents or plan to address climate change on particular sectors. However the institutional and absorptive capacity for addressing specific climate change adaptation actions needs substantive strengthening. As a result there is a tendency to resort to an ad hoc approach known as spontaneous or autonomous adaptation, which does not constitute a conscious response to climatic stimulation.

Adaptation options are strongly related to the level of uncertainty in which future climate change will happen. Adaptation measures can be classified into no regret, low regret and high regret investments depending on the low to high impact of future climate change uncertainty¹². Low and high regret options require data and information on future climate such as General Circulation Models (GCMs) which are powerful tools for accounting for the complex set of processes which will produce future climate change. However, similar to any prediction models, GCMs suffer from varying levels of uncertainties which represent unprecedented challenges to decision makers in the SWIM countries. On the other hand, no regret actions are likely to occur irrespective on how the climate change would vary and therefore the availability of climate change information is not crucial. No regret actions address the problem associated with the present climate change variability while at the same time build the adaptive capacity for addressing the impact of future climate change. Examples of no regret actions are: dissemination of climate information and access to early warning systems, conservation of agricultural practices that protect soils against erosion and runoff and conserve water; water use efficiency and improved water delivery for irrigation systems, improve access to new crop varieties which would increase the overall production and would diminish risks from droughts and floods¹³.

No regret actions have several benefits. They could reduce the socio-economic vulnerabilities and enhance the resilience of the affected communities in SMCs. Investment decisions can be implemented immediately

¹² Mainstreaming Adaptation to Climate Change in Agriculture and Natural Resources Management projects , Guidance notes, the World Bank <http://siteresources.worldbank.org/EXTTOOLKIT3/Resources/3646250-1250715327143/GN6.pdf>

¹³ Padgham J. (2009) Agricultural Development under a Changing Climate: Opportunities and Challenges for Adaptation. Environment and Agriculture and Rural Development Department Joint Discussion Paper. The World Bank.



without the risk associated with climate change uncertainty. These investments are cost effective irrespective of the climate change variability.

The proposed activity to be funded and implemented by SWIM-SM will provide the technical support, capacity development, guidance and awareness to Partner Countries (PC) on the development of no regret actions in the water sector. The technical support will encompass identification of appropriate technical solutions such as water demand management, alternative nonconventional water resources, measures for risk reduction and innovative technologies to adapt to CC. Guidance will entail identification of effective policy options, strategic planning and institutional approaches to expedite the implementation of Integrated Water Resources Management (IWRM), improved water governance, activation of economic instruments and mainstreaming no regret CC adaptation measures into relevant sectors of governments. Capacity development and awareness programmes will be tailored to include all stakeholders with emphasis on the involvement of youth, women and special groups to ensure participation and ownership.

II. Objectives:

- a) The overarching objective of the proposed activity is to support selected SWIM countries in their climate change adaptation efforts of developing *no regret actions* through technical assistance, policy guidance, capacity development and awareness. The proposed approach would include support policies and strategies at the local/basin level for improved water demand management, protection of surface and groundwater resources through the development of no-regret actions
- b) Strengthening the institutional and technical capacity for designing and implementing concrete no regret actions.
- c) Improving governance in water planning, allocation and service delivery, increasing awareness and in disseminating climate change information.

III. Proposed Activities:

The proposed objective will be achieved through a series of four coordinated tasks in full collaboration with water officials in PCs and in coordination with other activities undertaken by SWIM-SM and regional initiatives such as H2020 and MED-EUWI.

Task A: Compile all available information and assess the adequacy of the institutional and technical capacities to undertake proposed no-regret actions for CC adaptation at the national level:

1. Synergise with international and regional efforts undertaken by EU, UN, WB, specialized organizations in addition to national efforts to assess the existing CC strategies, and compile documents and information on current efforts and plans to adapt to climate change with emphasis on water sector.
2. Assess the adequacy of institutional and technical capacities of selected PCs to undertake the suggested no-regret actions to adapt to climate change.
3. Identify no-regret actions with focus on the mechanisms of their implementation. Coordinate with other activities undertaken by SWIM-SM to hold a joint integrated regional workshop to present the findings and the proposed no-regret actions.

Task B: Development of no-regret actions in the water sector

The objective of task B is to provide the technical support for the identification and design of no regret actions for addressing the water scarcity at the local or basin level. This would require access to climate information, identification of menus of no regret actions, selection of the most suitable no regret adaptation measures based on socio economic criteria. This would also require policy formulation and basin water resource



planning integration, horizontal coordination, multi-stakeholder dialogue and institutional strengthening. This task will entail the following:

1. Development of socio economic criteria and risk based approach for the identification and design of no regret activities in the water sector.
2. Provision of technical assistance and on-the-job training to selected PCs for the development of conventional and non-conventional water resources activities such as protection and maintenance of environmental flows, management of aquifer recharge, warning systems against floods, pollution control. This will entail supporting the water related institutions in performing technical, economic, financial, environmental and social analyses to secure additional water for economic activities and maintain ecological systems integrity.
3. Design of an incentive system, to improve water demand management, enhance efficiency and promote innovation in water saving and water conservation.
4. Hold a regional workshop on best practices, regional and international experiences in climate change adaptability with special emphasis on no regret actions

Task C: Improving water governance at National Level

Improving water governance through bottom-up approaches, including consultation, involvement of stakeholders and gender mainstreaming represent important components for insuring implementation of no regret actions. Given the plausibility of frequent droughts and critical water shortages in SMCs, transparency, equity, accountability, etc. will play a major role in the public acceptance and compliance with established no regret adaptation measures. This task will be executed in full coordination with SWIM-SM activity on “water governance at the local level” to avoid any potential duplication. However, the main focus of this activity is to ensure the public acceptance and compliance with suggested no-regret actions for CC adaptation. This task will entail the following:

1. Identification of practical measures to improve water governance at the policy level.
2. Development of guidelines for mainstreaming *no regret actions* in IWRM policies, programmes and projects.
3. Hold a regional workshop (using developed materials and findings) to enhance capacity of stakeholders from the water and relevant sectors on measures to enhance water governance in SMCs and available mechanisms for integrating *no regret actions* to CC in IWRM given the regional specificities.

Task D: Improving awareness on immediate need of the water sector for no regret actions to adapt to CC

Task D will address the development of outreach and communication campaigns targeting different stakeholder groups such as policy makers, water officials, civil servants, community leaders and civil society, with the aim of raising their awareness on the immediate needs for no regret adaptation measures and on cost-effective opportunities to reduce water demand and increase of nonconventional water resources. Task 4 will entail the following:

1. Develop a communication strategy to improving awareness, communicating risks of no action, disseminating best practices and building consensus among stakeholders and vulnerable communities on means and measures for improving their resilience towards CC impacts on water resources.
2. Conduct awareness campaigns with emphasis on the practical role of stakeholders in implementing *no regret actions* to adapt to CC.



IV. Expected output:

1. A knowledge map of available institutional and technical capacities in selected PCs to implement *no regret actions* for coping with CC.
2. Specific non regret measures and actions are identified and designed.
3. An assessment study on the status of water governance in selected PC with guidelines on mainstreaming *no regret actions* in local IWRM strategies.
4. Improved awareness and capacity of 60 water professionals and 500 relevant stakeholders on the necessity and means of implementation of *no regret actions* to adapt to CC within IWRM and good water governance context.

V. Relationship of this activity with the SWIM work packages:

This activity is related directly to the four SWIM work packages namely:

- Work package 1: Water Governance and Mainstreaming of climate change adaptation in integrated water management plans using a participatory approach and strengthening water governance at the local level (Tasks A and C)
- Work package 2: Capacity building in risk assessment for climate change adaptability, project design and economic evaluation techniques of no regret actions for the adaptation of climate change (Task B).
- Work packages 3 and 4: Application of water management plans through the development of no regret measures among southern Mediterranean countries, and the exchange between institutions inside and outside the water sectors particularly in addressing climate change impacts on water resources (Tasks B and C)
- Work package 5: Development of a Communication & Awareness Raising Strategy. This activity will closely involve the stakeholders in the development of no regret activities. It will also raise their awareness concerning the impacts of climate change on the water resources, and potential risk to the degradation of their ecosystem (Task D) of their ecosystem.

VI. Composition of the team:

The team would include:

- Mr. Sherif Arif SWIM-SM Team leader
- Mr. Hosny Khordagui , SWIM-SM Environment Key Expert
- Mrs. Suzan Taha, SWIM-SM Water Key Expert
- Ms. Barbara Tomassini, SWIM-SM Communication Key Expert
- An Environment Economist Expert (non- key expert)
- A Water Governance Expert (non-key expert)
- A Climate Change Expert (non- key expert)
- A Research Assistant (non -key expert)

VII. The way forward:

The following steps are proposed to proceed with the implementation of this activity:

1. Collect Partners Countries comments on the concept note and identify areas of interest/participation for each country



2. Organise a roundtable discussion with selected countries on no regret actions for climate change adaptability at the basin level and the preparation and management of this activity.
3. Draft information notes for the planned workshops.
4. Prepare a plan of implementation including the budget and timeline for the proposed activity with each PC expressing interest in participation.



D. Water Governance at local level - Sharing Experiences from Water Users' Associations

Concept Note

I. Introduction

Water users' participation constitutes a key component for the design and successful implementation of integrated water resources management. Participation refers to a continuum of users' involvement that affords them a greater role in management decisions. The Mediterranean experience related to water users' participation is much diversified. Some countries have gained considerable experience in making users' participation one of the pillars of their water management policies, particularly in the fields of irrigation and drinking water, while others still demonstrate limited or quasi-inexistent experience.

For example, Tunisia and Morocco have a long history of farmer's participation in the irrigation sector with roles and responsibilities between the government and the farmers evolving over time. Related legislation was adopted in both countries during the 90s to promote Water Users' Associations (WUAs) at the instigation of international donors, in particular the World Bank.

In general, WUAs have been established not only for irrigation, but also for drinking water. The main purposes for establishing irrigation WUAs are to reduce losses from the distribution networks and to maximize irrigation efficiency, equitable distribution of water and farmers' involvement in the decision-making. The key objectives for establishing drinking WUAs are to optimize management costs and sustain the service in rural areas.

More specifically, in Tunisia, the law allowing the creation of WUAs was adopted back in 1987 and has been revised and amended several times (1990, 1992, 1999, 2001, 2004) in order to make easier the establishment and the operational rules of these associations as well as to improve their efficiency. In 1992, a national strategy for the creation and the monitoring of water associations was developed specifying the objectives and the support mechanisms for WUAs. Since 1998, irrigation and drinking water development projects have been based on participatory approaches, thus accelerating the transfer of the management responsibilities to beneficiary associations. Tunisia counts more than 2500 associations, among which more than 1580 are for drinking water and more than 1000 for irrigation. Drinking water associations show better performances than irrigation associations regarding technical and administrative management as well as cost recovery and financial autonomy. Several studies have been conducted to review and evaluate the Tunisian experience on users' participation, though with mixed results. The Tunisian government continuously adjusts its policy and has been recently engaged in the preparation of a strategy for the sustainability of WUAs in order to reduce the technical and financial support and promote the associations' sustainability. The new political situation in Tunisia and the impact of the revolution on civil society involvement are expected to influence significantly this process.

In Morocco, the law regulating the creation of WUAs was adopted in 1990. The development of irrigation WUAs was promoted in the framework of a National Irrigation Programme in the 1990s (PIN 1993-2000) aiming to improve on-farm water management through the introduction of water saving irrigation technologies and the farmers' effective participation in the management of irrigation systems. Drinking WUAs were promoted in the framework of the drinking water supply for the rural population (PAGER), launched in 1995 and aiming to increase the level of access to safe drinking water in rural areas. More than 1600 irrigation WUAs and 450 drinking WUAs have been created. From experience gained during recent years it appears that WUAs are working satisfactorily only in some regions of Morocco, while facing heavy problems in others. New practices seem to be necessary in the area of promotion, creation, training and technical support for WUAs in order to assist with the realistic definition of objectives and the progressive transfer of management responsibilities to the members and therefore, to insure better water management and sustainability of water equipments and systems.



In Jordan, experience of WUAs has been initiated in the framework of the Water Management for Irrigated Agriculture project (WMIA), launched in 2001 and aiming to improve water resources management for irrigation in the Jordan Valley and the Highlands. However, the variety of farmer's social base and the consequent power relations between farmers as well as the complexity of the institutional context, and in particular the role of the Jordan Valley Authority (JVA), has raised several challenges during the establishment of WUAs. Ownership and effective farmers' involvement were among the major challenges to the development of WUAs, besides the overlapping of roles between the WUAs and the JVA. At present, the Jordan Valley has about 22 WUAs working under the umbrella of the JVA and covering about 75% of the Valley's irrigated land, whereas irrigation water distribution activities have led to the establishment of twelve associations through contracts with JVA.

The experience in institutionalised WUAs in Syria is still limited. Yet, there are some good pilot project results like that of the Al-Barika farm in the governorate of Deir-Ezzor or the drip irrigation farms in the village of Fraytan. The Syrian government is working towards the establishment of WUAs as a measure to improve on-farm water management. The existing water legislation (N°. 31, 2005) sets the stage for the establishment of WUAs and defines their structure, mandate and role in water and irrigation systems as well as their participation in decision-making.

In Lebanon, WUA's do not exist. Some water committees, created by the Ministry of Energy and Water, have a very restricted role: water distribution between beneficiaries and limited intervention in channel rehabilitation. WUAs' legislation was set during the French mandate and was not adapted to the local realities. Existing law 320/S, dated 1926, is the only text concerning "Syndical Association" for water users. This law focuses on protection from flooding. Although it gives the possibility to create WUAs in irrigation, it has not been revised to respond to irrigation particularities, nor provide more details on the creation and operation procedures.

At the regional level, there has been an effort to network irrigation WUAs through the Euro-Mediterranean Irrigators Community (EIC). EIC was established in 2002, is based in Madrid and is hosted by the Spanish federal WUA FENACORE. EIC aims at facilitating exchange of information, knowledge and experiences among irrigators of Euro-Mediterranean countries in order to improve management and distribution of water and addressing related legal, institutional and technical aspects. Currently, it has 37 member organisations from 8 Mediterranean countries. Additionally, considerable knowledge on WUAs is with well established organisations like ICARDA, FAO, ICID, etc

Progress achieved on local governance varies from one country to another. However, legal gaps, low capacities, asymmetric accessibility to decision making between the central government departments and local communities are among the barriers facing the development of WUAs. Actions for local governance improvement need to be based on the analysis of these barriers and build on the common vision among stakeholders for the steps necessary that will ensure active and participatory role of users in water resources management.

The proposed activity aims to assist the governments with strengthening local water management by setting-up the framework (legal, institutional, monitoring,...) and equipping WUAs with the knowledge and tools necessary to play a more active and participatory role in water resources management (from planning to implementation), managing water infrastructures, as well as monitoring water quality.



II. Objectives of the Activity

The proposed activity aims to:

1. Identify, under the guidance of national stakeholders and with due consideration for local conditions and specificities, concrete actions for improving local water management and reinforcing users' participation.
2. Assess the adequacy of water legislations including by-laws, standards, regulations and requirements for the establishment and effective operation of WUAs and identify opportunities for updating and/or amending water legislation,
3. Provide WUA with the necessary tools; guidelines, manuals, technical training and capacity building including soft skills development (e.g. communication, conflict management, etc.) as applicable that would enable them to be actively involved in decision-making in the water sector on selected areas and local level,
4. Create partnerships in development among policy makers, civil society and local communities in ways that enhance their mutual trust and collaboration.

III. Activity Tasks

The activity is subdivided in the following tasks:

Task 1: Preparation of a regional report on the status of water users' participation

Prepare a report establishing the state of the art on water users' participation in selected countries in the region. The countries will be selected so as to demonstrate a diversity of experiences, ranging from well developed experiences and success cases to semi-functional or failure cases. Available documents and data as well as evaluation studies and reports will be examined. Supplementary information may be requested from national partners, when and if needed.

Depending on the experience of each country, the report will include, but not be limited to, the following sections:

- An overview of the evolution of water users' association in the region
- The legal status and operational rules of WUAs at national level and their transfer and application to the local contexts
- The incentives and support provided by the public authorities for the creation and operation of WUAs
- Evaluation of WUAs performances (financial and managerial) and their impact on water resources and infrastructure management
- Lessons learned from success and failure cases, with an emphasis on the replicability/duplication of the former
- Weaknesses/ constraints to the development and reinforcement of WUAs
- Provisional recommendations for next steps, based on clear indications coming from policy and decision-making processes at country level

Task 2: Organisation of a regional workshop

Organise a regional workshop to promote the exchange of experiences among the countries in the region. In particular, the constraints to the development of WUAs will be contextualised in relation to local specificities. The workshop will give the opportunity to a number of targeted representatives from WUAs, national authorities, international organisations and donors to exchange experiences and reflect on potential ways



forward with regard to users' participation. The regional report described under task 1 will be disseminated to the participants in advance of the workshop so it can be discussed, commented upon and eventually validated during the workshop. National representatives will be asked to present their country experiences focusing on the priority actions for next steps. An additional objective of the workshop would be to lead also to the definition of general orientations for targeted activities that can be implemented in the framework of the SWIM-SM project. A more elaborate description of these activities will follow at a later stage through consultation between the SWIM-SM team, the country partners and the EC.

Task 3: Legal framework assessment and identification of opportunities for updating and/or amending water legislation

For countries where legal gaps have been identified as heavy constraints for the operation of WUAs, an overview of the legal aspects and an assessment of the adequacy of water legislations (including laws, decrees, by-laws, standards, regulations and requirements) will be carried out with due consideration to the local enabling environment for participation including social norms. SWIM-SM experts will examine water legislation currently in force regarding the opportunities for users' involvement in the decision-making and the overall water management processes, their institutionalisation and their adequacy with respect to local community specificities. A capacity development programme will be also implemented to enhance the capacity of water legislators in developing and/or amending water legislations by adopting a consultative and participatory approach so that the legal framework fits to the social realities at local level and facilitate users' effective involvement in water resources management. Likewise, and depending on the social issues hindering users participation (poverty, gender participation, conflicts between users, perception of water etc.), capacity building and awareness raising programmes will be implemented amongst the water users and other stakeholders as applicable.

Task 4: Training activities to assist the establishment of pilot WUAs

In consultation with the beneficiary countries, and based on their expressed needs and interest, a limited number of irrigated perimeters or drinking water points will be selected to establish WUAs in compliance with the respective national regulations.

Field-visits will be conducted to identify and map the beneficiaries. Awareness campaigns to sound the interest will be carried out to motivate users for the creation of WUAs and determine potential contributions from stakeholders, including media representatives.

Training workshops at national levels in selected countries and sub-regional level, as needed will be provided to selected users targeting primarily those users who will devote energy and resources to the establishment and operation of the associations. Manuals will be prepared to clarify the rules to be followed in accordance with national regulations and to provide easy and accessible guidance and tools for the application of these rules, also benefiting from the successful experiences from the region and beyond.

Task 5: Pilot activities to strengthen WUAs in accordance with national regulations

This task aims to enhance selected WUAs' capacities in selected countries to improve their involvement in water decision-making and effective water management. It envisages to:

- Conduct field-visits in selected countries in Tunisia and Egypt for which an assessment of their WUA was carried out by other international agencies to identify water challenges and the major problems facing WUAs.
- Map locally-initiated activities at community level, through local NGOs and extend the outreach to them
- Identify capacity gaps and conduct training workshops to strengthen the WUAs.
- Assist with the development of business plans for the concerned WUAs to strengthen WUA effective operation and sustainability, on a need basis.



- Prepare a manual describing the procedures and guidelines for strengthening WUAs in accordance with the respective national regulations and including insights from regional experiences. The aim is to use these manuals as reference documents for both WUAs and national authorities.

Task 6: WUAs to Conduct Self-Evaluation and Extract Lessons Learned

This task aims to take stock of the experience gained through the conducted activities and extract those elements that can be replicated under further pilot cases within the same and/or in other countries. While conducting the evaluation, attention will be placed on using social research methodologies that assist with capturing tacit as well as explicit knowledge from the involved stakeholders. Task 6 includes the following:

- Plan and conduct self-evaluation workshops in the pilot WUAs
- Document and disseminate widely the findings and lessons learned

IV. Activity Outputs

Expected outputs will consist of the following:

1. Report on the water users' participation in the Mediterranean region.
2. Report and recommendations from the regional workshop on water users' participation, including identified and prioritized future activities for SWIM-SM.
3. Report and recommendations on the legal gaps for selected countries including lessons learned from the capacity development/awareness programme.
4. Trainings and guidance manuals for the creation, operation and empowerment of WUAs in selected countries.

Effort will be made to liaise with regional organisations like AfD, FAO, ICARDA, etc for the preparation of the report and the organisation of the workshop(s) as well as the training activities.

Although very unlikely, should the need arise for joint activities with SWIM-SM activities implemented under the "No Regret Actions for the adaptation of the Water sector to Climate Change", the tasks/activities under this component will be carried out to ensure optimization of resources, and avoid duplication.

V. Team Composition

- Mr. Sherif Arif, SWIM-SM Team Leader
- Ms. Suzan Taha, SWIM-SM Water Expert
- Ms Barbara Tomassini, SWIM-SM Communication Expert
- Non key Expert, Rural engineering, Preparation of the state of art report / Regional Workshop facilitation / Identification of capacity building needs / Trainings preparation
- Non key Expert, Legal expert, Preparation of the legal assessment report / Preparation of capacity building activities
- Non key Expert, Sociologists, Awareness campaigns / Trainings preparation
- Non key Expert, Trainers, Trainings preparation and facilitation