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OPTIMA

Optimisation for Sustainable Water Resources Management

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D16.2 Guidelines for local participation

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Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

D16.2 Guidelines for local participation

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1. Participatory stakeholder involvement in OPTIMA

The Regional Workshop on Optimisation for Sustainable Water Resources Management designed and organized by IRMCo as leader for the Dissemination and Exploitation (Workpackage 16), offered the opportunity to make a final review of the extent to which the project succeeded in realizing the effective involvement of stakeholders during its life-cycle.

Seeking the involvement of relevant actors and stakeholders, and in particular of administrative bodies of local and regional government, the developing water industry as well as non-governmental organisations, featured as a specific objective of the project's dissemination plan.

To reach this objective, IRMCo designed an overall dissemination strategy which was presented at the kick-off meeting of the project in Malta during October 2004. The strategy was aimed at linking the expected outcome(s) of the dissemination activities to increasingly stronger levels of participation on the part of the stakeholders.

Subsequently, this strategy was used to guide a step-by-step planning of the dissemination activities. The latter were reviewed at every coordination meeting, which took place at approximately equal intervals of six months, and provided the opportunity to plan further, new dissemination activities. The reader is referred to report D16.4 Dissemination Update for a detailed review of the progress and planning of new dissemination activities at each of the project coordination meetings.

As mentioned above, the Regional Workshop held in Malta during 28-29 May 2007, provided the opportunity to make a final review of the effectiveness of the dissemination activities as well as to take on board the views and suggestions of both the stakeholders and of the research teams within the project consortium. With this objective in mind, major stakeholders from across the region accompanied the OPTIMA research teams. Representatives from international organizations were purposely invited to facilitate the round-table discussions during the workshop. More detailed information on the Regional Workshop, including the conclusions from the roundtable sessions have been collected in a separate document, D16.3 Regional Dissemination Workshop.

2. The overall dissemination strategy

The overall strategy presented at the kick-off meeting was adopted from the SAGE philosophy, which was developed in France and became part of the French law on water management in 1992. The 'Schema d'Amenagement et de Gestion des Eaux' (SAGE), places emphasis on a process of extensive dialogue among legislators, planners and end users.

As shown in Table 1, SAGE employs successive stages so as to reach a consensus among the various stakeholders, while the stakeholders on their part are encouraged to play an active role in each stage, thereby providing the basis for a structured dialogue.

Common with OPTIMA, SAGE considers the River Basin as the unit for planning and management of the water resources. The notion of the successive stages

considered in SAGE points to the appropriateness of a step-by-step planning of the dissemination activities, while at the same time ensuring that stakeholder views and expectations are duly taken into consideration throughout the full duration of the research.

Indeed, SAGE considers incorporating the views and perceptions held by stakeholders as an essential means for **stakeholders to be able to relate to the research** and hence **to increase their willingness to accept the results** as may be obtained.

SAGE Steps	Stakeholder involvement	Means used
1. State of the water resources	Stakeholders define issues and their priority ranking	Questionnaire
2. Diagnosis of the water resources	Diagnosis of stakeholder axis: - Actions of Actors on Resource - Actions of Actor X vs Actions of Y	Matrices
3. Alternative scenario formulation	Selection of scenarios is guided by a Steering Committee	Visual, user-friendly aids
4. Consensus on optimum decisions	Constructive dialogue with stakeholders on results obtained	Structured Workshops, Role-playing

Table 1 Schematic presentation of stakeholder involvement in SAGE

Using the SAGE philosophy as the starting point, the expected outcome of the dissemination activities can be linked to increasing levels of involvement in the research on the part of the stakeholders (see Fig. 1). Appropriately, a distinction is made at the level of the individual case studies on the one hand, and across the 7 case studies which featured in OPTIMA on the other hand.

Fig. 1 Expected outcome linked to increasing level of stakeholder involvement

Within each of the case studies:

- positive outcome : attract – and maintain - interest of stakeholders (even if no specific feedback is obtained)
- very positive outcome : stakeholders provide feedback, respond to questionnaire(s)
- excellent outcome : stakeholders actively contribute to research on their case study

Across the 7 case studies:

- positive outcome : increased awareness of OPTIMA research effort across the Mediterranean region
- very positive outcome : stakeholder networks are formed in each of the case study areas
- excellent outcome : active south-south dialogue between stakeholders

3. Step-by-step planning of dissemination activities

Following the overall strategy presented at the kick-off meeting, a series of successive steps were formulated, each step being tied to one or more specific dissemination activities. These successive steps were determined also by the feedback as obtained from previous steps, resulting in **a dynamic process**.

The progress with the dissemination activities was reviewed at every coordination meeting. As shown in Table 2, these took place at approximately equal intervals of six months, and provided the opportunity to plan further, new dissemination activities.

Table 2 Dissemination updates aligned with timing of Coordination Meetings

Coordination meeting	1	2	3	4	5	6
Venue	Bugibba Malta	Izmir Turkey	Casablanca Morocco	Gumpolds-kirchen Austria	Milan Italy	Qawra Malta
Date	Oct 04	Apr 05	Nov 05	May 06	Dec 06	May 07
Project Month	4	10	17	23	30	35
Dissemination	Strategy	First Update	Second Update	Third Update	Fourth Update	Final Review

Different types and formats of dissemination activities were employed to engage with stakeholders, including mailshots, questionnaires, posters, stakeholder workshops and seminars.

Apart from introducing the OPTIMA project, the first mailshot also had the objective to invite stakeholders to give their input towards the formulation of the Problem Statement on each of the case studies by means of a Water Issues Questionnaire.

All case study partners assisted IRMCo in compiling a brief overview of the case study areas in a comparable format. This resulted in a systematic collection of basic data (size of basin, population, etc.) and maps (river network, river morphology, digital elevation model, landuse etc.). These contributions were then taken up in the design of an OPTIMA Poster, giving an overview of the overall aims of the project and introducing the seven case studies (see D16.4 Dissemination Report, Annex 3 – Posters)

At the same time, the project website offered a means to document the stakeholder involvement, including an on-line stakeholder database in which information on an aggregate of 300 stakeholders was posted by the respective case study partners over the duration of the project.

The reader is referred to D16.4 Dissemination Report for a detailed review of the progress and planning of new dissemination activities at each of the project coordination meetings. The Regional Workshop in Malta during 28-29 May 2007 provided the opportunity to make a final review in direct consultation not only with the research teams but also with one or more stakeholders from the respective case studies who participated in the event.

4. Format of dissemination activities

Several dissemination activities were guided by the adoption of a common format, or a common template. These activities included the mailshots, the water issues questionnaire, the design of posters and the on-line database of stakeholders.

Indeed, to enable a cross-comparison of the water issues across the case studies, the questionnaire was designed to incorporate a widest possible range of issues, which was then employed as a common template. The mailshots and also the posters enabled to convey the same information to the stakeholders across the case studies. Similarly, the on-line database of stakeholders brings together various information according to a common template.

However, a uniform or standardized approach was not going to be effective in all dissemination activities. The design of participatory stakeholder workshops proved a case in point. Clearly, the challenge here is to guide a structured dialogue that enables the research team to use the feedback that is obtained in one or more of the project's expected outputs.

In Table 3, the SAGE steps have been linked directly to the expected outputs envisaged in the OPTIMA research, i.e. the definition of the problem statement, the build-up of the baseline scenario, the formulation of future, alternative scenarios and finally the reaching of optimal decisions.

Table 3 Schematic Overview of Stakeholder Involvement

SAGE Steps	Expected output	Stakeholder involvement	Interface with DSS development
1. State of the water resources	Problem statement	One-to-one interviews	Issues Questionnaire
2. Diagnosis of the water resources	Baseline scenario	Workshop	Issues Questionnaire, Performance Indicators
3. Alternative scenario formulation	Alternative scenarios	Steering Committee Meetings	Desired Performance Indicators and New Initiatives
4. Consensus on optimum decisions	Optimal decisions	Workshop	Role - playing

As anticipated from the outset, the careful customization of the design of workshops to the local context-situation proved essential. The next chapter provides more detail on the specific approach that was employed in two distinct case studies: the workshop in Tunis on the Melian Case Study and the workshops in Emek Hefer and Tulkarem respectively which dealt with the Wadi Zeimar/Nahal Alexander transboundary Case Study which is shared by the Palestinian Authority and Israel.

Participatory stakeholder workshops were held also in Jordan, Lebanon and Turkey, with over 200 stakeholders attending the various workshops that took place.

5. Guiding a structured dialogue in participatory stakeholder workshops

The present chapter describes two distinct approaches that were employed by IRMCo to guide a structured dialogue with stakeholders in two of the OPTIMA case studies. It should be noted that the insights and results obtained are intended, foremost, to highlight the need for a highly customized approach which duly considers the local context situation.

Evidently, workshops provided the opportunity to the respective research teams to seek the feedback from stakeholders on the ongoing research. The priority focus is therefore on encouraging stakeholders to provide their expert opinion, and, to invite and secure their active feedback and assistance as required by the research also beyond the workshop itself.

Formal presentations during the workshop were kept to a strict minimum so as to give adequate time for discussions to take place. However, including some presentations also by stakeholders in the programme can be an effective means to encourage their participation. For the workshops described below, roughly the same amount of time was allocated to presentations and to discussions respectively.

In order to achieve a structured dialogue, a series of lead-questions were prepared in advance. These lead-questions were highly influenced by the approach that was chosen to conduct the respective workshops described below.

5.1 Melian Case Study: Tunis Workshop, 3 May 2006

For the Melian Case Study, IRMCo worked in very close communication with CNT, the Tunisian research team in OPTIMA. In fact, two visits were made prior to the actual workshop which took place on the 3rd of May 2006 in order to plan and prepare for a common understanding of how to assure that a structured dialogue would be achieved during the roundtable sessions.

Three roundtable sessions were organized in direct analogy with the SAGE steps 1 to 3 as shown in Table 3. A brief introduction at the beginning of each roundtable session employed the following standardized format:

1) objective of each session
2) research tasks completed by CNT prior to the workshop
3) envisaged, further tasks
4) expected outcome of each session

In a first roundtable, the replies to the Water Issues Questionnaire provided by stakeholders prior to the workshop were revisited This was deemed appropriate since analysis of these replies indicated that an extremely high number of issues had been assigned as very important to extremely important. As shown in Figure 2, a much more concise Problem Statement emerged from the discussions during this roundtable.

The second roundtable sought the expert opinion of stakeholders on the outputs obtained from the initial baseline scenario drawn up by CNT. As shown in Figure 3, stakeholders provided quantitative data at distinct levels, i.e. not only for the entire basin but also at the sectoral level. This feedback enabled CNT to make the relevant changes to the baseline scenario, which confirmed the data provided by the stakeholders.

The third roundtable enabled stakeholders to contribute to the drawing up of possible future, alternative scenarios. It should be noted that at this stage in the research, CNT was lacking especially the required data related to costs and benefits. The third roundtable provided the opportunity to invite the stakeholders to directly contribute to this next phase in the OPTIMA research. Very significantly, this final roundtable not only resulted in a consensus among stakeholders on future, alternative scenarios as shown in Figure 4, but also led to the formation of a Steering Committee which agreed to assist CNT with the modelling requirements. The Steering Committee set up during the workshop brought together representatives of 7 major stakeholders, including a research institute and a farmers' union in addition to five public entities.

It is especially noteworthy that in addition to subsequent meetings with the Steering Committee, CNT also organized a joint field visit and a training session on the modelling.

First Roundtable

SAGE Stage 1 State of the Water Resources in Melian Basin

Objective
- **Revisit the Issues Questionnaire**
- **Invite further Replies (and Comments)**

Tasks completed to date
- **Analysis of Replies to Issues Questionnaire**

Further action required
- **Confirmation of the priority ranking assigned to the 'Issues'**
- **Identification of converging and diverging interests among stakeholders**

Expected Results
- **'Problem Statement' for Melian Basin**

Result of the First Roundtable

The Problem Statement

The water supply in the Melian basin is strongly dependent on the importation of water from outside the basin

Rainfall is very low, 450mm per year

Groundwater overexploitation reaches 150%

Management of the water resources is very complicated because it depends on many actors

Untreated wastewater from outside the basin is discharged into the Melian basin, exacerbating the pollution problems in the Gulf of Tunis

Fig. 2 Structure and outcome of First Roundtable, Tunis Workshop, 3 May 2006

Second Roundtable

SAGE Stage 2 Diagnosis of the Water Resources

Objective

- **Establish conceptual model of the Melian Basin**

Tasks completed to date

- **Topological model of the basin proposed by CNT**
- **Sectoral water demand**
- **Criteria and parameters assigned to nodes and reaches**

Further action required

- **Critical review of the current model outputs**

Expected Results

- **Accepted conceptual model for the Melian Basin**

Result of the Second Roundtable

1) Critical review at the level of the entire basin

Indicators	**Model Output**	**Reality**
Overall Supply/Demand Ratio	= 98.4 %	110-130 %
Reliability of Supply	= 73.7 %	100 %
Days with flooding	0 days	0 days

2) Critical review of Sectoral Demand

	Supply/demand (%)		**Reliability (%)**	
	Model	**Reality**	**Model**	**Reality**
Municipal	96.69	100	59.18	100 %
~~Touristic~~	~~97.86~~		~~70.41~~	
Agricultural	99.76	80	98.36	80 – 100 %
Industrial	92.83	100	66.85	100 %
Total	98.42		73.70	

Fig. 3 Structure and outcome of Second Roundtable, Tunis Workshop, 3 May 2006

Third Roundtable

SAGE Stage 3 Alternative water management scenarios

Objective

- **Compare performance of baseline scenario for the Melian basin with alternative scenarios**

Tasks completed to date

- **Performance of baseline scenario (proposed by CNT)**

Further action required

- **Implement outcome of Roundtable 2 discussions**
- **Define alternative scenarios**

Expected Results

- **Expectations of stakeholders on the desired performance of the Melian 'system' are translated in:**
  a) **Maximum or minimum values assigned to a set of 'performance indicators'**
  b) **Costs and benefits of new measures to achieve the desired performance levels**

Result of the Third Roundtable

Alternative Scenarios

<u>Desirable Performance at Basin / Sector / Node Level</u>

Reduce the dependency of the Melian Basin on importation of water, particularly for the agricultural sector

Increase the available water resources from within the basin, given that an estimated 15 million m3 of surface water is not currently exploited

Ensure the sustainable exploitation of the groundwater resources

<u>New measures / initiatives</u>

Artificial recharge of the groundwater with the surface water that is collected in existing hillside lakes ('lacs collinaires')

Construction of a new Treatment Plant (STEP)

Fig. 4 Structure and outcome of Third Roundtable, Tunis Workshop, 3 May 2006

5.2 Wadi Zeimar/Nahal Alexander Case Study: Emek Hefer and Tulkarem Workshops, 5 and 7 December 2006

Employing the same approach that was adopted in the Tunis Workshop was at no time considered to offer a viable option in the Zeimar/Alexander Transboundary Case Study. Prevailing conditions dictated that to meet with all stakeholders, two separate workshops would have to be organized. The very active consultations between IPCRI and IRMCo on how best to proceed did seem to give rise to a rather insurmountable list of challenges which would have to be addressed. Then a suggestion came from outside the consortium. Dr. Anne Osann, from the Universidad de Castilla La Mancha (UCLM) in Spain, provided the idea to focus on role playing. Put into practice, stakeholders would be asked to seek answers on how to address the water issues in the river basin from 3 distinct viewpoints: a) as a stakeholder living downstream, b) as a stakeholder living upstream, and c) as a stakeholder responsible for the management of the entire basin.

The third viewpoint was linked directly to the EU Water Framework Directive, which considers the river basin as the unit for all water management and planning actions, independently of political and administrative limits**.** Also, the research focus on water quality aspects in the Zeimar/Alexcander case study could be linked to the specific goal of the WFD "to prevent deterioration, and to achieve 'good' status in all waters by 2015".

The purpose of collecting respectively the downstream/upstream viewpoints was placed in the context of benefit sharing in transboundary river basins as promoted among other by a high level panel of experts at the Stockholm World Water Week during August 2006. In its conclusions the panel called for more systematic approaches on the ground which would bring about a deeper understanding of how benefit sharing could be promoted.

The now remaining challenge was to find a practical example which would help to illustrate the rationale of benefit sharing in a transboundary basin. This resulted in the selection of the Environmental Programme for the Danube River Basin. Lead questions for the discussion with stakeholder were prepared in relation to a series of statements which broadly described and followed the successive stages which eventually led to the development of the Danube Initiative. This served to illustrate how the effective implementation could be achieved only through the active cooperation of all stakeholders, big and small and women endusers, and the wider public in general.

The same format of presentations and lead questions were employed in both workshops, and in both workshops, stakeholders were found keen to give their views on desired future scenarios of the river basin which would lead to benefit sharing for both communities. IPCRI, as the research team for the Zeimar/Alexander river basin prepared a series of visual aids which illustrated the potential impact of a preliminary set of alternatives which had been studied in detail prior to the workshop. This preliminary set of alternatives is provided in Figure 5 together with the conclusions that resulted from both workshops.

Alternative Scenarios prepared by IPCRI Research Team prior both Workshops

Upstream scenarios

1. **Water treatment facility for Wadi Zeimar is expanded in order to treat the olive waste as well**
2. **Wadi Zeimar water is treated for use in agriculture**
3. **Both runoff and treated wastewater are used in agriculture**

Downstream scenarios

1. **Improved water treatment at Turtle Bridge**
2. **Water use alternatives: Agriculture – Nature**

River Basin Scenarios

6 alternative combinations of upstream/downstream scenarios

Consensus which emerged from both workshops:

- **due to the severe pollution in the river, there are major health issues which are affecting both upstream and downstream inhabitants**
- **it is necessary to find solutions for the benefit of both communities**
- **agreement to assess the alternative scenarios proposed by IPCRI's researchers in the context of benefit sharing**
- **Only an integrated management approach will lead to effective benefit sharing between both communities. Any alternative senarios should focus on the river basin as a whole**

Specific feedback on alternative scenarios proposed by IPCRI

- **Stakeholders urged for action plans that would bring tangible results in the short-term. It was augured that priority attention should be given to an educational awareness programme, advising the general public on the causal link between the pollution in the river and the health problems that are being witnessed.**
- **Reservations were expressed to what extent currently available water treatment technologies can deal with olive waste. Instead, it was augured that this type of pollution should be tackled directly at source. an essential part of the solution would be to adopt modern technologies for olive pressing which would significantly reduce the amount of water that is currently used.**
- **A technological solution should be considered in which no wastewater is allowed to be discharged into the river, but piped to one or more treatment plants. It was augured that only in this scenario, the Zeimar/Alexander river would be effectively 'restored' to its original characteristics as an intermittent river.**

Fig. 5 Consensus based on benefit sharing: conclusions from the Emek Hefer and Tulkarem Workshops, 5-7 December 2006

6. Planning for a future dissemination strategy

The Malta Regional Workshop provided the opportunity to conduct a final review of the dissemination activities not only with all the research teams within OPTIMA, but also with the representatives of some of the major stakeholders in the respective case studies. Inviting these stakeholders to suggest how a future dissemination strategy could further improve on the results that were achieved featured among the specific objectives of the roundtable sessions organized during the workshop.

In preparation for these discussions, IRMCo compiled some preliminary considerations, which drew mainly from two sources: the report 'A Critical Review' of EU-INCO water research from FP4 to FP6 (1994-2006) and the 'Guide Methodologique' to the 'Schema d'Amenagement et de Gestion des Eaux', issued by the French Ministry for the Environment in October 1992. The INCO Critical Review provides a comprehensive review of criteria and factors which were used to analyse the effectiveness of communicating research results and the impact of research including gender across water projects sponsored under the INCO programme since 1994. The methodological guidebook on SAGE provides a comprehensive list of means and tools which can be deployed to guide a structured dialogue with stakeholders.

In addition, IRMCo invited speakers to present a select number of topics which were deemed of particular importance in the discussions on a future dissemination strategy. These included legislative, socio-economic and gender aspects.

Making explicit reference to the requirement by the European Commission for each of the research teams to draw up a post-OPTIMA dissemination plan demonstrated that any future dissemination was not just desirable, but in reality also a contractual obligation. At the same, it was augured that the discussion would guide towards a set shared, common objectives across the research teams. In SAGE, 'collective objectives' are formulated and illustrated through the use of several indicators, which can be quantitative or qualitative. Generally, these indicators are defined around three inter-related themes: 1) resource conservation, 2) resource use optimization and 3) land use planning. It was deemed appropriate to link this wider set of indicators to the INCO Review recommendation to look at the 'problemshed' beyond the watershed.

It is particularly worthwhile to note that in response to these observations, stakeholders participating in the regional workshop expressed the opinion that the OPTIMA research teams (continue to) carry an obligation towards their respective stakeholders to show them the results obtained in order to acknowledge their active involvement and contributions to the research that was carried out. Stakeholders also recommended presentations be made at national and regional events that are being organized to stimulate a debate on the sustainable management of the environment in the region. In relation to gender mainstreaming, the consensus emerged that the issue at stake is whether the views of 50% of the population have been considered.

A further recommendation from the INCO Review is for research projects to go beyond the 'collection of information' on stakeholders. In this regard, SAGE specifically introduces a diagnosis not just of the physical state of the water resources, but also of the 'stakeholders'. It was demonstrated how the latter type of diagnosis is

carried out by means of two matrices. In a first matrix, the actions of one group of stakeholders is assessed in relation to those of another group, with the possible outcome ranging from (strong) synergy, neutral to (strong) conflict. Then, in a second matrix the impact of the 'actions' or 'interests' of each category or group of stakeholders on the water resources is assessed qualitatively, advising whether these represent an attitude of conservation or one of aggression towards the water resources.

Stakeholders at the Regional Workshop agreed that even in those case studies where no a priori conflict was registered, participatory involvement is a good way to avoid such conflict among stakeholders in future. In line with the recommendations from the INCO Review to focus dissemination on similar or comparable issues, stakeholders considered that a future dissemination strategy should feature especially the results of the comparative analysis between the respective case studies.

IRMCo (WP16 – Leader)

30 June 2007