

Source to Tap: Community Involvement in Source Water Quality Protection in Jordan

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Abstract

This paper addresses the community involvement aspects of a USAID-funded program for watershed protection, for which Camp Dresser & McKee International Inc. (CDM) is providing technical assistance to the Water Authority of Jordan (WAJ) and the Ministry of Health (MOH), and which has a global objective to protect and improve water quality at sources, safeguard infrastructure investments and protect public health.

Tracing public involvement in one particular source water protection case study, this paper describes how the community was successfully engaged in problem analysis and resolution, as well as in galvanizing governmental action to protect basic needs for clean, safe drinking water. In our paper, we illustrate an integrated water resources management picture that subverts an old development paradigm—that the “community” in the developing world is a passive recipient of governmental dysfunction. In this optimistic case study, the community uses its own, distinct voice—through the media and by way of direct action—to catalyze the motion of the local government.

We demonstrate that there were few remarkable circumstances in the watershed that fostered this unique success story. A mix of rural, peri-urban, and dense urban areas, the community of 35,000+ who reside in the watershed is diverse, with socioeconomic status ranging from average to poor. Yet this case study is characterized by the fact that ordinary people reacted with common sense in their best interests, making this approach uniquely simple, with possibilities for replication of this approach elsewhere in Jordan and in countries with similar characteristics.

A. Background on the USAID-Funded Jordan Water Quality Management Project (JWQMP)

A1. Project Overview

By 1997, the Water Authority of Jordan (WAJ) realized that water quality at several wells and springs was deteriorating so that simple disinfection was no longer adequate for public health protection. An approach was initiated involving protecting these sources to prevent further deterioration and implementing treatment to treat the water

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to appropriate, well-defined standards. WAJ focused most of its efforts on treatment facilities, and the U.S. Agency for International Development (USAID) with CDM designed and constructed treatment facilities at six sites at a cost of over US\$23 million. The second, and harder to achieve approach toward protecting water sources in order to prevent deterioration, was designed by USAID and implemented by CDM in 2001.

The smooth operation and delivery of safe water to the public was then hampered by changes in regulatory guidelines that sometimes resulted in plants being shut down. USAID established a progressive, rational plan of action for future assistance, based on the concept of watershed management.

Historically in Jordan and throughout the region, unregulated activities result in increasing groundwater pollution and a growing population demands increasing quantities of high-quality drinking water. Further, water scarcity forces abstraction of drinking water from potentially risky sources. Deteriorating source water quality demands sophisticated treatment technology, and donor agencies are compelled to respond to the urgent need. However, high technology imported into an uncoordinated and over-conservative regulatory framework can provide a false sense of security, rather than safeguard public health.

A review of Jordan's water resources context revealed weaknesses in several areas, including the following:

- Groundwater under the influence of surface water formed a large proportion of drinking water supplies. Available data showed source water quality deteriorating. Furthermore, lack of sufficient data precluded positive determination regarding many water quality parameters. The introduction of a source protection program was determined to be urgently needed.
- Monitoring of the total water cycle was under the jurisdiction of the WAJ Central Laboratory and the Ministry of Health (MOH) Environmental Health Directorate (EHD) laboratory. This data was often in conflict due to the lack of a systematic approach. It was determined that improvement could be achieved by implementing an International Organization for Standardization (ISO) 17025 plan. An ISO-accredited laboratory gave both the laboratory staff and management of MOH and WAJ a motivation and a sustainable mechanism to improve practices.
- The Jordanian drinking water regulations development process is under-resourced. No agency has clear mandate, time, and resources to study and legislate the increasingly complex, multidisciplinary problems inherent to integrated water resources management.

A2. Project Description/Background

To date, the JWQMP has been performed in two phases:

2002: Phase I Extensive Strategic Response: Triggered by deteriorating source water quality, plant shutdowns, and regulatory obstacles, this initiative was launched as a

short-term, educational, fact finding, and holistic analysis of the water resources picture, aimed at dealing with weaknesses in the barriers protecting public health.

2003–2005: Phase II Implementing Intensive Solutions: Based on lessons learned during phase I, and considering funding limitations, a set of *priority projects* were selected for intensive implementation during phase II. These priority projects included:

During phase II, the Qairawan watershed was selected to be a pilot project to parallel institutionalization of watershed protection in the WAJ. The Qairawan spring (25m³/hr) was one of the sites where additional treatment was added and is one of the most water-poor governorates of the country.

The overall project approach has included: (1) Developing a comprehensive understanding of the problematic quality of the Qairawan spring and other springs in the watershed; (2) Understanding the practices/activities in the watershed that contribute to water quality problems; (3) Working with community groups to develop applicable solutions that can foster sustainable coexistence of the many human activities within the Qairawan watershed; (4) Identifying solutions based on the contributions of stakeholders; and (5) Soliciting funding and agreeing on cost-sharing mechanisms for implementation of best management practices (BMPs).

The next phase of work, anticipated to begin fall 2005, will involve implementing a participatory Government of Jordan (GOJ), donor/community approach to the BMPs.

B. Community Participation: A Keystone of the Project

Prior to beginning phase II of the program, there was enough background data to indicate that the pollutants of concern at the spring were non-point, and included outflows from the farms and urban settlements in the watershed. This meant the problem was everybody's business, and that finding and implementing successful solutions had to be everybody's business, too.

The needs for and benefits of community participation in addressing a multidisciplinary problem are well known, and community participation techniques are frequently applied to multidisciplinary problems and to help protect natural resources. However, this project was the first time a detailed community participation program has been developed in Jordan for the purpose of source water protection. In other worldwide locations, the community outreach program is an important tool in watershed management planning, as successful application of such a program ensures sustainable application for any designed management plan.

Some of the key reasons for implementing a community participation program include:

- No government, alone, is able to solve problems that depend upon human interaction and human behavior.
- A reciprocal relationship exists between government (the regulator and provider) and people (generators or eliminators of problems, such as pollution).

- People/community organizations can act as pressure groups to bring about desired changes in government practices and in defining priorities that need to be addressed.
- If people are not part of the solution, they may become part of the problem.
- Participation can be enhanced if people recognize the benefits they receive through active participation. These benefits can be tangible (material, physical, financial) and intangible (self esteem, self actualization).

B1. Overall Methodology: Bringing All Stakeholders to the Table and Facilitating Input

The watershed management process involves coordination of a number of governmental and non-governmental groups whose input must be integrated into defining problems and coming up with solutions. Based on preliminary interviews with contacts made in phase I, a list of possible stakeholders was created for the inception workshop. This included the Qairawan Watershed Management Action Committee (the community group formed in phase I), relevant GOJ stakeholder agencies, local non-governmental organizations (NGOs), and other community representatives. Meetings were held with the various groups to introduce the project, hear their interests, and invite their participation in the project as appropriate.

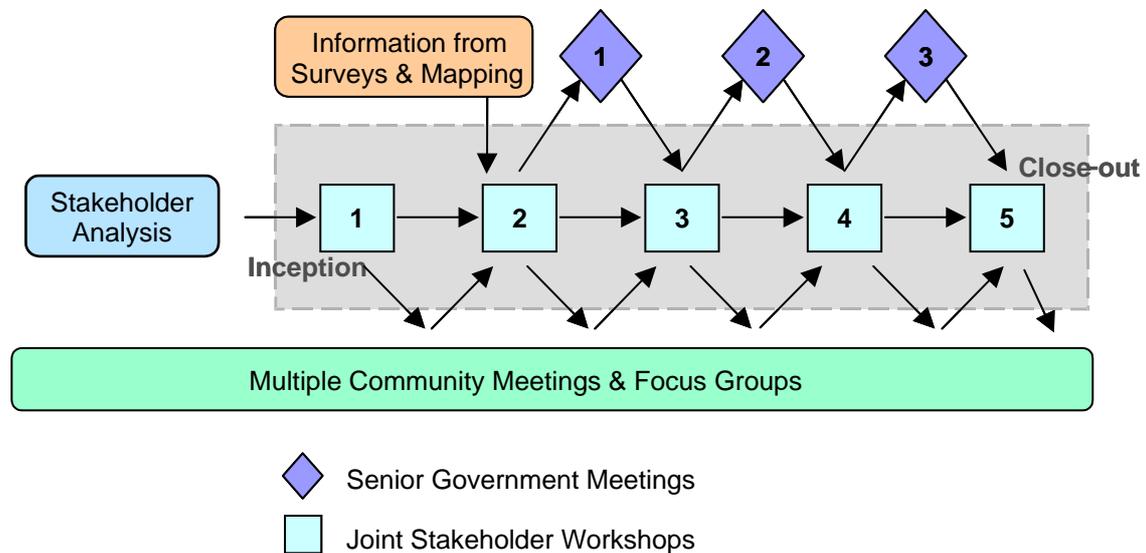


Figure 1: Coordination of Stakeholder Input through Meetings and Workshops

B2. Facilitated Workshops for Joint Stakeholders

The intent of the group was to be as inclusive as possible. **Figure 1** provides a visual description of the structure of stakeholder participation. We invited the participation of a joint stakeholder group to serve as a reference group for initiatives, changes, and primary information about the project and its issues and problems. This group is a cross-section of community leadership at all levels. The workshops were conducted in

Arabic (with English translation as required) and held in Jerash town, to allow for maximum participation of stakeholders. The group served to:

- Describe a common understanding of the purpose of the pilot project;
- Agree on a vision and expectations for the watershed program;
- Identify specific steps to address issues that could hinder the implementation of the project;
- Clarify roles and responsibilities of the various groups implementing the project;
- Agree on a work plans for the first 6-12 months of the project;
- Develop working relationships between the various stakeholders;
- Work toward consensus when joint decisions need to be made based upon the technical data collected in the watershed; and,
- Identify follow-up actions that will be required to successfully implement the program.

At the inception workshop, a group of about 40 people convened, including farmers, community leaders, health officials, municipal officials, business professionals, women's groups, septage truck drivers, environmental NGOs, and representatives of the Ministry of Water and Irrigation/WAJ and USAID. The membership of the joint stakeholder group has evolved with time, with those with the most consistent interest in the project as the principal members of the group. Joint stakeholder meetings/workshops are being held throughout the duration of the project. Joint stakeholder meetings/workshops covered such diverse topics as watershed problems analysis, pollution source identification, agricultural practices, and what to do when incompatible activities are taking place in the watershed.

The project team also set up local committees of stakeholders (called focus groups) to represent potential pollution sources and other potential advocacy groups in the watershed. The main focus groups were: Women, Suf Camp, farmers, septage haulers, and the commercial/services sector. After learning more about the activities in the watershed, stakeholders in the farmer and commercial sector groups were divided into subgroups covering the following interests.

- **Farmer Subgroups**
 - Vegetable and tress farmers
 - Chicken farmers

- **Commercial/Services Sector Subgroups**
 - Vehicle maintenance shops
 - Slaughter houses (chicken and livestock)
 - Olive oil presses, restaurants, and dairy shops

These groups are at the most basic, community level and will meet frequently with the project community facilitators. The focus groups help define the problems they face and work with the community participation team to gather data needed for the project and recommend solutions that are acceptable to the members of the focus group.

B3. The Public Awareness Strategy for Community Participation

An important component of the community participation work plan was the development of a public awareness strategy. The aim of public awareness activities was to provide information, education, and training about sources of groundwater contamination and the range of pollution-generating activities that affect the watershed. In addition, as part of the outreach activities of the focus groups, information and technical advice were shared. The specific aims of the public awareness campaign were to:

- Introduce the concept of watershed protection;
- Provide information on the watershed area; and
- Highlight harmful practices.

Behavior change was *not* a component of this work; rather the aim was to raise awareness about issues to set the stage for further intensive work in subsequent phases. Through the course of the facilitated workshops for joint stakeholders, it became clear that the best and most effective routes for getting out the message were through the Imams (holy men of the mosque) who would reach all male and female adult community members, and the schools, where the messages could be transmitted to the younger generations. Through intensive work with the Imams, and by getting their active buy-in and debate on framing the source protection concept within the religious message, a Friday sermon message was framed. Similarly at the schools, through working with the teachers and the students themselves, messages were created whereby selected groups of students put on plays and held contests to disseminate information to their classmates and at home. The 5-week campaign included:

- 35 Imams each conducting eight Friday sermons (*khutbas*) that reached some 4,000 citizens;
- 17 women lay preachers (*waethat*) conducting 12 religious lessons reaching some 360 women;
- Workshops at 12 schools involving 36 teachers and 768 students;
- The distribution of outreach materials; and
- An ongoing media campaign.

A campaign logo was also developed, which proved to be widely popular with both government and community members, attached as **Figure 2**.



Figure 2: Project Logo

B4. Lessons Learned

A key lesson learned during the performance of the community participation program was that it is crucial to establish trust with the community and build partnerships with all stakeholders. Successful partnerships are those built by helping partners to learn new information together, although specific “relationship-building” workshops do not work as well as interaction on a daily basis. A key strength that donors bring to such programs is the ability to create a “neutral” forum where all stakeholders can communicate. Often this is all that is needed, and, once the forum is created, facilitating interaction flows naturally.

In preparing the public to accept changes, it is critical that information is shared and that stakeholders are contacted at the inception of the program, or even before it begins. The community must be involved in defining the problems and a methodical process for meetings and workshops developed to ensure the engagement of local people throughout the process. Even when stakeholders do not agree with each other or the program's objectives, they must be integrated in the planning process.

The participation of community members of a wide range of backgrounds ensured the success of the project. It helped create awareness and then a demand for improved water supplies. This was most apparent once the BMPs had been defined. Essentially, community motivation was instrumental in getting the government and donors to commit funds toward future phases of the program. In addition, the sharing of technical scientific and engineering concepts was vital toward enabling the community members to feel like they were a real part of the team. The facts that there was investment in a lengthy educational process and that presented technical information was never “dumbed down” or oversimplified was much appreciated by the community.

Despite these positive aspects, any endeavor aimed at changing the way people think about daily activities encounters obstacles that need to be managed. Among the obstacles faced and the subsequent steps taken to overcome them in this project included:

- A lack of trust and unfamiliarity between community and local government officials. *Solution:* By enabling the partners to talk to each other, mutual respect was established.
- Many high-level technocrats and regulators had little or no understanding of critical scientific concepts. *Solution:* A lengthy education process, including scientific debate, was necessary.
- It was difficult to convey the benefits of the watershed program to people with low incomes. *Solution:* Institutionalization of the WAJ financing mechanism for sewer connections went a long way toward building goodwill.
- An adequate water quality database was lacking. *Solution:* An independent sampling program was created to develop this information.
- A new NGO was intended to be established, to be steward of this endeavor in Jerash, but the bureaucratic and legal procedures would have taken over a year. As a next step, we investigated existing NGOs' capacity and found them to be too weak or in an unrelated discipline. *Solution:* Worked at the grass roots-level with small groups of citizens through focus groups and civil society groups like Imams.
- Found it very difficult to find adequately qualified staff to work in the field offices because we were staffing up just after the end of the invasion of Iraq. Many qualified Jordanians were taken up by international NGOs and private firms to staff their efforts in Iraq. *Solution:* Invested a lot of time and effort in developing raw talent.

C. Conclusions

The water quality program in general—and the community participation program in particular—has resulted in many positive, enduring results and impacts, including each of the following:

- Through public participation and awareness-raising, the link between summer water shortages and citizen's household and farming activities has been made. This was the most important milestone of the community outreach activities. Once people realized they had a measure of control over the amount and quality of the supply, it was not as easy to play the 'blame game' on the government. More importantly, the need for citizens to become active stewards of their water supply was highlighted.
- Evaluation surveys of awareness campaigns carried out in schools indicate that knowledge has been successfully transferred to families. There is also anecdotal evidence of improved household practices.
- There is an increased understanding of the need to decommission cesspits as part of the process of connecting houses to the sewer system. To aid this process, WAJ has instituted a finance mechanism for sewer connections for low-income community members. In addition, Suf municipality has begun to collect solid waste from chicken slaughterhouses. Both these measures have helped improve groundwater quality.
- As a direct result of the community participation interaction and education, farmers have articulated a strong desire to receive advice regarding how they can reduce pesticide and fertilizer inputs and runoff.
- The specific processes used in the Qairawan pilot program for community/stakeholder engagement and raising public awareness have proved successful and are simple enough to be applied anywhere. In particular, the Islamic theology lends itself well as a seed for changing people's behavior in water protection and conservation. Stakeholder engagement is the cornerstone of watershed management and source protection;
- With regard to follow-on public participation (and related) tasks under the program, the following tasks are intended:
 - Conduct "knowledge attitude practice" (KAP) survey to see if public service messages are sticking;
 - Perform ongoing, detailed water quality monitoring;
 - Build links at the local level to foster engagement of WAJ and involvement of municipalities and people; and,
 - Replicate methods used in this pilot in another watershed and, eventually, throughout the whole country. WAJ has already identified a new watershed project site and has started planning procedures with the collaboration of local stakeholders.

By linking technical interventions to the decisions related to them, it is possible to determine appropriate stakeholder involvement. Technical interventions require choices that affect the public. Some of them are relatively simple, such as a sewer hookup. Others are very complicated and require a series of interactions, technical, and legal steps, such as the determination of a protection zone for a spring.

Community participation is a necessary component of any watershed management plan. Sustainable protection of water supply requires people to change their behavior, and behavior change can only be initiated through frequent interactions that allow people to determine, firsthand, that a given problem is important to change. People must participate in identifying real actions that can solve problems, and, in so doing, will subsequently see evidence of improvement in their lives. Through the establishment of community participation in this watershed management program, we have set the groundwork for sustainable community involvement in the Qairawan Watershed.

Author Biographies

Lead author **Chitra Parameswar, P.E.**, is a project manager and water quality specialist with international experience in planning, process, and design of water and wastewater treatment. She has delivered award-winning work in water quality monitoring, master planning, urban, peri-urban, and rural water and wastewater development projects; has been responsible for water quality studies; and is currently project manager for the water quality management project in Jordan, the project that this paper describes.

Amal Hijazi, Ph.D., is project management specialist and Mission Environment Officer at the Office of Water Resources and Environment, United States Agency for International Development (USAID). Dr. Hijazi has direct interaction with industry and international organizations to design and appraise projects in developing countries, and perform environmental examinations and assessments for USAID-funded activities. She directs and supervises activities for the Water Quality Management Project in Jordan, and has helped: revise regulations that safeguard public health, improve spring water quality, and strengthen ties between different ministries and cooperation with the Water Authority of Jordan (WAJ).

Laura Harvey is a writer and marketing coordinator with over 10 years of international marketing and sales experience, whose work is largely focused in developing countries. For the Water Quality Management Project (Phases I and II) in Jordan, she performed grant research and grant writing, group meeting facilitation, and technical report writing and editing. She has also drafted press releases, articles, and other communication pieces related to the project.