

# Water demand management in the Mediterranean, progress and policies

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**PAPER**

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*Economic analyses for supporting policy decisions for  
sustainable water management*

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**Abstract of the paper**

As part of the EU Water Initiative in the Mediterranean region, a project has been launched by WWF Mediterranean Programme and the Sebou River Basin Agency for testing economic methods and tools to support policy decision towards more sustainable water management. Inspired by the EU Water Framework Directive, the project will test economic methods such as cost-effectiveness and cost-benefit analysis to support the selection of measures for improving the quality of the water environment in this river basin. Some of the measures considered will be demand management measures, e.g. a change in water pricing policy. Thus, comparison between demand management and more traditional supply-side measures will be made on socio-economic and distributional grounds. Also, the cost-recovery implications of the proposed programme of measures will be analysed – focusing in particular on the relative contribution from different economic sectors and water users to the costs of proposed measures.

**Résumé**

L'agence hydraulique de bassin du Sebou et WWF Maroc ont démarré début 2007 une collaboration sur le thème de l'économie appliqué à la gestion des ressources en eau. Financé dans le cadre des activités de l'initiative sur l'eau Européenne en Méditerranée, ce projet s'attachera à tester des méthodes et outils d'analyse économique d'appui à la prise de décision pour une gestion durable des ressources en eau. L'application de méthodes d'analyse coût-efficacité et coût-bénéfice (ou coût-avantage) permettra en particulier de comparer un grand nombre de mesures permettant d'améliorer l'état des ressources en eau, y compris l'application de mesures de gestion de la demande comme des changements dans les politiques de tarification de l'eau. Les analyses permettront également de comprendre les implications socio-économique des différentes mesures proposées, y compris en ce qui concerne le recouvrement des coûts et les contributions des différents acteurs et secteurs économiques au financement des mesures proposées.

**INTRODUCTION**

Integrated river basin management and good governance are two buzzwords central to many water resources strategies and plans often heard in discussions among water experts, administration staff, stakeholder representatives. There is wide agreement that these are basic principles to sustainable management of water resources, be it in Europe or elsewhere.

An important assumption made by those at the origin of the European Union (EU) Water Framework Directive (WFD) is that the integration of sound economics (encompassing both financial and wider

economic concerns) into water policy and management is directly relevant to both good governance and integrated river basin management. Indeed, economics deal with the financial and economic (shared) responsibility of different water uses and actors. It helps understanding the tradeoffs between economic development and the protection of the environment including aquatic ecosystem. It positions economic and financial incentives in the wider context of efficient water use and sustainability. And it provides means to capture the different values one can attach to the environment and that justify the need to protect it, including non-use values such as bequest values (capturing potential uses by future generations) and existence values (linked to the existence of the good itself independently of human concerns and views).

And in line with this assumption, the WFD adopted in 2000 promotes the application of sound economic principles (e.g. the *polluter-pays-principle*), economic methods (e.g. cost-effectiveness analysis or cost-benefit analysis) and economic instruments (e.g. water pricing) in water policy and management in Europe.

### **THE ECONOMIC ELEMENTS OF THE EU WFD**

The EU WFD is the first piece of environmental legislation in Europe that directly puts obligations for EU Member States (MS) to apply economic principles, methods and instruments. The WFD requirements include (EC, 2002):

- The obligation to ensure by 2010 an adequate recovery of the costs of water services and to promote pricing policies that provide an incentive for water users to use water efficiently to support the achievement of the environmental objectives of the WFD. This obligation, specified in Article 9 of the WFD, has received much attention during the policy development process of this directive because of its potential financial implications for economic sectors and water users.
- An economic analysis of water uses for each river basin district by 2004 as referred to in Article 5 of the WFD and its related Annex III. This analysis should answer two main questions: what is the economic importance of the main water uses today? And: How will economic sectors and drivers putting pressures on the water environment evolve over time between now and 2015? (2015 being the first deadline specified in the WFD for reaching its environmental objectives, i.e. good water status for all waters)?
- A cost-effectiveness analysis to support the selection of measures aimed at reaching good water status, as specified in Annex III and also referred to in Article 11 of the WFD. The analysis aims at identifying measures for achieving the environmental objectives of the WFD in the cheapest way. Results of the analysis should be presented in the river basin management plans submitted for consultation to stakeholders and to the wider public by 2008, and adopted by 2009.
- In addition to the cost-effectiveness analysis, the WFD provides MS with the possibility to apply for derogation or exemption, i.e. provisions that allow Member States not to reach good water status by 2015. Specified in the provisions 4, 5 and 7 of Article 4 of the WFD, these exemptions include the possibility: to reach environmental objectives within longer time scales; to reach lower environmental objectives; to allow for some degradation of water status for new morphological modifications and economic activities that are considered as sustainable; or to reach lower environmental objectives in terms of ecology because of significant morphological changes in rivers and lakes that can not be brought back to natural conditions. To justify such exemptions, MS need to undertake a series of tests including economic tests such as a cost-benefit analysis. If exemptions are requested by MS, the results of these tests need to be presented in river basin management plans.

Because of the different river planning cycles foreseen by the WFD, the deadlines specified above are

relevant to the first river basin management planning cycle. And the different economic analyses developed for addressing the economic significance of water uses, supporting changes in pricing policies or facilitating the selection of measures, will need to be refined and complemented in follow-up plans to be adopted by 2015 and 2021 (if the environmental objectives of the WFD are not reached yet...).

#### **BUILDING A PROJECT ON THE ECONOMIC ELEMENTS OF THE WFD FOR THE SEBOU BASIN : INSTITUTIONAL CONTEXT**

In parallel to the implementation of the WFD in EU countries, many initiatives and activities were launched to discuss the relevance of the water management principles promoted by the WFD in other regions and countries. In particular, a network of pilot river basins in the Mediterranean region was established (the so-called Mediterranean Pilot Basins or MPB) to identify the main constraints in applying the principles of the WFD in partner countries and regions of the EU.

Following contacts between the Sebou hydraulic basin agency, MENBO, WWF and the European Commission in January 2006, it was decided to include the Sebou basin in the MPB network as part of the joint process between the EU Water Initiative and the WFD (MED-EUWI/WFD JP). And a task sheet for testing the economic elements of the WFD in the Sebou basin was prepared and submitted for funding to the European Commission/RMSU/MEDA (WWF/AHB-Sebou, 2006). An important justification to this request for funding was the complementarity between this new activity on the economic elements of the WFD and existing projects or partnerships, in particular:

- SPI-Water – This project, financed by DG Research, builds on activities developed in two non EU pilot river basins: the Sebou basin in Morocco and the Litani basin in Lebanon. In a first step, the SPI-Water project's component targeting the non EU pilot river basins aims at analysing the current application of the main principles of integrated water resources management in the two basins and to identify the main weaknesses/limitations. In a second step, it will identify options for enhancing the application of these principles and of their effectiveness. In a third step, the results of the first two steps will help developing guidance with recommendations on good practices with the application of integrated water resources management principles using tools for the implementation of the Water Framework Directive in EU countries developed by past researches funded by DG Research. The Sebou hydraulic basin agency is assisted by WWF Mediterranean Programme in the implementation of this project.
- The mission for the identification and development of wastewater treatment projects with elements of institutional support – this project, financed by the European Commission and implemented by its Moroccan delegation, has a more operational objective. However, its institutional component is clearly linked to discussions on the economic elements of the WFD in particular those on water pricing and cost-recovery.
- An existing Memorandum of Understanding (MoU) between the Sebou hydraulic basin agency and WWF Mediterranean Programme. One of the objectives of this MoU is to promote integrated water resources management. And it is expected that testing the economic elements of the WFD will contribute to this objective.
- MENBO. The network of river basin agencies of the Mediterranean region aims at promoting collaborations and exchange between water agencies of the Mediterranean region.
- The partnership developed between the Sebou hydraulic basin agency and the Seine-Normandie water agency in France – one of the fields of collaboration being the inventory of problems faced when managing river basins including socio-economic questions and issues.

By the end of November 2006, because of the importance of the focus of the project (the economic aspects of water management) and its complementarity with other on-going initiatives and projects,

the European Commission decided to fund the pilot project for testing the economic elements of the WFD in the Sebou river basin. The following section of this paper summarise the objectives of the project and the main methodological issues that will be investigated in the Sebou river basin.

### **OBJECTIVES OF THE PROJECT**

The main objectives of the project is to test the economic methods and tools proposed by the EU Water Framework Directive under institutional, socio-economic and water resources management conditions characteristics of the Mediterranean Sea. This test will help identifying the main constraints in applying these methods and tools. It will also identify possible solutions and options for dealing with these constraints in an effective manner.

The project will also illustrate the policy relevance of different socio-economic assessments to the comparison of different water management strategies and options, e.g. supply-driven versus demand-driven management options. Attention will be given in particular to the application of economic instruments (water pricing and environmental taxes and charges).

Finally, the project will contribute, clearly at a very modest level, to efforts for raising awareness and building capacity on the application of integrated water resources management in Morocco.

### **MAIN METHODOLOGICAL ISSUES INVESTIGATED BY THE PROJECT**

As indicated above, the main objective of the project is to test the economic elements of the EU WFD in the Sebou river basin. It is proposed to test all economic elements of the WFD (i.e. those pertaining to Article 5, to Annex III but also to Article 4 dealing with derogation and with the search for an adequate balance between economic development and environmental protection) – even if some of the tests might have a more virtual character. The main methodological issues that will be tested are further described below (WWF/AHB-Sebou, 2006):

- **Economic importance of water uses.** Information on the economic importance of the main water use sectors in terms of turn-over, value added, employment... will be collected from existing statistics, reports, research papers. Interviews with stakeholders and local experts will help complementing existing secondary data and enhancing their accuracy. The comparison of economic data with information on pressures imposed by water users on water resources (in terms of abstraction, pollution...) will help capturing the economic importance of water uses and the relation between economic development and the protection of water resources. Methodological challenges include the spatial scale at which economic indicators are computed, the integration between technical and economic information, and possible approaches for estimating economic indicators for which no information is available in official statistics.
- The development of a so-called *baseline scenario for the Sebou river basin*, i.e. what will be the state of the Sebou water resources by 2015-2020. This will requires identifying the main drivers influencing economic sectors and water management – and investigating (probable, expected) future changes in these drivers, and thus ultimately on pressures imposed on water resources and on the state of these water resources. Particular attention will be given to expected changes in the agriculture sector and to the implementation of water protection strategies and plans that have already been adopted/for which financial resources are already secured today and that will help improving the state of water resources. How to integrate expert and stakeholder knowledge in building scenarios, or how to deal with uncertainty in forecasts and predictions are aspects that will be specifically investigated.
- The analysis of **current water pricing policies**. Specific attention will be given to cost-recovery aspects (who pays for what) and to incentive pricing issues – in line with the requirements of Article 9 of the WFD and also because both issues are seen of importance for

the Moroccan situation. Information on costs of water services, water tariffs (structure, level) and subsidies (indirect, direct) will be collected and analysed. Priority will be given to water users that are critical for water management and water services in the Sebou river basin, and for which sufficient information is available. Some attention will be given in assessing environmental and resource costs – although it is expected that the analysis will remain rather qualitative and will not undertake specific assessments for assessing the monetary value of these costs.

- **Cost-effectiveness analysis.** Information on costs (investment costs, operation and maintenance costs, indirect economic costs) will be collated for a range of measures. The combination of this cost information with effectiveness/environmental impact information will help identifying the measures that help improving the status of water resources at least cost – as this is seen as particularly important for countries and regions with fragile economic sectors and limited government budgets.
- **Cost-benefit analysis.** For some projects or measures, a cost-benefit analysis will be performed. Specific attention will be given to the costs and benefits that are linked to changes in water status, for example benefits accruing to some economic sectors because of a reduction in abstraction or pollution from other economic sectors. Or benefits for society because of the improvement in the quality of the aquatic environment (these will be assessed qualitatively, then in physical terms, finally in monetary terms for illustrating the approach that could be applied).

These different components will clearly be inter-related – the results of some activities feeding into the assessments of follow-up activities and assessments. Two more horizontal methodological issues will be discussed and investigated during the duration of the project:

- The integration between technical and economic expertise and information. Indeed, this integration is critical to the relevance of economics to water management and decisions. It requires regular exchange and discussions among experts from both disciplines – in particular to agree on (spatial, temporal) scales of analysis, indicators, methods....
- The link between economic analysis and decision making. Indeed, it is important that economic assessments effectively help addressing the main questions faced by water managers in taking their decisions. Specific attention will be given to information and communication of economic methods and results to technical experts and water managers.

## CONCLUSIONS

The project has been initiated in February 2007. And it will last for 12 month. Thus, it is today too early for presenting first results and lessons. It is important to stress, however, that in parallel to data collection and analysis, the project will organise a series of bilateral discussions and meetings with local experts and stakeholders. This will help discussing the robustness of assumptions and analyses, assessing the main policy questions and results of interest to water managers, presenting results and discussing their relevance to Moroccan water policy making or identifying the main strengths and weakness of the different methods and assessments tested. The possibility to organise a Mediterranean workshop for sharing results of the Sebou project and of those of other similar projects in Mediterranean river basins has already been proposed.

**Key words :** cost-effectiveness, cost-benefit, demand management, water pricing, cost-recovery

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Task sheet submitted by WWF/AHB-Sebou.

### **Relevant websites:**

[www.panda.org/mediterranean](http://www.panda.org/mediterranean)

[www.abhsebou.ma](http://www.abhsebou.ma)