ADVANCING THE BLUE REVOLUTION INITIATIVE

WATER USER ASSOCIATIONS IN THE MIDDLE EAST: PRELIMINARY FINDINGS AND NEXT STEPS

MARCH 2008

This publication was produced for review by the United States Agency for International Development. It was prepared by DAI.

COLLABORATING ENTITIES

DAI (Prime Contractor)

Subcontractors

Academy for Educational Development
Aiken Global Environmental Services, LLG
AISDevelopment, LLC
CDM International, Inc.
CDR Associates
Duke University
ECO Consult (Jordan)
Emerging Markets Group
Environmental Quality International (Egypt)
Hatch Mott Macdonald
Hydro-Yemen (Yemen)
Institute for Public-Private Partnerships
International Development Enterprises
International Executive Service Corps
The Media Network, Inc.
Metropolitan Consulting Corporation
Riverside Technology, Inc.
SETS (Lebanon)
Social Impact
TCG International, LLC
Texas Universities Partnership
Training Resources Group, Inc.
Valu Add Management Services

Resource Organizations

Center for Conflict Resolution (Uganda)
Dolsar Engineering Limited (Turkey)
International Society for Development in the Euphrates and Tigris Region (Iraq)
MASCA (Morocco)
Oregon State University
Overseas for Sustainable Development (Jordan)
Resource Mobilization Advisors
Water Environment Federation (WEF)
Yilma Global Consult (Ethiopia)

ADVANCING THE BLUE REVOLUTION INITIATIVE

WATER USER ASSOCIATIONS IN THE MIDDLE EAST: PRELIMINARY FINDINGS AND NEXT STEPS

Prepared by:

Stan Peabody, DAI
Amer Jabarin, ECO Consult

DISCLAIMER

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

USAID – DAI Contract No. EPP-I-00-04-00023-00

The information and data contained herein are protected from disclosure by 18 U.S.C. § 1905 and are proprietary information as defined by 41 U.S.C. § 423. They shall not be disclosed in whole or in part for any purpose to anyone by the government, except for purposes of proposal evaluation, negotiation, and contract award, as provided by FAR 15.413-1 and FAR 3.104, or to the public, without the express written permission of Development Alternatives, Inc.

1. INTRODUCTION

The over-riding question in this task is the following: Do water user associations (WUAs) hold promise as vehicles for increasing water use efficiency and rural incomes in the Middle East and North Africa? Two other questions follow. First, if the answer is positive, what is needed to enable them to realize their potential? Second, if the answer is negative, is that because of inherent limitations in WUAs or because of the way they have been developed and structured? If the latter, how can such limitations be overcome?

To address the issue, the team proposed to carry out four activities:

- Review literature and meet with experts (USAID, World Bank, private sector) *Status: partially completed*
- Conduct field visits to countries in the region to meet with water management officials, WUAs and farmers (Jordan, Egypt, Turkey, Morocco and to be decided) concluding with the preparation of an issues paper *Status: the last visit to Morocco is planned for late February; we expect to complete the issues paper by end May 2008*
- Organize a regional workshop to discuss case studies, exchange experiences and articulate national and regional priorities for further development *Status: under discussion; if we proceed, the workshop would take place in Egypt fall, 2008*
- Create a working group to establish a platform for action *Status: under discussion; this would be the principal outcome of the workshop*

Due to the need to synchronize schedules of team members, we started with the field visits to develop a common understanding and familiarity with some countries in the region. Further reviews of the literature and discussions with experts will draw on our findings, as well as prior experience, thus enabling them to be more focused and practical.

This brief report attempts to summarize findings to date, based on field visits to Jordan, Egypt and Turkey, and to report our current thinking about next steps. The trip reports are attached as annexes.

2. FINDINGS

During our field visits, we tried to cover a multitude of aspects of WUAs and their contexts, ranging from the institutional motivation to organize them, to their internal dynamics and relationship with their larger context. Table 1 compares WUAs in the three countries—Jordan, Egypt and Turkey—in terms of most of the aspects we explored.

Table 1
Comparison of WUAs in Jordan, Egypt and Turkey

Dimension	Jordan (GTZ)	Egypt (LIFE)	Turkey
Farm Population	Owner-operators (mostly part time) and renters	Owners-operators (mostly part time) renters	Owner-operators , renters
Crops	Mixed, horticulture, vegetables, grains	2 full seasons—citrus, maize, cotton, sugar cane, wheat, alfalfa	Mixed, horticulture (citrus), vegetables, maize, winter grain
Primary Technology	Drip	Gravity, furrow	Gravity, furrow
Secondary Technology	Some gravity	Pumping from canal and ground	Drip, pumped groundwater
WUA age	1-3 years	1-3 years	10+ years
Precedent	Traditional user groups, largely disappeared	Different attempts--mesqa, drainage, etc—most failed.; various pilot schemes	Village Irrigation Groups since 1960s
Institutional driver	GTZ and JVA	Integrated Water Resources District	DSI and World Bank
Objective of Agency* to promote WUAs	Empower Users, reduce chaos	Engage Users, promote social control	Divest system management, operation and maintenance and tariff collection
Who organized	Dedicated GTZ/JVA team	District Staff	Project and DSI Staff GDRS for groundwater

Average preparation time	2 years	2 years	2 years
Membership	Voluntary	All water users, domestic, irrigation, industry	All irrigation users
Official establishment	When ready	When ready	DSI fiat
Registration	Yes, Cooperative Law	No, Governorate Decree	Yes, Ministry of Interior
Bank account	Yes	No	Yes
Assets	Office	None	Office, Machinery, Infrastructure
Responsibilities	Distribution; demand collection	Distribution; demand collection; conflict resolution	Full management, O&M
Organizational structure	Committee and Assembly,	Committee; Board; Assembly	Staff; Committee; Assembly
Representation	Assembly elected, representing outlet areas	Assembly elected representing outlet areas; board elected including all users—agriculture, domestic, industry	Assembly elected representing outlet areas; heads of villages, settlements are “natural” members
Gender Participation	Very limited participation of women as members	Required participation of women on board; usually representing domestic users	Limited participation of women as members
Formalized two-way communication between WUA and individual members	Not below representatives	Not below representatives	Not below representatives
Assembly meeting	Annually	Twice a year	3 times/year
External	None	None	Repayment of DSI

obligations			“capital investment”
Tariff basis	Volumetric, subsidized	None	Volumetric proxy (crop)
Fees collected	Membership	None	WUA tariffs
Who sets tariffs	JVA	No fees	Assembly
Who pays tariff	Operator	n.a.	Operator
Sanctions for infractions	Fines	No	Fines
Sanctions for non-payment	No	n.a.	Interest added for late payments
Operating contract	None	None	With DSI
Water delivery contract	Not formal	Not formal	Not formal
Ongoing Support	GTZ/JVA	LIFE, District	DSI, as needed
Related Investment	Removed design flaws	None	Machinery; some Rehabilitation
Agency ties	Annual Plan negotiations, weekly update meetings	Monthly Meetings	Annual Plan; intermittent communication
Changes in role of Agency	Not yet, but envisioned	District became integrated water management unit, no change on-ground	DSI withdrew to main structures
Perceived change in relations with Agency	JVA now listens, negotiates	District is now partner	Reduced dependence on DSI; WUAs still not accepted as partners
Ties between extension and WUA	None	None	None
Do agricultural programs target	No	No	No

WUA			
WUA/Commercialities	None	Experiments (Heinz contract farming)	Not officially as WUA
Cross membership with grower associations	No	No	Yes
Capacity Development	Yes, moral support	Yes, District Unit departments, ongoing	Yes, training
Able to contract	Yes	No	Yes
WUA staffing	Voluntary	Voluntary	Voluntary officers; significant full time and seasonal staff
Budget	Membership Fee	No	Substantial
Perceived benefits of WUAs (by WUA)	Less theft, reliability	Less theft, reliability	Better service, better maintenance
Perceived benefits of WUAs (by Agency)	Fewer infractions and conflicts	Fewer conflicts and complaints	Fewer complaints, better coverage (head and tail)
Demonstrated impacts	Fines, infractions declined sharply	Complaints, infractions declined sharply	Resolved head/tail discrepancies, reduced complaints
Aspirations	Contracting for maintenance and/or management, input provision, processing, lobbying	Maintenance contracting, solid waste management	Ultimately, transformation to closed pressure system
Expressed needs	Varies from technical support to full management authority	Ability to contract	Extension services
Major obstacles, constraints,	Lack of experience; lack of funding; Attracting new	Lack of experience; lack of funding; cannot legally collect fees; officially	Lack of funding for transformation to pressure system

	members; inadequate legal umbrella	recognized, but no legal umbrella	
Strategy for financial sustainability	Absent -Not clear yet	Absent -Not clear yet	Not clear; collected fees usually cover running costs but a sustainable strategy for future improvement is lacking
Potential to improve water use efficiency	High, already implicit in mandate	Limited	High, if accept the mandate
Potential to develop commercial ties to increase incomes	Moderate, relevant to resident owner-operators	Being tested, unclear	Site specific; could be redundant
Potential for active commercial role	Moderate	Not without legal status; moderate with legal	Site and opportunity specific
Potential role as farmer advocate, conduit for information dissemination	High, if accept the mandate	Moderate	High, if accept the mandate
ABRI support opportunities	Legal, institutional support, expose to international experience; if accept commercial mandate, match with investors	Legal, institutional support, expose to international experience	n.a. on WUA level

*Agency refers to the government water/irrigation agency—Jordan Valley Authority (JVA), Integrated Water Resources District, General Directorate of State Hydraulic Works (DSI), respectively.

The table reveals a number of common characteristics:

- All of the WUAs were organized at the initiative of the government water agency and it took time to convince farmers to join; none were user driven
- All WUAs started with a specific mandate which was narrow in the case of Jordan and Egypt (distribution) and broader in Turkey (system operation and maintenance)
- None of the WUAs has a specific legal context; either there is no context (Egypt) or they obtained legitimacy through laws developed for other purposes, with some inappropriate or inapplicable provisions
- All WUAs have structure that includes representatives of different parts of the command area; in Turkey, elected village mayors and headmen are ex officio Assembly members
- Only in Egypt do WUA boards include representatives of domestic and industrial water users; and are required to include women on the Board, usually representing domestic water users
- WUAs in Egypt and Jordan are voluntary user groups; in Turkey, a WUA resembles a mini-irrigation department with a paid staff
- None of the WUAs were developed with the collaboration of the Ministry of Agriculture and none are utilized or even recognized by agricultural extension staff or programs
- In Jordan, members see WUAs as possible vehicles for innovation; in Egypt and Turkey, they are aligned with the status quo
- Only in Jordan do WUAs expect to provide leadership in increasing water efficiency and increasing farmer incomes

Given this overview, the next section will summarize our observations and preliminary conclusions regarding four issues related to our team's mandate—WUA scope; WUA context; participation; and sustainability—and discuss some opportunities for change.

WUA Scope

WUAs are constrained by their history. They are usually developed to address specific, practical problems, with little apparent thought given to their future roles. The WUAs in each of the three countries were organized to address issues that were important to the farmers—unreliable delivery and theft in Jordan and Egypt and poor service and maintenance in Turkey—and they therefore generated interest after initial skepticism. In some places, where the agency wants to create WUAs to do maintenance—to do its dirty work, in other words—they have little chance of survival. Although it is important for the WUAs to have a mandate that is both valued by members and relatively easy to

accomplish, a narrow focus can also limit the imagination of leaders and members and ultimately keep the association from taking on new responsibilities that could enhance the value of the association. Emphasizing practicality and getting things moving (not uncommon when governments and donors are involved) can result in a mismatch between the purpose and potential of the WUA and the law used to institutionalize them. In Jordan, the use of the cooperative law both creates suspicion, given the poor reputation of cooperatives, and imposes limitations on the activities of the WUA. In Egypt, the WUAs have no legal status and thus cannot open bank accounts or take maintenance contracts, both of which may be necessary for their survival. In summary, a narrow scope and inappropriate legal framework can ultimately limit the utility and thus the survival of a WUA.

WUA Context

WUAs are generally created out of context, which also constrains their potential impact. Even in countries where the irrigation authority is located within the Ministry of Agriculture, there is little relationship between the development of WUAs and the larger context of agricultural development. The impetus for creating WUAs is to manage water, almost oblivious to the fact that the water is to be managed for agriculture. On one hand, this means that the WUAs end up without institutional links to agricultural extension or other support mechanisms that might help them manage distribution more effectively for cropping and extension staff lose the opportunity to use the WUA to reach more farmers. On the other hand it also means that when water is short the farmers can not rely on either the WUA or extension to help them cope with the shortage by advising on cropping patterns, rotation, selection, or other options. Water availability is sure to continue to decline in the Jordan Valley, even in good years, which affects the actions of individuals as well as operation of the irrigation system itself.

Unless WUAs and extension work together to help farmers, they may make cropping choices that over-tax the irrigation system or makes distribution inordinately complex and tenuous. This mismatch is already evident in middle Egypt, where the conflicting demands of sugar cane and other crops compromise adequate delivery to both; and it has manifest in eastern Turkey, where farmers adopt cropping patterns which generate water demands that are beyond the capacity of the irrigation system. The lack of coordination between WUAs and agriculture has a greater impact in areas of highly commercialized agriculture, where crop selection, product quality and harvesting are critical factors in determining farmers' incomes and precise water scheduling is necessary to meet standards. To bridge the gap, WUAs in Turkey may have the resources to consider adding an agronomist or extension specialist to the management team. In Jordan and Egypt, the WUAs do not have such opportunities to adjust to their context.

Participation

The most important impact of a successful WUA is a shift in the balance of power between water providers and water users. Without WUAs, water users are largely invisible to water agencies; once they are established, effective WUAs become clients whose needs cannot be ignored by water providers and water users become the clients of the WUAs. Ideally, the WUA leaders and water officials see themselves as partners. In Jordan, WUA officials meet weekly with JVA staff. In Egypt, each WUA has three specialized committees that meet monthly with a corresponding department of the District office, and the District has two conferences a year attended by all WUA heads. Both parties describe the regular interaction as qualitatively different from the earlier situation and very productive. WUAs in Turkey have greater autonomy than in Jordan and Egypt, and their relationship with DSI is one of partners. Within the respective WUAs, the level of participation of members appears to vary considerably. All have area representatives and WUA assemblies, but only Jordan has an annual general assembly open to all water users.

Sustainability

WUAs in Jordan and Egypt were established after gaining the support of water users and they have shown results in water distribution and reducing and resolving conflicts. WUAs in Turkey were established rather quickly, but they were nurtured by DSI for a couple of years while they gained support and credibility. As their current responsibilities are focused, their role is valued and their survival is not dependent on generating financial resources for operation, the WUAs in Jordan and Egypt may be sustainable. At the same time, however, it is possible that the results of their efforts—reliable and relatively peaceful water delivery—could endure even if people lose interest in the association. WUAs in Jordan want to play more substantive, varied roles, from negotiating input prices to managing systems. If successful, their prospects of survival are greatly increased. In Egypt, the lack of legal recognition impedes further development of the WUAs, causing members to lose interest. WUAs in Turkey have responsibility for delivering service and maintaining infrastructure and they collect the resources needed to carry out their work from members. Their role is regarded as important and they have delivered results. The ones we visited appear to generate resources to repay debt and carry out routine maintenance functions, but they have not developed plans to deal with the inevitable cost of rehabilitating or replacing outdated infrastructure. In most parts of Turkey, water resources are going to become increasingly limited, thus the survival of commercial agriculture depends on switching to drip irrigation. WUAs see this as a need, but they have not assumed responsibility for transforming gravity systems into closed pressure systems. Unless they do so, their sustainability is also in jeopardy.

Opportunities

Most advocates of WUAs argue that they should be single-function institutions or, at least, start out as single-function institutions until they are well established and able to assume additional responsibilities. WUAs in Jordan and Egypt started out with limited objectives and achieved early success. Many are ready to take up new challenges such as contracting, processing, marketing or system management. In both countries, further development of WUAs is constrained by an inappropriate legal framework or the lack of legal status. WUAs in Turkey have a broader mandate of managing systems and maintaining infrastructure, but their major constraint is the technology they inherited and their exclusive focus on water delivery, rather than water utilization. To move forward, they need to take the lead in transforming their systems, which they can do only if farmers raise their incomes by growing high value crops and receiving reasonable prices for them. Thus they must take an active role in agricultural development. This will also be the case in Egypt, as it is in most countries.

ABRI may be able to support WUA development in three ways. First, help draft legislation to put in place a legal structure for WUAs that protects their interests and enables them to serve water users in additional ways. Second, find ways to help WUAs play a more pivotal role in agricultural development, such as by acting a conduit for the dissemination of technical information to help farmers grow crops that are high-value, high quality and more profitable, and by refining delivery schedules and methods that reduce water consumption while meeting the requirements of high value crops. The first would be easy to arrange; the second would entail a new look at the roles and interface of agricultural ministries; private sector suppliers, buyers, processers and exporters; water agencies; and WUAs. The mismatch between agriculture and water seems to be universal, and attempts to address it on a high, institutional level have not borne fruit. Consequently, given its importance, there may be some value in exploring the issue from the ground up, using WUAs as the locus for integration and demand-generation. The initiative would look for examples of successful integration that could be emulated. Third, the second task may generate ideas for private sector investment in technological adaptation, production or post-harvest activities. We have not been able to identify any private sector opportunities in our field visits, but some may emerge from discussions that could be pursued by ABRI specialists.

3. NEXT STEPS

Morocco

Our field visit to Morocco is planned for the spring. We understand that some large systems in Morocco are changing from sprinkler to drip irrigation and that WUAs are playing a key role in the change. We will explore this topic as well as the others identified above.

Matrix Revision

Following the Morocco trip, we will revise the matrix and submit a brief report on the trip, covering unique characteristics of WUAs or their activities.

Discussions, Brainstorming

During free time in March and April, we will continue our literature review and discuss our ideas with different experts and solicit information about other WUAs.

Issues Paper

At the end of May, we will submit an issues paper that summarizes findings from various sources and identifies issues that warrant further exploration or brainstorming.

International Workshop

Depending on the outcome of continued exploration and preparation of the issues paper, we may recommend holding an international workshop. The likely focus is on how to enable WUAs to integrate water and agriculture to help farmers increase their incomes while using less water. This would include presentations on WUAs and the irrigation/ water interface in different countries and discussions on how to address gaps and expand the role of WUAs. If we recommend a workshop, we will submit a proposed format and participation list with the Issues Paper. The likely date of a workshop would be October 2008.

Working Group

One objective of the workshop would be to create a working group that would continue the dialogue and develop concrete proposals to test hypotheses or apply lessons learned during the remainder of ABRI.

ANNEX A
TRIP REPORT, JORDAN AND EGYPT
DECEMBER 7-18, 2007

The purpose of this trip to Jordan and Egypt was to learn about new WUAs being established in Jordan with GTZ support, and the new approach to WUA formation being implemented in Egypt with the support of USAID. Both efforts involved about two years of work to discuss the concepts, attract interest, and engage farmers in creating the WUAs. The initiatives were promoted by the Jordan Valley Authority and the Ministry of Water Resources and Irrigation, respectively, and ultimately gained the support of water users because the WUAs directly addressed their problems. In both cases, the focal issue was the high level of water theft and subsequent unreliability of water delivery. Organizers were originally greeted with skepticism, but some people eventually understood the potential benefits and agreed to organize the association. The results of early success helped to shorten the formation time in new areas, but the process continues to take time. ,

1. Jordan, December 7-10, 2007

Introduction

Water is the major limiting factor facing the agricultural sector in Jordan. The country is among the poorest ten countries in terms of water resources. The climate is arid with a poor distribution of rainfall over the different regions and there are significant yearly fluctuations. More than 90% of the country's annual rainfall is less than 200 mm and over 70% of the country receives less than 100 mm. About 2 percent of the total area of the country receive an annual rainfall exceeding 300 mm while only 5.5 percent of the lands receiving 200 to 300 mm of rainfall annually.

The total area of the country is about 89 million dunums (du) (1 du = 0.1 ha), while the average cultivated land in 2006 was about 2.5 million du, representing about 2.8% of Jordan's total area.. Rangeland averages about 90% of total land. Average annual field crops average about 1.2 million du, while area devoted to tree crops average more than 863 thousand du. The total irrigated area in 2006 amounted to 835 thousand dunums representing about one third of the total cultivated area as shown in Table 1.

Table 1
Irrigated and Non-Irrigated Areas Under Tree Crops, Field Crops and Vegetables in 2006

Crops	Total Area	Irrigated Area	Non-Irrigated Area

	(Dunum)	(Dunum)	(Dunum)
Tree Crops	863,359	337,346	526,014
Field Crops	1,235,891	88,568	1,147,323
Vegetables	423,107	408,617	14,490

Source: Department of Statistics, Amman, Jordan
http://www.dos.gov.jo/agr/agr_e/index.htm

The two major agricultural production regions in Jordan are: 1) the uplands and 2) the Jordan Valley. However, the total irrigated areas in both regions are 530 thousand and 305 thousand dunums in the uplands and in the Jordan Valley, respectively as indicated in Tables 2 and 3. It can be noted from the two tables that almost all of the cultivated area in the Jordan Valley is under irrigation.

Table 2
Irrigated and Non-Irrigated Areas under Tree Crops, Field Crops and Vegetables in 2006 in the uplands

Crops	Total Area (Dunum)	Irrigated Area (Dunum)	Non-Irrigated Area (Dunum)
Tree Crops	767,672	241,866	525,806
Field Crops	1,204,450	59,403	1,145,048
Vegetables	242,966	228,522	14,444

Table 3
Irrigated and Non-Irrigated Areas Under Tree Crops, Field Crops and Vegetables in 2006 in the Jordan Valley

Crops	Total Area (Dunum)	Irrigated Area (Dunum)	Non-Irrigated Area (Dunum)
Tree Crops	95,688	95,480	208
Field Crops	31,440	29,165	2,275
Vegetables	180,141	180,095	46

Despite of its low contribution to Jordan's GDP in 2006 (2.4%), the agricultural sector is one of the crucial sectors since it is: 1) the main source of many food products especially fresh fruits and vegetables; 2) constitutes a base for integrated rural development; and 3) one of the sources of hard currency obtained from exporting fresh fruits and vegetables. It is believed that the indirect contribution of the sector when the agro-industry, inputs and agribusiness services are added may approach to 22% of GDP.

Water management in the Jordan Valley

The Jordan Rift Valley which is extended from the Syrian border at the north to Wadi Araba in the south. The whole Valley is divided into four regions; the North, Middle and Karameh, and the Southern Ghors Directorates. These directorates are further subdivided into stage offices. Each stage office is divided into development areas consisting of a number of farms or farm units.

The main sources of water in the Valley are a mix of fresh water from the Yamouk River, side wadis, and flood water stored in dams. For the areas located to the north of the dead sea, the various water supplies are conveyed through the King Abdullah Canal (KAC), which is backbone of the irrigation system in the Jordan Valley. Due to shortages in municipal water supply in Amman, the government started diverting some of this fresh water from the KAC.

The major three players in managing the water resources in Jordan are the Ministry of Water and Irrigation (MWI), the Jordan Valley Authority (JVA), and the Water Authority of Jordan (WAJ). In 1977, the Jordan Valley Authority (JVA) was established to effectively manage the irrigation supply system and provide necessary socioeconomic support to farmers' communities in the Jordan Valley. The JVA is staffed with about 1800 staff responsible for a wide array of social and economic developmental services provided to the local communities in the Jordan Rift Valley. The provided services include utilization of water resources in the Valley for irrigated agriculture, municipal, industrial and tourist purposes, and a limited generation of hydroelectric power. The major two responsibilities of JVA include: 1) managing the distribution of irrigation water to users; and 2) continues monitoring and maintaining water quantity and quality.

The supplied irrigation water to farmer is managed through allocating specific volumes to each farmer based on the dominant cropping pattern and area of irrigated land. Over the years, less water volumes have been allocated to farmers due to illegal use of water, mal infrastructure and water leakage. Many of these farmers complain that irrigation water is distributed inequitably on farms in terms of quantity and quality.

Water users' participation in water management in the Jordan Valley

Since the establishment of JVA, the main focus of its efforts was to improve utilization of the water resources through water administration and supply management. The focus on the supply side of managing water started in late nineties before shifting to the demand side. The first effort to involve stakeholders in water management was initiated in 1997 through a French sponsored project in the North Jordan Valley. The project idea was based on allowing farmers to distribute irrigation water among them from a lateral main line.

The other attempt towards involving the participation of farmers in managing irrigation water was in 2000 through a German sponsored project. At the same year, there was another attempt by the World Bank in early 2000. Successive surveys and analysis found that these attempted achieved little success. These surveys concluded that a uniform approach for introducing user's participation in water management might not work. It is believed that more than a single approach might be needed.

Several other informal forms for participatory water management have been tried such as "water council" and "water delegation". However, the search for a legal cover has ended by the choice of establishing an "agricultural cooperative for water users" structured under the umbrella of the Jordanian Cooperative Law. The Jordanian Cooperative Organization (JCO) requires fees and financial deposits for registering farmers' cooperatives.

The most recent attempt to introduce water user's participation in water management in the Jordan Valley was through one of the management projects is the GTZ-funded Water Resources Management in Irrigated Agriculture (WMIA) project. The project was launched in 2001 and is expected to conclude in 2009. The project aimed at enhancing the participation of farmers in managing the distribution of irrigation water in the different parts of the Jordan Rift Valley.

To ensure a proper participation of farmers in managing and distribution of irrigation water, the WMIA project realized the need for establishing water user associations in the Valley. As a result, during the current operational phase of the project, about 16 water user associations have been established in the Jordan Valley. Twelve of which are officially registered as 'Cooperative Societies'. The other four are water councils and farmers communities.

A recent paper which will be published in the upcoming volume of water policy [1] reviewed the little Jordanian experience in establishing WUA. The paper conducted a joint analysis of the technical status of water distribution network which showed the following improvements:

- The first step is frequently a rehabilitation of the hydraulic system which includes the removal of illegal connections in the distribution network;
- Rehabilitation of the metering system: old water meters had to be exchanged for new ones; in some cases they were repairable;
- Systematic flushing of pipes is reintroduced at appropriate line ends and not somewhere in the line as used to be the case before the WUA;

[1] Amer Salman, Emad Al-Karabliehb, Hans-Jochen Regnerc, Heinz-Peter Wolffd and Munther Haddadina, " Participatory irrigation water management in the Jordan Valley", Water Policy, 2008.

- Regular cleaning of pump sumps in pumping stations, detection of systematic mistakes, proposals and their implementation improve the filtering process at the pump station and avoid entry of suspended matter and impurities in the pumping facilities;
- Close maintenance of water meters, introduction of the principle of preventive maintenance instead of emergency repairs;
- Efficiency of JVA O&M staff is monitored by WUA, appraised and criticized in joint meetings. The performance of the staff has significantly improved;
- Leaks in the conveyance and distribution system, from source to destination, are detected and taken care of, especially in the Southern Ghors by the southern end of the Dead Sea; and
- Central filtration systems for the irrigation zones are rehabilitated (Southern Ghors).

The paper concluded that the successful and promising process of introducing participatory structures into the irrigation scheme of the JVA has already allowed for some useful suggestions for the required elements in management, even if the process in Jordan has not yet matured.

Jordan's Experience in Establishing Farmer's Associations

Despite the failure of farmer's cooperatives system in the last two decades, farmers and exporters of fresh fruits and vegetables with the support a USAID project established in 1994 the Jordan Exporters and Producers Association for Fruit and Vegetables (JEPA). This association is a non-profit organization that was established by a group of private exporters and producers in the horticultural sector. The main objective of establishing JEPA is to organize the exporters and farmers under an umbrella to promote top quality exports of fresh produce and cut flowers from Jordan. Through this structure, JEPA is aiming at becoming a financially sustainable body and also to expand its mandate to become an incubator for other crop councils.

It is worth mentioning here that JEPA is still receiving some technical and financial assistance from donor agencies to support in implementing of its activities (trade fairs, studies, information system, trade and buyers missions, workshops, seminars, training, extension, conferences and so on)

One of the major functions of JEPA which may resemble some of the functions of WUA is lobby the government to reform policy and regulatory issues. JEPA can be one of the potential partner organizations in Jordan that can help in promoting commercialization and marketing of fresh horticultural products. One of JEPA's functions is to provide a vehicle for collective action by the private sector in seeking broad based technical and business assistance as well as policy and regulatory reform. JEPA also aims at increasing vertical integration among producers and exporters. Such kind of integration can be achieved through pre-contracting activities to secure flow of fresh produce from members of WUA to exporters who are members in JEPA.

Field Visit

During the visit to Jordan, the team met with the core group organizing WUAs from the Jordan Valley Authority (JVA) and GTZ and members of two established WUAs in the northern part of the Jordan Valley, and attended the organizational meeting of a new WUA in the south.

Two major challenges face irrigators in the Jordan Valley. First, water supply is uncertain and constantly shrinking due to increased diversions to Amman and decreased allocations by Syria. Second, steps are underway to privatize the Jordan Valley Authority and turn it into a water wholesaler. The first challenge directly affects farmers and highlights the impact of water theft, design defects, infrastructure destruction and increasingly chaotic distribution. The second challenge is seen as a potentially greater threat if the private operator assigns secondary priority to irrigation allocations.

GTZ promotes WUAs to manage water distribution with a team of three people from GTZ and three from the JVA. WUAs are organized around pump stations, the JVA's primary delivery point, and cover one or more development zones that receive water from the outlet through pressurized pipes or gravity canals. WUAs take as long as two years for the formation process, which involves overcoming considerable skepticism regarding the motives of advocates and resistance to the concept of farmer organization, given the negative experience with cooperatives. About half of the irrigated area is now covered by 16 WUAs, 14 of which have been registered under the Cooperative Law. Membership is voluntary and all water users receive the same services, regardless of membership status.

The WUA has a simple structure of a general assembly that meets annually and an Administrative Committee. Although the WUA develops an annual plan that is approved by the JVA, the Administrative Committee meets bi-weekly with the JVA for detailed discussions and negotiations. From the perspective of the JVA, the WUAs are important partners who successfully manage detailed distribution and pinpoint technical bottlenecks that are gradually being resolved. From the farmers' perspective, WUAs have greatly increased the flow of information about system operation, put the delivery system in order, established transparency in operations, given farmers' responsibility for opening and closing valves and recording delivery times, and given farmers the ability to negotiate with JVA. Most critically, both farmers and officials claim that the WUA has reduced conflict among farmers and between farmers and the JVA and made farmers realize that water theft robs other farmers, not the JVA. An indication of success is the fact that in one year the number of infractions and fines dropped from 260 to 15 in one WUA and from 300 to 10 in another.

GTZ has resisted efforts to expand the mandate of the WUAs, at least until they are strong and sustainable, but WUA officials are starting to think more broadly and are

discussing such topics as creating a federation to increase their lobbying influence with the JVA and political leaders, negotiating for favorable input prices, acting as contractors for maintenance, and establishing marketing channels.

Physical circumstances differ within the Jordan Valley, and such differences are reflected in the mandate of WUAs. For example, farmers in the center and north suffer primarily from distribution problems resulting from changes in technology and water availability, among other things, and have given priority to addressing them. In the south, in contrast, the systems are newer and distribution is less of a problem because of higher technology. The prospects of outside management of the JVA are seen as a major threat, however, and farmers who established the newest WUA are giving priority to system management and developing the capability to compete for management contracts in the future.

GTZ recently turned to promoting WUAs on the highlands, where irrigation is based on groundwater pumping, but the initiative is too new to expect either results or lessons. Meanwhile, the work continues to cover the rest of the Jordan Valley and continue supporting existing WUAs to ensure their sustainability, one element of which is establishing a viable legal framework to enable them to expand their mandate to meet the needs of members.

As part of its efforts in prompting WUA, the GTZ arranges frequent visits for farmers from areas with no WUA to other areas where associations are established. This activity was extended to cover tours to outside Jordan to countries such as Egypt and Turkey. The latest tour was organized by the Turkish water lead agency “General Directorate for State Hydraulic Works (DSI)”.

2. Egypt, December 11-15, 2007

During the visit to Egypt, the team met with people in the Integrated Water Resources Unit of the Ministry of Water Resources and Irrigation, including staff of the USAID Integrated Water Resources Management Project (LIFE—Livelihood and Income from the Environment), held discussions with Branch Canal Associations in the Delta and Luxor area, and visited a high-tech facility in the New Lands that produces flowers for the European market. With only a brief visit, our attention focused on LIFE because it the one WUA support initiative that has a wide geographical scope, is not tied to a specific infrastructure investment project and uses the staff of district offices to promote WUAs, rather than an external support group. Like WUAs universally, the Egyptian ones focus only on water and have no links to the agriculture establishment.

Despite a long history of irrigated agriculture using traditional methods and traditional social control, irrigation has undergone major transformations over several decades that disrupted whatever remained of old traditions and has yet to establish new sustainable

water management mechanisms. Egypt has used donor support to invest heavily in irrigation infrastructure, first to deal with year-around irrigation, then to lower canal levels to require pumping to reduce demand, then to improve drainage, and a new move is afoot to raise canal levels to eliminate private pumping. Various attempts have been made to create water/drainage user groups over time, usually in association with infrastructure investments, the most well known of which were the mesqa-level(tertiary system) associations. None of the approaches proved sustainable or, in the case of small, isolated pilot initiatives, applicable over the whole country. Meanwhile, irrigation systems have become increasingly complex, serving different crops and technologies without planning, coordination or both.

The integration of the management of irrigation, drainage and groundwater under the Integrated Water Resources Management Unit in 2004 was an important step in developing a single institutional interface with farmers and farmer groups—the District Integrated Water Resources Unit, serving an average of 50,000 feddans (approximately 52,000 acres or 21,000 hectares). The LIFE project is designed to 1) support district integration on a number of levels from stakeholder participation to capacity building; and 2) provide equipment and management practices to improve water use and quality.

In marked contrast to most water related organizational initiatives, which are highly centralized, operating from a central authority, LIFE utilizes a decentralized approach to strengthen integrated water management districts and train staff to mobilize farmers to create branch canal water user associations (BCWUAs). Backed by a sophisticated but practical monitoring and evaluation program that utilizes GIS, district staff and BCWUAs are able to monitor and account for the virtually all water resources in the district. In addition to measuring actual deliveries and comparing them to agreed plans, BCWUAs give monthly feedback through a simple satisfaction report.

The mobilization process is carried out according to guidelines prepared by the project, which were clearly informed by international best practices, adjusted to the local scene. Mobilization involves a mixed-gender team, as basic provisions call for at least two women to be on the Board. The BCWUA is managed by a Board (9 or so members with a couple of alternates), which reports to larger Committee (35-50 or more members) composed of representatives from different points along the branch canal. Two members of the Board represent domestic water users and industrial water users are also represented, if relevant. The mobilization process starts with discussions with community leaders and a data gathering procedure that ends up with a detailed social and physical map of the branch command area, which is then digitized in the District office.

Consistent with the project's decentralization approach, BCWUA responsibilities are also decentralized. Each association has three committees: Maintenance, Water Distribution, and Planning and Internal Affairs. Each committee has one member of the Board and two people from the Assembly. Each committee meets monthly with their

counterparts and the counterpart unit of the District office. According to both district officials and water users, the biggest impact of the BCWUA a reduction of the incidence of conflicts between water users. Complaints that previously were taken directly to the district office are now taken to the Board, which records and resolves them on site. The process is transparent and the results are accepted by those who complain; compliance is also monitored, establishing an effective system of social control.

A second impact of the BCWUA has been to heighten awareness of environmental problems that affect water quality and the community as a whole. Rural communities lack solid waste management systems, thus people pile refuse (agricultural and other) on canal banks with the expectation that it will be washed away or carted away during canal maintenance. The result can be fetid water in the lower reaches of canals. Both of the BCWUAs visited by the team were organizing to manage solid waste, but it was not clear whether or not there were suitable dumping sites, so the result may only be to relocate the problems elsewhere, instead of resolving them.

The BCWUAs are created by administrative decree without an adequate legal framework. It is envisioned that the BCWUAs will eventually obtain maintenance contracts from the district offices, but this is not possible until it is sanctioned by legislation. Law 12, which is moving through administrative and legislative processes, is expected to enable the BCWUAs to expand their mandate and collect revenues.

Other initiatives are underway that have influenced the design of the project and/or will generate lessons that can be applied as the campaign to create BCWUAs continues. Unfortunately, the team constrained by time from visiting other sites. The Dutch have support the creation of BCWUAs (they call them Water Boards) in a few locations and, with significant inputs, have strengthened them. In about 12 other locations, CARE Nederland is helping BCWUAs develop conflict management mechanisms.

Preliminary Observations

In both countries, the WUAs were created with a limited mandate that focused on a problem that was important to all water users, equitable and reliable water distribution (meaning to control water theft). Although in most cases it took about two years to mobilize enough people to establish the association, the resistance was due to a legacy of bad experience with cooperative activities and general skepticism about government programs, rather than the objective of the association. Once the effort to organize showed signs of success, and members could demonstrate the value of the association to themselves and others, the mobilization process became easier. In both cases, the benefits became clear quickly—members identified the drastic decrease in infractions and fines as the prime indicator of success. Moreover, non-members easily complied with schedules and procedures, as they benefited equally.

In neither country were the WUAs expected to assume tasks that were clearly the responsibility of the water suppliers, especially collecting water service fees, nor was there an implicit expectation that canal management would be turned over to the WUAs. In the case of Jordan, the mobilization process was led by an expert team. In Egypt, district offices assumed responsibility for mobilizing farmers and continued their direct involvement in the BCWUAs through monthly meetings of technical committees, in addition to other contacts. In neither country have the WUAs tried to establish ties to the agriculture Ministry either to facilitate contacts or to advocate on behalf of their members.

In both countries, leaders of the WUAs seek opportunities to expand the roles for the WUA, from environmental management in Egypt, to lobbying or arranging inputs and marketing in Jordan. In both countries, WUA leaders recognize the need for agricultural development and commercialization, and want to play a role in helping farmers increase their incomes. In both places, many or most of the WUA constituents are part-time farmers, or absentee decision-makers, which both poses challenges in terms of communication and consensus building and offers opportunities in terms of making use of the members' external contacts and wider experience. It remains to be seen whether or not the WUAs can successfully take on new tasks, but they clearly have the ambition to do so and are anxious to learn from experiences elsewhere.

Irrigation water in the Jordan Valley is used almost exclusively for high-value crops for domestic markets and export. In Egypt, the focus varies from one region to another. Sugar cane dominates in middle Egypt and horticulture, vegetables, field crops dominate in the delta. We did not have time to learn about export channels in Egypt or to meet with middlemen or exporters, thus we do not know whether there are opportunities for new players in post-harvest marketing, processing and, exporting. Regardless of the scope for additional commercial ventures of the WUAs, however, it is likely that members of WUAs in high-value cropping areas would put pressure on the association to update technology. Their willingness to invest collectively in improvements has yet to be demonstrated in either country, however. In any case, neither of the WUA initiatives in Jordan or Egypt was designed to either promote export-oriented agriculture or to plan its activities to respond to the particular needs of export-oriented producers. One of the reasons to visit Turkey is to understand the relationship, if any, between WUAS and commercial post-production processing, packing and exporting.

ANNEX B
TRIP REPORT, TURKEY, JANUARY 27-FEBRUARY 2, 2008

Introduction

The team visited WUAs in Jordan and Egypt that were new (1-2 years old) and had a relatively limited mandate, focused primarily on water distribution. Despite the narrow mandate, WUA leaders and members said they were interested in taking on new tasks. In both countries, WUA members said they would like to take contracts for maintenance. In addition, different WUAs in Jordan showed an interest in lobbying, system management, brokering inputs and marketing; in Egypt, the additional task was solid waste management to improve irrigation water quality.

In contrast, WUAs in Turkey are generally older (Many date back to 1994 and 1995) and had gone through a "turnover" process that gives them full responsibility for operation and maintenance. The purpose of the team's visit to Turkey was to address issues related to governance and sustainability in relatively mature WUAs and to understand what role, if any, the WUAs play in promoting water-saving technology and the commercialization of agriculture. The core team was joined by Nemat Guenena (EQI) and Kristine Kohler (DAI) private sector partnership specialists. The mission enabled our colleagues to become familiar with some irrigation issues and give us insights on options for private sector support within the WUA context.

The team visited two areas: Izmir on the Aegean coast and Adana on the Mediterranean coast. Two sites in the Izmir area raise grapes for raisins and one produces citrus. Members of the WUAs in Adana have mixed horticulture and field crops, with citrus. Both areas produce fruit and vegetables for markets in Turkey and the EU. None of the WUA leaders or members we met thought the WUA could or should take on additional responsibilities. When asked what kind of assistance the WUA could use, respondents mentioned common agricultural extension services related to identifying new crops and varieties, improving agricultural practices and marketing.

WUA Governance and Responsibilities

The General Directorate for State Hydraulic Works (DSI) is responsible for water resource planning and management, including licensing groundwater extraction, construction of large dams and irrigation facilities and delivering water to municipal water companies and industry. Typically, DSI gave priority to construction, rather than operation and maintenance. Also typically, DSI sought to divest responsibility to water users. In the 1960s, DSI established village-level irrigation groups, led by mayors and village headsmen, whose responsibility was to clean tertiary canals and drains. In effect, they were village-level maintenance groups that took orders from DSI staff.

In the early 1990s, DSI attention shifted to turning responsibility for system management to water users. Four pilot schemes were established in 1992, followed in 1995 by a national program to create WUAs and make them fully responsible for operation and maintenance of primary, secondary and tertiary facilities. The WUAs absorbed existing irrigation groups into larger organizations that encompassed several villages, led by a Council consisting of heads of the irrigation groups (natural members) and elected representatives from different parts of the system according to delivery area. Although the associations were virtually created overnight, DSI staff admit that it took about two years and much village-level convincing to make them fully functional

WUAs are registered and audited by the Ministry of the Interior. The Council elects a small management board which oversees the work of a permanent professional staff and part-time field staff during the irrigation season. Frequently, the President of a WUA is a local mayor and operations are inevitably entrusted to an Executive Secretary and staff. WUAs obtained subsidized maintenance equipment through a World Bank project and some have purchased additional equipment with their own resources, so they can meet their maintenance obligations satisfactorily.

WUAs are seen by both members and DSI staff as important and effective, although they perceive the benefits differently. Members claim that the WUAs offer dependable maintenance service and they distribute water equitably to head-enders and tail-enders alike, especially compared to DSI. Although DSI staff also recognize the success of WUAs in distributing water throughout the systems, they generally observe that WUAs have reduced conflict between water users and successfully resolve conflicts and address violations within the system, rather than referring them to DSI.

WUAs are expected to fully fund O&M costs and, theoretically, to collect revenue for unforeseen repairs and to replace or upgrade the infrastructure. WUAs are also expected to repay DSI's "investment costs," and maintenance and repair work that the organization cannot do itself. They do not pay a water tariff to DSI or any other agency. Each WUA sets water fees and members pay according to crop and delivery area, roughly corresponding to crop water requirements. The WUA prepares an annual water plan for DSI, based on farmers' demand, and DSI revises the plan to correspond to available resources. Farmers then adjust their cropping patterns accordingly. Water resource availability varies considerably from one basin to another, as well as from one year to another. In 2007, farmers in the Izmir area (Gediz Basin) received about 50 percent of request, but farmers in the Adana (Seyhan Basin), did not suffer shortages.

Technology

Until the last decade, DSI designed and constructed systems for furrow irrigation. In many areas, the gravity systems were supplemented by groundwater. More recently, DSI started to design closed pressurized systems suitable for drip irrigation, but the huge backlog of incomplete systems has not been re-designed, thus furrow irrigation will prevail in most areas. It appears that farmers are well aware of the benefits of drip irrigation, both to reduce water consumption and simplify fertilizer application. Some of the more prosperous farmers have installed drip for vines and tree crops, vegetables and water melons in both areas.

DSI strongly promotes drip irrigation and the Government has a program to subsidize drip investments at 50 percent with a repayment of five years without interest. Despite the subsidy, farmers generally feel they cannot afford the investment or cannot deal with the complicated official procedures required to obtain the subsidy. In both Adana and Izmir areas, maize has replaced cotton as the major annual crop, which limits the likely spread of drip irrigation. DSI staff estimate that as much as half of the irrigated land in the Adana area is leased to other farmers, rather than farmed by the owners. Presumably, renters are less likely than owners to invest in drip irrigation, particularly for field crops. Nonetheless, it is clear that farmers and DSI both see drip irrigation as the wave of the future, and the incidence of drip irrigation will increase as farmers continue to grow more high-value crops in fields and under plastic. Institutionally, WUAs appear to be passive observers in the process of technological change, rather than active advocates and supporters. WUA leaders are likely to be on the cutting edge of changes as individuals, however.

Production, Processing and Marketing

Turkey has a multi-tiered, dynamic post-production infrastructure. Without exception, farmers in the WUAs we visited produce for national and international markets. They sell their crops to buyers associated with packing houses and processing plants, many of which are located in the immediate area, in the case of raisins and citrus. Similarly, vegetables are often sold in the field prior to harvest and the middlemen may manage the harvest itself and transport. For annual crops, farmers obtain market information in the local markets and through the media.

Each of the areas we visited has a primary traditional permanent crop—grapes, citrus and now pomegranates—as well as field crops and vegetables. In the Izmir area, Manisa and Alasehir are internationally famous for raisins, and tangerines and oranges from Gumuldu have national name recognition. Adana area has a greater mix of crops and a higher proportion of annual crops—vegetables, maize and cotton, which has declined sharply in the last decade. In all cases, farmers interface with middlemen, some of whom provide input supplies on credit, but they tend to keep their options open until near harvest time, to obtain the best prices, rather than commit their crops early in the season. Although raisins are processed for the EU market in sophisticated packing plants, citrus is exported to Russia or other counties with lower quality standards.

The team encountered three new developments that demonstrate the dynamism of the private sector in processing and marketing, sometimes with official support. First, in Suruhanli (Manisa), a former cotton processer started a new raisin processing factory in conjunction with a Dutch partner that will eventually produce high-value yoghurt-covered raisins. This particular niche should shield the entrepreneur from the highly competitive raison processors, including the leading state cooperative.

The second innovation is in Alasehir (Manisa), where the President of the WUA has used his influence as Mayor to simplify investment procedures to encourage

entrepreneurs to establish fresh grape processing facilities in the area. These facilities package the same grapes used for raisins and farmers earn more per hectare for fresh grapes than for raisins. The Mayor claims that the number of processing facilities has increased from one in 1999 to 60 in 2007; and fresh grape exports to the EU increased from 10,000 T in 1999 to 180,000 T in 2007.

Finally, citrus farmers in the Adana area have established a Citrus Growers Union with 400 members to promote the interests of citrus growers. The Union tests and recommends varieties, advises growers on production techniques, and tries to use its bargaining power to negotiate prices with 5-6 large traders and exporters in the region. Although this is the largest we encountered, informants suggest that other producer unions are also being established for other crops. The Union also appears to inform members of new opportunities and to help cut through the red tape required to obtain drip irrigation subsidies, for example. As a result, WUA leaders expect the amount of drip in citrus to increase significantly this coming year. Although the Union does not have a formal relationship with WUAs, members of the Union are also members of the WUAs. In one case, members of the Union recently convinced the Gazi WUA to set up and manage a weather station.

Preliminary Observations

Turkish WUAs cover large hydrological units and function as businesses, thus they resemble water-districts more than participatory associations. They are autonomous and have full authority over their command areas, as well as real responsibilities. The WUAs interface with DSI for planning and scheduling, and their maintenance activities are monitored closely by DSI, but they are not officially within the DSI chain of command. Of course, on a practical level, the level of WUA autonomy varies with the amount of water resources available. In this sense, the WUAs in Adana are considered to be more independent than in other regions of relative water scarcity.

WUAs were equipped with the machinery they need to carry out maintenance responsibilities (some DSI staff argue that they have too much equipment) and have the authority to set tariffs at levels that enable them to use and maintain the equipment. Many of the WUAs we visited use irrigation infrastructure systems that is from 30-50 years old and therefore can expect to face major reconstruction investments in the future. This is a concern of DSI as well as the WUAs, as the logical approach would be to change to closed pressure systems, which the WUAs think they cannot afford. Moreover, most WUA leaders believe that their members cannot afford the high tariffs required to put funds aside for a major transformation, thus they do not do so. Although there is great latent demand for pressure systems and farmers are aware of the benefits, individual farmers invest in facilities for their own plots, but WUAs do not take the lead. This should be a legitimate role of the WUA, but we saw little evidence that is being taken up. Thus the question remains what would be needed to get WUAs to play the leading role in system transformation and universal adoption of water-saving technology.

On the commercial and marketing front, it is not clear that there is an obvious role of WUAs except perhaps as a conduit for information for members regarding technical issues, marketing opportunities and the benefits of collective bargaining. The post-production sector is both well-developed and dynamic and, while farmers in Turkey suffer the universal disadvantages vis-à-vis middlemen, it is clear that they generally have alternatives. Discussions with processors and packers suggest that farmers individually look to obtain the best prices, rather than wait passively for buyers to come to them. Producers unions show promise for specific crops, and they may spread if they are successful. Meanwhile, as small farmers generally have less maneuverability than larger, prosperous farmers, there may be a role for WUAs to assist them. In Jordan, for example, the main actors in WUAs are permanent farmers. They compete for prices and markets with renters who are generally tied to large commercial enterprises, and see opportunities for the WUA to develop processing facilities or to bargain with middlemen on their behalf.

In short, it appears that WUAs in Turkey are important and could be sustainable if they plan farther in the future, but they could do more for their members.

ANNEX 3
PERSONS MET

Jordan, December 7-10, 2007

Amman
The first visit to the Jordan Valley Authority (Middle Directorate):

Mr. Jochen Regner,
GTZ Program Manager
Water Resource Management In Irrigated Agriculture (WMIA)
GTZ Water Program
Amman, Jordan
Tel. and Fax: 00962-(0)6-5678926
Mobile: [redacted]
E-mail: [redacted]
Websites: www.gtz.jo, www.gtz.de

Eng. Ali Al-Edwan,
GTZ WUA specialist
Water Resource Management In Irrigated Agriculture (WMIA)
GTZ Water Program
Amman, Jordan
Tel. and Fax: 00962-(0)6-5678926
Mobile: [redacted]

Eng. Qayis Oaiss
Director of North and Middle Directorate,
Jordan Valley Authority,
Ministry of Water and Irrigation,
Jordan Valley, Derar Region,
Tel: 00962-(0)53570559
Mobile: [redacted]

The Second visit: Water User Association (PS.55), Jordan Authority, (North Directorate):

Mr. Walid Omar Al-Fakeer, WUA Chairman
Kraymeh, North Valley
Mobile: [redacted]

The Third visit: Water User Association (PS.33), Jordan Authority, (North Directorate):

Mr. Mohammad Qassem, Chairman
Al-Balawneh, North Valley
Mobile: [redacted]

Mr. Araf Abudullah, Secretary
Mobile: [redacted]

Mr. Yousef Hamed, Member
Mobile: [redacted]

Mr. Fadi Abu Sahuoon,
Water Resource Management In Irrigated Agriculture (WMIA)
GTZ Water Program
Amman, Jordan
Tel. and Fax: 00962-(0)6-5678926
Mobile: [redacted]
Websites: www.gtz.jo, www.gtz.de

The Fourth meeting:

Ross E. Hagan, Deputy Director
Water Resources and Environment Office
USAID/Jordan
Amman, Jordan
Off. Tel: +962-6-590-6284
Mobile: [redacted]
Email: [redacted]

The Fifth meeting:

Mr. Ahmad Al-Bukhari,
Water Resource Management In Irrigated Agriculture (WMIA)
GTZ Water Program, Amman, Jordan
South Ghors-Al-Mazrah
Tel. and Fax 00962-(0)6-5678926
Websites: www.gtz.jo, www.gtz.de

The sixth meeting: (Establishment of Ghore Al-Safi WUA)

Eng Ali Al-Dwan,
Water Resource Management In Irrigated Agriculture (WMIA)
GTZ Water Program, Amman, Jordan
South Ghors-Al-Mazrah
Tel. and Fax 00962-(0)6-5678926
Websites: www.gtz.jo, www.gtz.de

Eng. Khalid Al-Qusoos
Director of Southern Ghoes and Wadi Araba Directorate,
Jordan Valley Authority,
Ministry of Water and Irrigation,
Jordan Valley, Derar Region,
Tel. 00962-(0) 32302571

Ms. Nancy Odeh
Ph.D. Candidate
Environmental Policy Group
Massachusetts Institute of Technology
77 Massachusetts, 02139-4307
Tel: 617-837-9292
Email: [redacted]

Egypt, December 11-18, 2007

Cairo

First Day meetings (Cairo):

Dr. Jeffrey Fredericks, PE, PhD
Chief of Party
LIFE
Integrated Water Resources Management Project
Ministry of Water Resources and Irrigation
9th Floor, El Warak, Imbaba, Cairo
Egypt
Tel: 20-2-544-9506, 9507, 9485
Fax: 20-2-544-9484
Mobile: [redacted]
Email: [redacted]
Web: www.iwrmeg.org

Eng. Moamen Said El Sharkawy, M.Sc. Civil Engineering
LIFE
Integrated Water Resources Management Project
Ministry of Water Resources and Irrigation
9th Floor, El Warak, Imbaba, Cairo
Egypt
Tel: 20-2-544-9506, 9507, 9485
Fax: 20-2-544-9484
Mobile: [redacted]
Email: [redacted]
Web: www.iwrmeg.org

Dr. Wadie Fahim Mankarious
Environmental, Water Resources Specialist
Integrated Water Resources Management Project
Ministry of Water Resources and Irrigation
9th Floor, El Warak, Imbaba, Cairo
Egypt
Tel: 20-2-544-9506, 9507, 9485
Fax: 20-2-354-8853
Email: [redacted]
Web: www.iwrmeg.org

Eng. Gamil El-Sayed Mahmud
Unit Director
Integrated Water Resources Unit
Ministry of Water Resources and Irrigation
9th Floor, El Warak, Imbaba,
Cairo, Egypt
Tel: 20-2-544-9554
Fax: 20-2-544-9530
Email: [redacted]
Web: www.iwrmeg.org

Eng. Wafaa P. Faltaous
Project Manager, LIFE
Office of Environment
USAID, Cairo
1/A Ahmed Kamel St
Off: El-Laselki St., New Maadi,
Cairo, Egypt
Email: [redacted]

Mr. Eric Viala
Regional Water Advisor
Office of Middle East Programs
USAID – Cairo
New Maadi, Cairo, Egypt
P.O.Box 32, Cairo, Egypt
Off: 20-(0)2 2522 6848
Fax: 20-(0)2 2522 7041
Mobile: [redacted]
Email: e[redacted]

[redacted] **El-Sabaa' – Manoufiya Governorate) :**

Eng Essam Berkat El-Sabaa'
IWRM Dstrict Head,
Berkat El-Sabaa' District
Manoufiya Governorate

Mr. Roshdy Madi
Chairman, Board Committee of the Shamman WUA
Berkat El-Sabaa' District
Manoufiya Governorate

Mr. Ali Senna
Chairman, Board Committee of the Om Dalal WUA
Berkat El-Sabaa' District
Manoufiya Governorate

Mr.Fadel El-Bathnoni
Chairman, Board Committee of the El-Dessa WUA

Berkat El-Sabaa' District
Manoufiya Governorate

Mr. Abdel Moeim El-Habashi
Chairman, Board Committee of the Meleeg West WUA
Berkat El-Sabaa' District
Manoufiya Governorate

Third Day meetings (Luxor) :
Eng Nabil Fahmy
IWRM District Head,
Luxor District
Luxor, Egypt

Mr. Ahmad Mohammad Abdelwally, Chairman
Board Committee of Al-Salamia Albahrya and its Branches WUA
Luxor' District
Luxor

Mr. Abdel star Badwai Mohammad
Board member, Board Committee of Al-Salamia Albahrya and its Branches WUA
Luxor' District

Mr. Mahammad
Board member, Board Committee of Al-Salamia Albahrya and its Branches WUA
Luxor' District

Mr. Ahmad Mustafa
Board member, Board Committee of Al-Salamia Albahrya and its Branches WUA
Luxor' District

Mr. Ahmad Al-Saadi
Board member, Board Committee of Al-Salamia Albahrya and its Branches WUA
Luxor' District

Fourth Day meetings (Luxor) :

Dr. Kelly Harrison
Managing Director
Egyptian Sun for Agricultural Development
EMME*flor*
Tel: +202-843-2456
Fax: +202-843-1675
Mobile: [redacted]
Email: k[redacted]

Sixth Day meetings (Cairo)

Ms. Randa Fahmy
Executive Vice President
EQI, Environment Quality International
18 Mansour Mohamed St.
Zamalek, Cairo 1211, Egypt
Tel: (+202) 735-3797, 738-1328
Fax: (+202) 735-5489
Email:[redacted]

Mr. Mounir Nakhla
Manager, Eco-Industry and Trade
EQI, Environment Quality International
18 Mansour Mohamed St.
Zamalek, Cairo 1211, Egypt
Tel: (+202) 736-7897, 738-1327
Fax: (+202) 735-5489
Mobile: [redacted]
Email [redacted]

Seventh Day meeting (Cairo)

Mr. Eric Viala
Regional Water Advisor
Office of Middle East Programs
USAID – Cairo
New Maadi, Cairo, Egypt
P.O.Box 32, Cairo, Egypt
Off: 20-(0)2 2522 6848
Fax: 20-(0)2 2522 7041
Mobile:[redacted]
Email:[redacted]

Turkey, January 27-February 2, 2008

Ankara

Mr. Halil Agah, M.Sc.
Senior Rural Development Specialist
World Bank
Ugur Mumcu Caddesi No. 88 2nd floor
06700Gaziosmanpasa
Ankara, Turkey
Off: (+90) 312-459-83-60
Fax: (+90) 312-446-24-42
Emai[redacted]

Mr. Ismail Ugur
Deputy Director General
General Directorate of State Hydraulic Works
06100 Yucetepe
Ankara, Turkey
Off: (+90) 312 418-92-07
Fax: (+90) 312 425-73-88
Email: [redacted]

Mr. Adem Avni Unal
Chief of Foreign Relations
General Directorate of State Hydraulic Works
06100 Yucetepe
Ankara, Turkey
Tel: (+90) 312 425-46-14
Fax: (+90) 312 425-46- 14
Email: [redacted]

Mr. Hasan Ozlu
Head of Operation & Maintenance Department
General Directorate of State Hydraulic Works
06100 Yucetepe
Ankara, Turkey
Tel: (+90) 312 418-33-90
Fax: (+90) 312 418-33-85
Email: [redacted]

Izmir

Mr. Ayhan Sariyildiz
Bolge Muduru**,**
DSI – State Hydraulic Works – 2nd Regional Directorate
Agacliyol Bomova - IZMIR
Tel: (+90) 236 462 74 04
Fax: (+90) 236 435 37 42
Cell: [redacted]

Mr. Mustafa Taskin,
Deputy Director
Management and Maintenance Branch Manager,
DSI – State Hydraulic Works – 2nd Regional Directorate
Sanayi Cad.No. 39
35100 Izmir/Turkey
Tel: (+90) 232 435 51 00/249
Tel Home: [redacted]
Cell: [redacted]
E-mail: [redacted]
E-mail: [redacted]

Dr. Huseyin Gundogdu,
Agricultural Engineer (PhD)
Planning Department
DSI – State Hydraulic Works – 2nd Regional Directorate
Sanayi Cad.No. 39
35100 Izmir/Turkey
Tel: (+90) 232 435 51 00
Fax: (+90) 232 435 37 42
Cell: [redacted]
E-mail: [redacted]

Mr. Bilgin Telek
Section Director**,**
DSI – State Hydraulic Works – 2nd Regional Directorate
DSI 22. Sube Mudurlugu
45020 Manisa/Turkey
Tel: (+90) 236 231 00 84
Fax: (+90) 236 232 11 34
Cell: [redacted]
E-mail: [redacted]

Mr. Bahattin Guneydas
Trim Urunleri Tic. LTD. STI
Bayrampasa
Ayrampasa Markez Hal No. 394
Istanbul
Tel: (+90) 212 640 39 14
Cell: [redacted]

Mr. Bkir Guneydas
Trim Urunleri Tic LTD. STI
Gumuldur Gumesko
Tel: (+90) 232 793 10 06
Fax: (+90) 212 640 02 10

Adana

Mr. M. Fuat Sucak
Bolge Mudur Yardimcisi
DSI VI Bolge Mudulugu
Orda Caddesi No. 96
Adana
Tel: (+90) 459 05-86

Mr. Faruk Umar
Kadikoy Sul. Bsk
Yenikoy Muhtari
Kizilzy Cad. No.129
Kat 1/7 Seyhan/ADANA
Tel: (+90) 322 351 46 52
Cell: [redacted]

Mr. Saban Is
Genel Sekreter
(Zir. Yuk. Muh)
T.C. Yukari Seyhan
Sulama Birligi
Baskanligi
Caputcu Koyu
Seyhan Adana
Tel: (+90) 322 493 43 14