

## *Stakeholder dialogue and participatory planning in the water sector of Balqa Governorate, Jordan*

Fadi Shraideh, Rania Alzoubi, Mufleh Abaddi and Fidaa Haddad  
EMPOWERS Team, Jordan

### **Abstract**

EMPOWERS stands for "Euro – Mediterranean Participatory Water Resources Scenarios". It is a four year project funded by the European Commission and Care International and implemented by national and regional partners in three MEDA zone countries: Egypt, West Bank & Gaza and Jordan. It aims to improve rights and long-term access to water by underprivileged populations through participatory water governance within each country<sup>57</sup>.

In Jordan the project is focusing on local water resources management in Balqa Governorate. EMPOWERS overall objective is to improve long - term access to water and especially to underprivileged populations at the local level. It aims to achieve this through more effective local integrated water resource management. The project is developing approaches for stakeholder dialogue and participatory planning of water projects at the Governorate and community levels. It is doing so by involving all relevant stakeholders from end-users in communities to national and governorate levels.

The EMPOWERS project in the last two years concentrated on establishing different platforms for communication and concerted action at all levels; national, governorate and local communities, using a range of different activities and methods. This paper describes the methodologies developed in the last two years and the results achieved in developing long-term visions, strategies and projects for the Governorate of Balqa and the three pilot villages in which the project is working. The paper will focus in particular on the village of Um Ayyash village, a small village in the Jordan valley and on presenting progress and experiences to date in Um Ayash, as well as the main strengths and weaknesses of the approaches used..

### **Background**

Jordan is a small, lower middle-income, country with per capita income of about \$1,700, and a young population of about 5 million (increasing by about 2.8 percent per annum), seventy percent of whom are below the age of 30. About 78.7% of the population lives in urban areas, primarily in the four governorates of Amman, Irbid, Zarqa and Balqa\*.

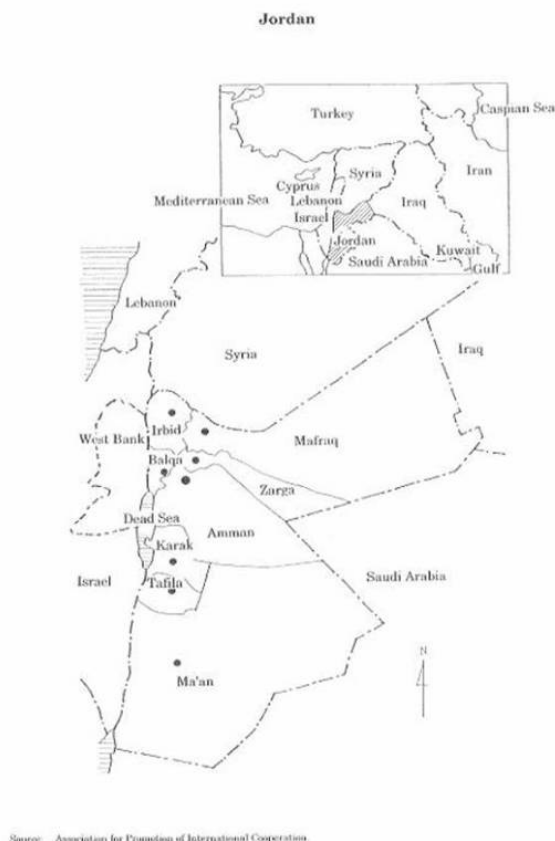
The Jordanian climate is semi-arid. Rainfall ranges between 50 mm in the desert region to about 600mm in the eastern mountains adjacent to the Jordan valley. The total rain fall in Jordan is estimated at 8.5 billion cubic meters, of which about 85% is lost to evaporation with the remainder flowing into wadis and partially infiltrating into deep aquifers.

The expanding population and the climatic and topographical conditions of the country have caused enormous pressure on the limited water resources and created a severe water supply-demand imbalance. Renewable water resources are among the lowest in the world. Resources are already seriously limited and are far below the threshold for water stress of 1000 m<sup>3</sup> per capita. Per capita annual water from renewable sources is projected to drop from 160 m<sup>3</sup> /capita/year in 1998 to 91 m<sup>3</sup> /capita/year by the year 2025, by which time if current growth is maintained the population will reach 10 millions.

---

<sup>57</sup> See EMPOWERS working paper 1, Peter Laban,

**Figure 1: Jordan**



In addition to the already mentioned problem of the widening gap between supply and demand are: the high rate of leakage (estimated at 50% of the supply) from old and poorly maintained networks; overexploitation of groundwater; difficulties in delivering water to rural areas; unhelpful topography, and having to rely on shared water with neighboring countries.

To face these challenges Jordan has worked on several strategies, the most important of which is water resources management; by which the country seeks to preserve water from contamination, low quality and overexploitation, and to attain optimal water usage.

Here lies the significance of EMPOWERS Partnership as a way to improve water management in cooperation with stakeholders and especially end-users.

## The EMPOWERS Program

EMPOWERS is a four year regional program for local water management in Egypt, Jordan and Palestine. It is the ambition of the EMPOWERS Partnership to improve long-term access and rights to water by underprivileged populations, through a process of participatory water governance. This process will be based on the application of the principles of Integrated Water Resource Management (IWRM) to the planning and development of water resources and water services. While current approaches to IWRM tend to focus attention on larger geographic units (river basins, major watersheds) and higher levels of policy and planning (national, governorate), EMPOWERS will shift such attention to the meso and local level (governorates, districts, local communities and end-users). Nevertheless, while focusing at these lower levels, EMPOWERS will ensure the relevance of local IWRM activities to national policy formulation. EMPOWERS also has a regional role of disseminating information that relates to local water governance via a web-site, newsletters, exchange visits and regional events.

One of the core assumptions of the EMPOWERS programme (CARE UK/EC, 2002) is that stakeholder involvement - particularly at the intermediate and local levels - leads to improved use and

management of water resources. Improved management implies taking better account of users needs and engenders collective responsibility for interventions in the water sector.

To this end, the project is developing a participatory planning cycle for Integrated Water Resource Management (IWRM). This cycle builds on the identification of water-related problems and the development of area specific long-term visions and strategies for water resource development. This strategizing process is supported by the collection and analysis of relevant information on water resources, infrastructure, actors, demand and access and the validation of this information in semi-quantitative Bayesian Networks (computer software).

The aim of this planning cycle is to support stakeholders at local and intermediate levels in making the technical and political decisions to develop and manage their water resources. It is this larger process of participatory analysis, visioning, scenario building and strategic planning that is the real heart of EMPOWERS. The result will be the development of practical tools and gaining experience in planning for integrated water resource management (IWRM) at the local level.<sup>58</sup>

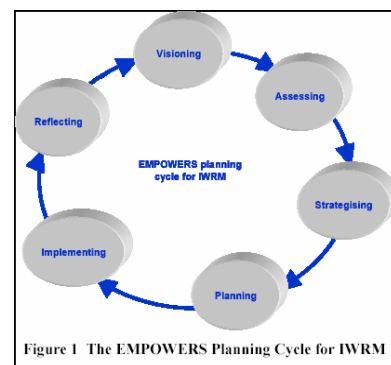


Figure 1 The EMPOWERS Planning Cycle for IWRM

## EMPOWERS in Jordan

Water is a scarce and precious resource that is of vital importance to the continued socio-economic development of Jordan. It requires careful planning based on long-term data about both available water resources (surface water, groundwater including the deep aquifers, brackish water and appropriately treated wastewater) and demand for water and water based services. Limited available water resources must be used in an equitable way, taking into consideration various water rights, priority for reasonable domestic use, established socio-economic development and other uses such as agriculture, industry and tourism.

In Jordan, EMPOWERS is implemented in Al-Balqa Governorate, one of the major governorates in the northwest of Jordan. It is a governorate whose area covers 1.119 km<sup>2</sup>, and has a population of 340,000 persons (2004) with a density of 320 person/km<sup>2</sup>. Geographically, Al-Balqa can be divided into two main areas:

- Mountains, where annual rainfall ranges from 500 to 600 mm.
- Jordan Valley which contains the lowest point on earth, the Dead Sea. With an annual rainfall average that does not exceed 200 mm<sup>59</sup>.

During its first phase of activity EMPOWERS worked the development of communication platforms to bring together all water stakeholders, at all levels, in order to create a basis for dialogue and sharing experiences and to move towards concerted action in solving problems and future collective planning. The first activity that the EMPOWERS team in Jordan undertook to establish the communication platform was to identify the various stakeholders at the different administrative levels, and to analyze their roles using stakeholders analysis tools.

The Stakeholder analysis was used to:

- Identify and define the characteristics of key stakeholders.
- Draw out the interests of stakeholders in relation to the problems that the project is seeking to address (at the identification stage) or the purpose of the project (once it has started).
- Identify conflicts of interests between stakeholders, to help manage such relationships during the course of the project.

<sup>58</sup> EMPOWERS Working paper no. 1, version 2, by Peter Laban, Patrick Moriarty

<sup>59</sup> Ministry of Water and Irrigation report - Jordan, 2003

- Help to identify relations between stakeholders that may enable "coalitions" of project sponsorship, ownership and cooperation.
- Assess the capacity of different stakeholders and stakeholder groups to participate.
- Help to assess the appropriate type of participation by different stakeholders, at successive stages of the project cycle, e.g. inform, consult, partnership -- all of these have different possible models.

A brainstorming session was conducted in cooperation with key water related institutions (Ministry of Water and Irrigation, Ministry of Agriculture) and the Ministry of Social Development the legal host for Care International's Jordan office, in order to identify an initial Stakeholder checklist to the project. This initial consultation was based around questions such as:

1. What are the principal national power structures involved in water resources and water services (including decision maker, landowners, level of administration, centralization & decentralization, human rights, gender, ...)
2. Who is interested in EMPWOERS success?
3. What is the relationship between the government and: farmer organization, donors, social movement, end users....?

A number of parties were identified then as national stakeholders, and a first list developed, including:

- Different Ministries concerned in water issues such as the Ministries of Water and Irrigation, Agriculture and Environment.
- Ministries concerned with social development and social welfare such as Ministries of Social Development, Health, and Interior Affairs.
- National GO's and NGO's including: Jordan Cooperative Corporation, Royal Scientific Society, Jordan Environment Society, The Jordanian Hashemite Fund for Human Development (JOHUD), Jordanian National forum for the Women, Farmers Union.
- Local communities and End users; Communities (V.S. - C.S. - Tribal Groups); Local water users, Large farmers.
- Studies and research centers such as; Water and Environment Research & Study Center, University of Jordan,
- Donors, USAID, AED, GTZ, EU and other donors

The next step in the analysis was the Assessment of the Stakeholders importance according to their influence on EMPOWERS project in Jordan and its impact on them at the national and governorate levels. Stakeholders were divided into: Key Stakeholders (Prime actors) and Stakeholders (low influence, mid influence) depending on such questions as:

- Who are the most interested in the project?
- What are their responsibilities & commitments concerning the project?
- What are their expectations, benefits from the project?
- Who are the key actors of the project?

The selected list of key stakeholders were; the Ministries of Water and Irrigation, Social Development, Interior Affairs\ the Balqa Governorate, Agriculture, Health, Environment.

## **Framework for Cooperation between Stakeholders**

Representation of key stakeholders was sought (and obtained) at national and governorate level and, also included end-users. Separate platforms for representation were created at three main levels (National, Governorate, Local) to provide a clear framework for cooperation and coordination among various stakeholders. For each platform representatives of each stakeholder were nominated in order to assume a role in the implementation of the project.

The different platforms created in Jordan were: at the national level (project steering committee), at governorate level (the current executive council of the governorate, and a pilot projects steering committee) and at local communities level (water resources management committees in each targeted community).

## Creating a national level communication platform

### **The Steering committee:**

Based on the stakeholder analysis the steering committee was formulated from representatives of key stakeholders. The Head of the steering committee is a current member of parliament (head of the water committee at the parliament) and a former minister of agriculture. The committee also includes the general secretaries of the key stakeholders, representatives from the Prime Ministry, other related ministries, other water projects in Jordan and the sponsors of the EMPOWERS Project.

### **The main objectives of the steering committee are:**

- Guidance and supervision of EMPOWERS Project activities
- Provision of required resources to facilitate project progress
- Monitoring the achievement and progress of project objectives
- Providing technical assistance and guidance for the project team
- Establishing an efficient network for project implementation
- Setting efficient system for knowledge exposure and transfer

Different meetings have been held by the committee to follow the progress of the project and to have a base for discussions, to present different perspectives and opinions of all stakeholders concerned in the project. For example, the second meeting of the steering committee was to approve the choice of pilot projects identified as part of the wider EMPOWERS process in the targeted villages. Local community members presented their work in the project to the committee and their justifications for the pilots. The meeting was a great opportunity for both sides as the local communities' members had the chance to explain their view points and problems to the authorities and the officials had the opportunity to listen and understand the communities' needs in a better way. There was a noticeable break down of traditional barriers and people talked freely to each other, leading both sides to understand each other a little more and open links between them.

## Creating a governorate level communication platform

The Ministry of Interior (Balqa Governorate) showed high interest in EMPOWERS from the start, and proposed to host the project in its building. This was suggested by the Governor in several meetings. From the technical implementation point of view it is indeed relevant to be next to MOI and this will facilitate the coordination of the project field activities\*.

Stakeholder analysis at the governorate level was developed through participation in the governorate executive council meetings – which consists of the head of various departments in the governorate and districts rulers - under the patronage of Balqa's governor. In these meetings the participants set criteria for selecting the villages for developing the EMPOWERS methodology. They also carried out a problem tree analysis for the governorate from which they came up with a check list of primary and secondary data required for further analysis.

### **Village Selection Criterion**

- Problems representing village
- Low and high areas
- Population has agricultural lands
- Population between 2000—5000
- Available water resources
- Poverty
- There is no other projects working in the area

Stakeholders at the governorate level have taken quite a degree of ownership of project activities and took the responsibility of assuring the achievement of objectives and impact. In addition they have initiated channels of communication and interaction among all concerned parties, including the overall community of governmental and non-governmental organizations. A solid working relation between the stakeholders within the general project framework is a key factor for the good and smooth implementation of the project and it will ensure the sustainability of the project. The key stakeholders at the governorate level, in addition to representatives from the selected communities, have been

---

\* Report of the Jordan Country Partnership, EMPOWERS project, Jordan, Fadi Shraideh, 2003 - 2004

provided with short trainings and support in order to build their capacity. In short, the EMPOWERS Project has given considerable importance and time to getting the key stakeholders and their local offices involved in the project implementation\* .

The team (the project coordinators and representative from the stakeholders) organized a field visits to a twenty villages in the governorate to collect information regarding the selection criterion. Data were classified and analyzed in cooperation with key stakeholders. Three villages were selected based on analysis from the results of PRAs: Subeihi (highland), Um Ayash (lowland) and Rweiha (lowland) villages.

The main difficulty that faced the project in the field was the low level of trust and confidence towards each other of both governmental officials and the local community. On the one hand, the local community member have the classical stereotype image of government officials as people who work solely from behind their desks and are concerned only with finalizing their paperwork and reports, and have no interest in referring to the community while supposedly planning for their needs. On the other hand, governmental officials see the local community members as passive recipients of government plans and have low confidence in the local communities' capabilities to handle their village's problems along with them. Another obstacle is that the two parties didn't have any sense of ownership or responsibility for preserving local water resources, as they see this as the responsibility of the government, who are also responsible for providing them with water services. This situation has been significantly changed during the project process, where different activities and meeting that gathered both parties provide a good opportunity for both sides to deal directly with each other and get a better understanding of one another's capacities and responsibilities. In the second cycle of the project more people will be involved and the process will be easier and more comprehensible.

The Project team set up a pilot steering committee at the governorate level to support the implementation of the village level pilot projects and to have the role of monitoring and evaluation of these projects. The committee consists of local stakeholders from Balqa directories and from the local CBO's. This committee is considered a way to assure the sustainability of the pilots and to continue working with the CBO's in the next phase of the EMPOWERS project.

### **Creating a local level communication platform**

At the village level, initial problem analysis was carried out in each village using problem trees, and other PRA tools including mapping and focus group discussions with the villagers, who also participated in surveys, field visits and awareness raising activities. Through participation in the survey of the village's social, economic and livelihood situation and infrastructure characteristics, the villagers became acquainted with the project and its goals as well as a range of issues related to their problems and water situation.

Several committees were formed to operate as a reference and a base for concerted action and planning in the targeted villages. A local water resources management committee was formulated in the three villages; Subeihi, Rweiha and Um Ayyash village. These committees work under the umbrella of a local civil society organization, and required the introduction of a new item to that organization's internal by-laws; making water resources management one of its licensed activities. These committees represent all sectors of local community and consist of seven members – three from the society and four from the local community (paying attention to social differences within the community). The committees are responsible for managing the pilot projects and achieving the overall goals of EMPOWERS. The project team was attentive to gender related issues during the formulation of project teams.

The main purpose of the committees is to develop a sense of responsibility and ownership of the water resources in the village; to be in charge of adopting and promoting the idea and methodologies of the project; and, to provide a link with other local community's members.

---

\* Report of the Jordan Country Partnership, 2003 - 2004

All of the civil society organizations are well informed that the project is for the entire village and that its benefits must be as generalized as possible. They also know that the pilot projects will be owned by the village but under the committees' management and the society's responsibilities, and that the pilots' revenue will be used in other projects for the local communities benefit.

One of Reweiha village member contributed with a room in his house for the establishment of the cooperative society (their pilot project) for free and for a whole year with electricity and water.

Each civil society organizations was obliged to contribute to the project using their own capacity, and committed to this in the memorandums that they signed with the project team.

The idea of the project wasn't popular at the beginning of the project because the local communities – even the government official – are used to the old way of conducting development projects. This consists of pre-planning the project by experts and then implementing it without real participation from local community members. The local communities, especially the marginalized and the poor, are used to having subsidies directly from the government and the donors. The project came as a new and not familiar way of conducting projects, they responded to it with reservation, waiting to see where it would lead. As some local community members expressed it: "we are not in the position of putting our terms but we will work with you until we see the results". In the project process they developed a better understanding – as did the EMPOWERS team - of the way the project works. They are starting to see benefits other than having fast and tangible returns, particularly in the new relations with officials, and in the ability to start to think differently about their situation.

## **Developing visions, scenarios and strategies with stakeholders**

At various meetings and workshops visions were developed for both Al Balqa governorate and the three villages'. All these visions were developed and agreed upon by all relevant stakeholders (governorate employees, villagers) and were modified to be SMART (specific, Measurable, Acceptable/achievable, Realistic and Time-bound). The village's visions took in account water users and uses (domestic, sanitation, irrigation). The Governorate vision tried to meet the needs of different users at the governorate level. (for more detail about the methodologies discussed in this section, see EMPOWERS working paper 4)

Four possible scenarios were developed using for each vision, based on identification of the factors that affect achieving the vision, ranked according to their relative importance and likelihood of outcome. Based on the situation described in each scenario, strategies for achieving the vision were developed. Villages and governorate visions, narrative scenarios and strategies were then tested using Bayesian Networks (a computer based decision support tool), which brought together information from the initial problem trees developed with the stakeholders, and the information collected and analyzed subsequently. This step allowed the underlying logic of scenario/strategy combinations to be tested, and additional data needs to be identified. Testing initial scenarios and strategies with BNs was an important step as it allowed the visions, scenarios and strategies to be made more developed and detailed.

Visions, scenarios and strategies were finalized through feedback from the stakeholders (villagers and governorate officials), with all stakeholders being involved in all steps (with the exception of mathematical modeling using Bayesian Networks – in which only senior staff were involved). All the narrative scenarios developed describe a possible future situation in 2007 for villages and in 2020 for governorate

In the stage of strategic planning, a common understanding and agreement was established between all stakeholders at the villages level – including Water Resources Management Committee – concerning the essential problems that need solutions.

Also during the process, the roles of the stakeholders in the implementation were specified, and made compatible with the national strategies. Then, a pilot project was selected for each community in a manner that achieves part of the visions and in order to train stakeholders on making action plans.

## **Sustainability**

To ensure the sustainability of the project and enhance participatory interaction, a cooperation memorandum was signed between EMPOWERS Partnership and the Ministry of Agriculture, through which the latter became the project's technical coordinator.

Two water engineers were assigned to work with the project (one for a full time and the second upon request). Their duties are to support the work of the EMPOWERS project especially in the technical issues and facilitate the work with the ministry.

Stakeholders were encouraged to participate in order to acquire a sense of ownership to the process. This was done by building their capacity in water resources assessment, and introducing them to the Project's methodologies and tools; such as (stakeholder analysis, PRA, Problem tree analysis, stakeholders' analysis, water resources assessment, scenario and strategy building) and familiarizing with them, The active participation in all the events of the Project and learning from the mistakes during the Project's life.

A key issue here, that made the project more complex and hard to handle, is the different roles that the project plays: learning process facilitator, leading planning, implementation (four pilot projects), monitoring and evaluation and starting the new management cycle of the project. This situation creates an overload on the project staff especially with the coming three additional pilot projects. The approach adopted by the project team (of four full-time and one part-time professional) was to distribute the work in a way that everyone took responsibility for specific roles, and use was made of key stakeholders representatives, especially in the fields of the awareness and training programs and in the monitoring and evaluation process (from planning till reporting). This involvement also raised their sense of ownership and their belief in the project, although it the degree to which this was felt depended largely on the different interests they had in the project.

In such a project the people involved people, especially the core team, required a long time to develop a common understanding and shared visualization of the process – there are still differences in the perception of each member about the project. But it is hoped that with further discussions and dialogue these differences will reduce.

## **Identifying an institutional hosting for the methodologies developed**

During the first phase of project implementation, the need for facilitation skills among the country team was addressed. Facilitation skills are important both for the project team and for the stakeholders themselves, as they will use them in the process of conveying the ideas and methodologies of the programme to their colleagues and as part of the whole process of sharing knowledge and experience in the field of integrated water management.

An institution was identified to take the role of developing the skills of the staff and key stakeholders representatives and, critically, also as the party who will adopt the tools and methodologies of the project after the project ends. This institution is to be the new partner of EMPOWERS programme in Jordan; The Queen Zein Al Sharaf institution for development (ZENID) is a well known institution in the Middle East region that has carried out many successful project concerning development issues and human rights.





## Case study:

### Background information

Um Ayash village is located 10 km in the north of Dier Alla province in the Jordan valley. The village has an area that doesn't exceed 2 km<sup>2</sup>. The area is characterized as being part of the Ghour where average annual rainfall is about 177 mm. The village is divided into lower and higher areas

Um Ayash's inhabitants are considered to be among the poorest groups in the Jordan valley. Some of the families don't send their children schools. Most women in the village are uneducated and illiterate, although most of the families (research sample) depend

on the income that the women provide through their daily paid work in the field.

### EMPOWERS Programme

After selecting the village, a stakeholder analysis at the local level was conducted in cooperation with some of the villagers and officials from the area. Through that analysis the villagers developed a better idea of the roles and services of various governmental departments especially those related to water issues. This knowledge established a good basis for planning. Consequently, a local cooperative society was selected to be the legal umbrella for the pilot projects in the village.

One of the officials in the Water Authority stated that it was the first time for him to visit the village despite being located within his work domain during his 20 years of service in the Authority. It was a new experience for him to deal directly with the public and to have a good look at the problems in the real life.

The Um Ayash Women Cooperative Society was one of the local community development organizations that was chosen to be the legal umbrella for the work in the village. As this was a women's society, the project team sought to encourage men to work with the women as partners and to convince them of the importance of participation and interaction in decision making. Four women were chosen from the society (by the board of directors) and three men from the local community to be in the committee. Because most of the villages are from two tribes – one is dominant - it was difficult to keep the balance between the members so the team increased the members' number from 7 to 9 to include members from the marginalized and less privileged villagers.

A problem tree analysis was conducted in cooperation with Um Ayash cooperative society by various stakeholders and local community members. Based on the underlying problems identified in the problem tree analysis a PRA was held in each village.

In the PRA Villagers were included in all steps especially in drawing their village's map and showing: services provided, social and economical classification throughout the village; location of local water resources. This tool helped the governmental officials to have a realistic and on the ground view of their work domain; and where some of the villagers problems had been solved immediately.

Through PRA there was a familiarity with several high poverty cases that need to aid from the National Aid Fund. The official from the Ministry of Social Affairs participating in the survey helped some of the poor families whose living standards comply with aid requirements to have a monthly aid and personally followed up their cases.

On the other hand, the awareness and training programs make the villagers more conscious of the particularities of their situation and thus able to determine the priorities in their water problems.

The participation of the Prime Ministry representative, Mr. Mahmoud Wreikat, in conducting a training workshop on management and development had a big influence on the participants (water committees of the three villages) and increased their sense of the importance of the subject and the seriousness of the governmental parties in working with them. This participation had an impact on Mr. Wreikat himself as he became more aware of the water situation, touched upon the villagers' problems and got comprehensive, firsthand information.

Through different workshops, meetings and other experience exchange activities carried out at all levels, a process of building the capacity of the water resources management committees has been started. This capacity building revolves around strategic planning, management and communication skills. It has led to strengthened communication channels among the citizens of the village, among the citizens of the project's target villages in general, between villagers and government officials and at the national level, and with the steering committee members horizontally and vertically.

A wide arena was made available for dialogue and discussions about the issues that concern the citizens. It was a platform that provided national level decision makers with a more profound understanding of the local

problems and their dimensions.

In those meetings it was noted that the barriers between the citizens and the officials at all levels started to disintegrate. One could also see the growing aptitude of local community members for communication and discussions with the officials and to present their opinions and problems freely and candidly.

The social structure of the Jordanian communities is based largely on tribal background. The role of 'minor' families, women and youth role in decision making process is marginalized and their opinion is not taken into account. The heads of the big families are the ones who are responsible for decision making concerning the village and their tribes. This way of life also respects the independent and self-reliant people who have proved themselves and acknowledges them as equals; even poor people and women. Our role in the project is to empower these marginalized groups in order to claim their rights to participation in a way that don't contradict with local customs and habits. It is not an easy situation and needs patience and respect especially when dealing with women.

The participation of the underprivileged in the targeted communities was very positive during various meetings and the gap between the members of the water resources committee was tackled as there was a common feeling developed about the importance of improving the villages conditions.

One of the committee's members (Othman) declared: "We have gone beyond our differences as individuals in the favor of the village's common interest.

## References:

EMPOWERS working paper No.1 Overall Vision and Approach of EMPOWERS for IWRM Planning, Peter Laban

EMPOWERS working paper No.3 The EMPOWERS participatory Planning Cycle for integrated water resource management ).....Patrick moriarty , Charles Batchelor

EMPOWERS working paper No. 4 -

EMPOWERS working paper No.5 ( Using water Resources Assessment with the EMPOWERS IWRM planning cycle ).....Charles Batchelor, Patric Moriarty

Ministry of water and irrigation report 2003

Ministry of Agriculture strategy

All working papers are available for download at [www.empowers.info](http://www.empowers.info)