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## **Improved Water Management Component**

# **Stakeholder Participation Activity in Integrated Water Management Districts**

**September 2004**



**International Resources Group and Partners**

MOBIS TASK ORDER No. 263-M-00-04 00004 00  
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Red Sea Sustainable Development and Improved Water Resources Management  
Improved Water Resources Management (IWRM) Component

## **Stakeholder Participation Activity in Integrated Water Management Districts**

September 2004

International Resources Group  
Washington, DC

Development Alternatives, Incorporated  
Washington, DC

MWRI  
Integrated Water Management Unit

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Eng. Moamen El Sharkawy and Eng. Amira Abdel Hady of the Integrated Water Management Unit (IWMU) prepared this report for the Stakeholder Participation Task Group.

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## Acronyms, Abbreviations, and Measurements

AAU	Agricultural Administrative Unit
AED	Academy for Educational Development (a US-based entity providing USAID-funded assistance regarding environmental education and awareness)
AO&M	Administration, operation and maintenance
APRP	Agricultural Policy Reform Program
BCWUA	Branch Canal Water User Association
CAPMAS	Central Agency for Public Mobilization and Statistics
CSO	Civil Society Organization
CTO	Cognizant Technical Officer. The USAID person responsible for supervising a technical assistance contractor.
DAI	Development Alternatives, Inc. (a Washington DC-based consulting firm providing USAID-funded assistance regarding water management)
DANIDA	Danish International Development Agency
DMS	Data Management System
DSL	Digital Subscriber Lines
EE	Environmental Education
EEIS	Egyptian Environmental Information System
EEPP	Egyptian Environmental Policy Program (a USAID-funded program aimed at achieving environmental policy reform)
EPADP	(MWRI) Egyptian Public Authority for Drainage Projects
EPIQ	Environmental Policy and Institutional Strengthening Indefinite Quantity Contract
GIS	Geographic Information System
GOE	Government of Egypt
GPS	Global Positioning System
GW	Groundwater
GWS	Groundwater Sector
HCDWI	Head of the Central Directorate for Water Resources & Irrigation
HEPS	(MWRI) Horizontal Expansion & Projects Sector
HGD	Health General Directorate
HTML	Hyper Text Markup Language
IAS	Irrigation Advisory Service (CD: Central Directorate)
IBRD	International Bank for Reconstruction and Development or World Bank
ID	Irrigation Department
IDS	Irrigation and drainage system
IIIMP	Integrated Irrigation Improvement and Management Project
IIP	Irrigation Improvement Project
IIS	(MWRI) Irrigation Improvement Sector
IMT	Irrigation Management Transfer
IRG	International Resources Group (a Washington DC-based consulting firm that is prime contractor for USAID's support the Water Component)
IS	Information System
IS	Irrigation Sector of the MWRI
ISM	Irrigation Systems Management Project
ISP	Internet Service Provider

ISTG	Information System Task Group
IT	Information Technology
IWM	Integrated Water Management; the unit of MWRI formerly known as the Water Policy Advisory Unit (WPAU)
IWMD	Integrated Water Management District
IWMD-IS	Integrated Water Management District-Information Systems
IWMU	Integrated Water Management Unit
IWRM	Improved Water Resources Management Component of RSC/W
LAN	Local Area Network
M&E	Monitoring and Evaluation
MALR	Ministry of Agriculture and Land Reclamation
MED	(MWRI) Mechanical & Electrical Department
MIC	MWRI Ministry Information Center
MISD	Matching Irrigation Supply and Demand
MOU	Memorandum of Understanding
MS	Microsoft
MWRI	Ministry of Water Resources and Irrigation
NDP	Second National Drainage Project
NEAP	National Environment Action Plan
NGO	Non governmental Organization
NWRC	(MWRI) National Water Research Center
O&M	Operation and Maintenance
OJT	On-the-Job Training
PDA	Personal Digital Assistance
PM&E	Performance Monitoring and Evaluation
PSU	Program Support Unit
RSC/W	Red Sea Coastal/Water, short name for this contract
STTA	Short-term Technical Assistance
TA	technical assistance
TCP/IP	Transmission Control Protocol/Internet Protocol
TOR	Terms of reference
UNDP	United Nations Development Program
UPS	Uninterruptible Power Supply
USAID	United States Agency for International Development
USB	Universal Serial Bus
WAN	Wide Area Network
WAU	Water Advisory Unit
WCU	Water Communication Unit
WDC	MWRI Central Water Distribution Center
WPRP	Water Resources Results Package
WQU	MWRI Water Quality Unit
WUA	Water User Association
ZA	El Zenati and Associates

### ***Measurement Units***

Feddan	unit of land measurement = 4200 m <sup>2</sup>
Kerat	unit of land measurement = 1/24 feddan = 175 m <sup>2</sup>

# Executive Summary

## ***Background: Decentralization to Integrated Water Management Districts***

The Egyptian Ministry of Water Resources and Irrigation (MWRI) is creating integrated water management districts (IWMD) by consolidating the staff and budgets of MWRI district offices. Consolidation requires unification of district boundaries for different responsibilities, a new organizational structure, an intensive training program, installation of an integrated database system, and a more participatory approach to water resource management.

The USAID-funded Integrated Water Management Project, September 2003 to September 2004, has assisted implementation of this policy in four pilot irrigation districts. The Integrated Water Management Unit (IWMU) of the MWRI has supported this policy with assistance and resources for seven activities: District Consolidation, Water Monitoring, Stakeholder Participation, Information System, Performance Monitoring and Evaluation, and Training.

Beginning in December 2003, MWRI with USAID support has promoted stakeholder participation by formation Branch Canal Water Users Associations (BCWUAs). This report concerns the actions and results of the stakeholder participation activity.

## ***Accomplishments***

From December 2003 to August 2004, IWMD staff, with support of the Integrated Water Management Unit (IWMU), the Central Directorate of Irrigation Advisory Service (CDIAS) and the RSC/W project, accomplished the following:

- Established 94 BCWUAs on all branch canals of four pilot districts
- Assisted and trained the BCWUA members so that each BCWUA could pass through its initial development phases: 1) Entry, 2) Organizational Development, and 3) Memorandum of Understanding
- Trained 90 staff members of the pilot IWMDs so that they could support the BCWUAs and provide a continuing capacity for the IWMDs to work in a more participatory manner. There were nine training modules followed by on-the-job exercises with farmers.
- Implemented supporting activities to document the pilot experience for future replication and enhancement.

In more detail, their accomplishments included:

### **1. Forming field teams in the IWMDs to support WUAs.**

Historically, WUAs in Egypt were established by teams from CDIAS, or another central office of MWRI. A major change initiated under this project was to build the capacity of the IWMD field staff to establish BCWUAs. A field team (FT) of 4 to 5 members, including at least one woman, was designated for each branch canal. The total project team working in BCWUA establishment in the four IWMDs had the equivalent of 86 full-time members (79 FT and 7 managing team). Each district had between 13 and 27 staff devoted to work with BCWUAs (Table 1).

**Table 1 Field Staff for BCWUA Formation**

	District							
	South Zifta		Ibrahimiya		Luxor		West Esna	
Position	IAS	District Staff	IAS	District Staff	IAS	District Staff	IAS	District Staff
Engineers	2	1	2	1	—	1	1	1
Technicians	—	15	—	18	11	15	1	10
Total	18		21		27		13	
Feddan	42,360		59,000		42,850		22,000	

## 2. The IWMU and CDIAS trained IWMD staff for participatory irrigation management and establishment of BCWUAs, followed by farmer training events to develop the BCWUAs.

CDIAS trained about 90 field staff members within the four IWMDs to build local capacity for managing participatory irrigation management (PIM) and establishing BCWUAs. The staff training included 9 training courses. Each classroom course was implemented twice, once for Upper and once for Lower Egypt. In total, there were 80 days of classroom training.

After each classroom course, there were district field or on-the-job training for BCWUA formation and strengthening. The topics corresponded to the staff training courses, and additional, tenth field workshop. In all, there were 226 days of field practices or on-the-job training in the four districts.

The success of the program resulted from using both classroom and on-the-job training consecutively in a well-planned and logical program to achieve the Stakeholder Participation objectives.

Training was organized in three phases: Entry, Organization and MOU, as follows:

- **Entry Phase.** The Entry Phase introduced the BCWUA to the IWMD staff, farmers and residents of the branch canal. By the end of this phase, the FT had been recruited, staff and water users were familiar with the concepts of the BCWUA, data were collected, and key people were informed of the process. The stage was set to form BCWUAs.

As Law 12 has not yet been revised to define the role of BCWUAs, the legal form to establish a BCWUA was an Initiation Decree by the Minister of Water Resources and Irrigation for establishment of BCWUAs in the four IWMDs.

The following courses correspond to the Entry Phase:

- Orientation
- Data Collection
- Stake-holder Analysis
- Gender Issues and Canal Grouping
- **Organization Phase.** The Organization Phase resulted in recognized BCWUAs. Based on the initiation decree, the farmers and residents of each BC elected a BCWUA assembly. The Assembly elected its Board, including a BCWUA board chairperson, secretary, treasurer, and other members. Then the

Undersecretary of Water Resources and Irrigation at the governorate level issued a decree establishing the BCWUA.

The following courses correspond to the Organization Phase:

- Election of Representative Assembly
  - Roles & Responsibility of the Representative Assembly
  - Election of BCWUA Board
  - Roles & Responsibility of the BCWUA Board
  - Exchange of Experience among BCWUAs
  - Follow-up for Water Users (BCWUA board only)
- **Memorandum of Understanding (MOU) Phase.** To enhance stakeholders' participation and to start activation of the established BCWUAs, a MOU was prepared covering roles and responsibilities. The MOU was signed by the Undersecretary of Water Resources and Irrigation at the governorate level representing the MWRI, and the Chairperson of each BCWUA, representing all the BCWUA members. The MOU did not require an additional course because it was covered in the Roles and Responsibility workshops of the earlier phase.

At the end of these three phases, the BCWUAs became ready to undertake practical functions and to represent water users to the IWMD.

### 3. IWMU and CDIAS Implemented Supporting Activities that Enable Replication.

The IWMU and CDIAS with project support undertook the supporting activities needed to document this pilot experience for future replication. Activities have included the following:

- **Preparation of Training Modules.** The Activity produced nine training modules and agendas, one for each of the courses. It produced designs for participatory water management and establishment of BCWUAs.
- **District Data Base for Strategic Planning.** The IWMD BCWUAs database was developed by CDIAS to document the progress of each branch canal and BCWUA and to archive that information at IAS and within the relevant IWMDs.
- **M&E Knowledge Base for Replication.** Establishing BCWUAs in the IWMDs of four governorates is expected in the near future, and in all irrigation districts of Egypt eventually. Therefore, there is a need for efficient and effective ways for establishing BCWUAs. The Knowledge Base for Replication incorporates interviews with field staff, IAS agents, District supervisors, and engineers.
- **Process Documentation.** The Activity Work Management Group designed formats to help the field staff to report each field activity for establishing BCWUAs; these have been collected and archived.
- **Public Awareness Activities.** The Water Communications Unit of MWRI, with assistance from AED, produced “The Branch Canal Water User

Associations Informative Handbook.” A pamphlet of “Frequently Asked Questions about Branch Canal Water Users Associations” is being prepared for all the members of the BCWUAs. The pamphlet explains the benefits of a BCWUA and its organizational structure.

## Results

**BCWUAs.** By August 2004, the activities just described achieved formation of 94 BCWUAs, covering all the branch canals within the four pilot IWMDs.

Now, 64,593 water users are members of an organization; 1,924 water users are serving in representative assemblies; and 576 are on boards.

**Table 2 BCWUAs Established**

	South Zifta	Ibrahimiya	Luxor	West Esna	Total
Branch Canals Water User Associations	26	31	30	7	94
Water Users Organized	29,059	11,878	14,691	8,955	64,583
BCWUA Representative Assembly members	474	662	659	129	1924
BCWUA Board Members	158	169	194	55	576

**Participation of Women.** Women were well represented in this project. The FTs included 1 woman in each 5-person team, which strengthened the teams. About 13 percent of Assembly Representatives and Board Members are women.

**Table 3 Women Participating in BCWUA Assemblies and Boards**

	South Zifta	Ibrahimiya	Luxor	West Esna	Total
Number of females in BCWUA Representative Assembly	77	127	42	11	257
Percentage of all BCWUA Representative Assembly Members that are females	16.2%	19.2%	6.4%	8.5%	13.4%
Number of females on BCWUA Boards	30	25	15	4	74
Percentage of all BCWUA Board members that are females	19.0%	14.8%	7.7%	7.37%	12.9%

## Lessons Learned

**Planning Baseline.** Several key numerical figures for future planning were calculated as part of the Knowledge Base supporting activity. These figures may be used in several ways – as baselines to be compared with future projects, as initial estimates of

project characteristics to be adjusted as a new project acquires local knowledge, as estimates of initial staffing needs, and otherwise.

Among the figures that may be useful for planning are the numbers of water users per BCWUA and the number of feddans per BCWUA.

**Table 4 Planning Parameters (a)**

IWMD	South Zifta	Ibrahimiya	Luxor	West Esna	Average
Water Users per BCWUA	1,118	383	490	1,279	687
Feddans per BCWUA	1,525	2,000	1,428	3,143	1,771

Labor usage was analyzed and may also prove useful as a baseline:

**Table 5 Planning Parameters (b)**

Size of BC	District Field Team Staff (person-days)		
	Engineer	Field Staff	Total
1771 feddans (mean of this project)	12.7	101.8	114.8
2235 feddans (mean of IIIMP proposal)	14.7	117.2	131.9

Source: Knowledge Base

**Keys for BCWUA Success.** Some of the important elements for future success are the following:

- **MWRI Support and Team Organization.** There was full cooperation, participation and support from the relevant MWRI management units, notably the IWMD managers, the general directors and the undersecretaries. They were the institutional counterparts for implementing water resource participatory management
- **Planning Considerations.** a) The establishment of BCWUAs was part of integrated water management at the district level, rather than a separate activity. b) Planning for implementation was adjusted for **site-specific conditions**, including canal/drain system layout and the social conditions of users and stakeholders. c) The effort to establish BCWUAs provided opportunities for regional and local stakeholders, including governmental and non-governmental organizations, to participate in the process. The agricultural cooperative agents helped the activity, especially during data collection.
- **Selection of Staff.** Staff candidates were nominated by the District and selected by the Activity Work Management Group. The District nominated a pool of candidates larger than the needs of the WUA effort so that the staff could be selected from candidates. Prior experience and areas of interest came to guide selection. Criteria for selection are reported in the body of this report. When a district staff member was assigned to the activity, he or she usually received a formal decree from the relevant DG. This avoided problems that have been experienced in other projects.

- **Field teams.** Staff organization included a) field teams of 4 or 5 individuals, including at least one woman, b) development of work plans by every field team, c) tasks assigned for each staff member
- **Monitoring and evaluation.** Continuous monitoring and evaluation of implementation and staff activities was crucial for success.
- **Gender.** Women participated fully in this Activity, both as water users and as outreach staff. The degree of participation exceeded expectations.
- **Participation.** Farmer participation was more enthusiastic than expected. There is an expectation that the BCWUAs will result in effective participation in decisions.

### ***Issues to be Addressed for Future Implementation***

**Further development.** In an astonishingly short time, and with considerable farmer enthusiasm, the BCWUAs with IWMDs have been formed and arrived at the point of achieving participation in water management decisions in IWMDs.

However, they have not yet taken that step. The Activity Work Management Group recommends that they should be supported in the Activation and Transfer Phases to see how far they can go to provide important benefits to members. BCWUAs can a) assume A,O and M tasks, b) improve water delivery or drainage, c) reduce conflict over water; d) become effective representatives of farmers, e) become effective partners in support of agricultural development, and f) deliver other benefits to members.

**Focus.** Irrigation and drainage, or agriculture more broadly conceived, continues to be the principal focus of the members of the BCWUAs, while the representatives of the residential areas, largely women, have shown a strong concern with environmental issues. Both are valid concerns. Agriculture should remain as the principal focus as BCWUAs assume operational tasks, with environment an important secondary concern.

**Policy.** Legal reform to recognize BCWUAs should be supported. When the BCWUAs become legal entities under a revised Law 12, they will face important choices. Will they manage money? Will they legally take on AO&M tasks? The Activity Work Management Group suggests that the BCWUAs undertake as much of the operations and maintenance of the BCWUA as they are able.

**Replication and expansion of this activity.** The national goal for the next five years should be to expand the number of IWMDs with BCWUAs by more than 75 Districts, including 24 with financing of USAID and MWRI, 19 with financing of IIIMP and MWRI (2 overlapping with USAID-financed areas), and the balance with other financing, including the Water Boards Project and GOE/MWRI funding. There are 206 Districts in Egypt, so that goal would be to cover at least 36 percent of the Districts within 5 years.

The number of staff needed to reach 36% of BCWUAs in the country may be estimated, using the parameters developed in their report, at about 1.3 percent of the total MWRI staff in the country (according to MWRI data provided to M. Svendsen). This may be an important and productive use of their time. If this modest load is not acceptable, the very WUAs may take on the task, possibly at lower cost.

Initial planning for replication of the BCWUA/IWMD experience should be done using the planning parameters derived from the current experience, modified in the following ways to reflect increasing efficiencies:

1. District Staff will become more efficient with increasing experience; farmers will know about BCWUAs from the experiences of their neighbors;
2. As farmers gain capacity, the very BCWUA can become an institutional partner to reduce the work load on the IWMD; the level of support for new BCWUAs may be constant but farmers may take on some of the work, thus reducing costs;
3. Supporting central staff will become more efficient, given that the training modules, data base forms, and knowledge base are in place;
4. New actors, such as WUAs formed at a higher level, may come on line and assist organization of BCWUAs.

**Alternative methods.** The institutional model presented here – IWMD reorganization, recruitment of willing staff, the Activity Work Management Group to provide support, participation of governorate-level undersecretaries, limited amounts of outside technical support – should be considered a sound model for larger projects and programs. Smaller efforts may not need as much regional or national managerial inputs.

The BCWUA model here, which incorporates elements of the Water Boards model, is proving viable, at least at these early stages. It may have to be modified for ground water systems. More work needs to be done to make the BCWUA and agricultural units more compatible with the structures of the main canals.

The methods used here should be expected to evolve because the BCWUAs have not taken on their potential O&M functions. These functions, including water allocation and conflict resolution, will become more important in the coming years as the limited supply of water meets the growing demand caused by urban growth and opening new lands to irrigated cultivation. Further, as they become more experienced and well established, BCWUAs will become more active and will develop new understandings with their MWRI IWMDs.

# 1. Introduction

The Egyptian Ministry of Water Resources and Irrigation (MWRI) is creating Integrated Water Management Districts (IWMD) by consolidating the staff and budgets of the MWRI offices within irrigation districts, units that serve an area of about 40,000 feddans. Consolidation requires unification of authority/administrative boundaries, preparation of a new organizational structure, an intensive training program, installation of an integrated database system, and a more participatory approach.

The Integrated Water Management Unit (IWMU) of the MWRI has supported this policy with assistance and resources for seven activities: District Consolidation; Water Monitoring; Stakeholder Participation; Information System; Performance Monitoring and Evaluation; and Training.

This report concerns one of those activities, Stakeholder Participation. Beginning in December 2003, Stakeholders' Participation has been promoted through the formation of Branch Canal Water Users' Associations (BCWUAs) in the IWMDs.

## ***Authorization***

A consortium led by International resource Group (IRG) under the USAID funded Red Sea Coastal/Water Project (RSC/WP -- Contract No. MOBIS GS IOF-0076MSIN 874-1 Task Order MOBIS 263) was responsible for assisting the Government of Egypt (GOE) to improve environmental management. The purpose of the task order was to provide the core management and analytical technical support for several components of the Egyptian Environmental Policy Program (EEPP). The period of performance was from September 1, 2003 through September 30, 2004.

RSC/WP has assisted MWRI in the activities described in this report, including establishing Branch Canal Water User Associations (BCWUA) and preparing this report.

## ***Purpose of the Report***

The purpose of this report is to document the activities and results of the Stakeholder Participation Activity of the RSC/WP Project, the effort to establish Branch Canal Water Users Associations (BCWUAs) in four pilot IWMDs. It also summarizes lessons learned from the experience to provide recommendations for replication and continuation of the work with BCWUAs in IWMDs.

## ***Organization of the Report***

Following the Introduction (Chapter 1 of this report), there is a review of the context of the Stakeholder Participation activity, including a general overview of the MWRI policy in participatory water management and a summary of the RSC/W Project (Chapter 2). Chapter 3 presents the activity program and accomplishments, including objectives, work plans, organizational structure, strategies and accomplishments. Chapter 4 describes the results of the activities implemented, which were described in the preceding chapter. Chapter 5 briefly compares the goals of the Stakeholder Participation activity with its achievements. Chapter 6 presents the lessons learned through implementing the activity. The final Chapter 7 makes recommendations for

expanding the coverage of BCWUAs within IWMDs in Egypt in accord with MWRI policy and the findings of this report.

Detailed documentation of activities is provided in the appendices:

Appendix A	Activity Work Plan/Schedule
Appendix B	Process Documentation for established BCWUAs
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## 2. Context for Stakeholder Participation Activity

The Ministry of Water Resources and Irrigation (MWRI) is the primary government agency charged with management of water resources in Egypt. MWRI and USAID are aware of the need for policy reforms that will effectively address the water needs of a growing population and agricultural expansion. MWRI has three main axial policy objectives:

1. Development of additional water resources.
2. More efficient use of the available water resources.
3. Improvement of water quality to protect public health and the environment.

To achieve these objectives, the MWRI has formulated and adopted short and long-term policy goals. One of the long-term goals is to reorganize its internal functions and operations through local consolidation and ministry-wide decentralization, including devolution of authority to the local level.

### ***MWRI and USAID Support for Integrated Water Management***

The MWRI has adopted a policy to integrate all water management functions at the district level to support decentralized management. These districts are called Integrated Water Management Districts (IWMD) (هندسات الموارد المائية والرى). An IWMD is a single entity that operates and maintains all water resources and facilities under its jurisdiction for irrigation, drainage, groundwater and pump stations to deliver water to users equitably [synthesis of several definitions; see APRP Report 49].

Ministerial Decree number 506 was issued on December 10, 2001 to form two IWMDs in Lower Egypt: 1) South Zifta Irrigation District in the Zifta General Irrigation Directorate, and 2) Ibrahimiya Irrigation District Irrigation in West Sharkia General Irrigation Directorate. Two additional districts were later formed in Upper Egypt by Ministerial Decree number 308, issued on June 22, 2003. These are West Esna Irrigation District and Luxor Irrigation District in Qena General Irrigation Directorate.

### ***Historical Background for BCWUA Establishment and Stakeholder Participation in IWMDs***

A critical component of the IWMD is stakeholder participation. “**Stakeholder participation**” refers to interactive participation in decision-making concerning the development and management of water resources. The MWRI recognizes that stakeholder participation strengthens fulfillment of public policies and contributes to transparency of public and private action. It provides opportunities for cooperation and coordination between government and stakeholders, which builds trust and collaborative relationships.

MWRI has recognized that for an effective IWMD, participatory organizations must be established and activated on each branch canal within the IWMD.

**Participatory Irrigation Management (PIM)** is the part of stakeholder participation that focuses on agricultural issues. **Water resource management** is broader and includes other water users and managers. PIM includes planning, design, construction, maintenance, and financing for the main irrigation system and all subsystems.

Involvement is flexible, ranging from information sharing, consultation, and joint assessment to shared decision-making, collaboration, and empowerment. PIM includes water user assumption of administration, operations and maintenance (AO&M) functions. PIM has been found in many countries to address inefficiencies in managing irrigation and drainage, and to assist demand management.

MWRI was the pioneer agency in Egypt in conceptualizing and implementing PIM. Over the course of 20 years, MWRI has supported PIM initiatives and the concept has evolved to include not only irrigation management but also representation of other water users and residential areas. These developments established the methods and policies for the current activity, which is the largest expansion of BCWUAs to date. Interested readers will find a summary of Egypt's experience with PIM as Annex H.

### ***Project Description***

The Government of Egypt (GOE) has undertaken to promote improved water resources management with the assistance of the USAID funded Red Sea Coastal/Water Project (RSC/WP). Technical assistance is provided by International Resource Group (IRG) under contract to USAID (Contract No. MOBIS GS IOF-0076MSIN 874-1 Task Order MOBIS 263). With assistance of this project, MWRI has continued implementation of the Integrated Water Management Districts (IWMD) in four districts in three governorates.

Integration of activities at the District level is the unifying concept guiding the project. The integration of an IWMD has five themes:

- **Administrative integration:** Under present operational and administrative procedures, management of supplies and services within the MWRI is handled through line department directives emanating from the central ministry to lower line offices at the inspectorate and district levels. Administrative integration consolidates and decentralizes all MWRI offices at the district level in one entity under one management.
- **Water Resources Integration:** In an IWMD, water resources (surface water, drainage, groundwater and rainfall) will be managed in an integrated manner to maximize the benefits from water use.
- **Information Integration:** Information will be maintained at the IWMD.
- **Water Users Integration:** Direct water users have a role in the IWMD to achieve efficiency and sustainability of water projects. The method is to establish BCWUAs linked to the IWMD.
- **Stakeholders Integration:** Broader participation of governmental and non-governmental organizations in water resources management in the IWMD is intended to prevent redundancies and provide the forum for integrated planning of investments.

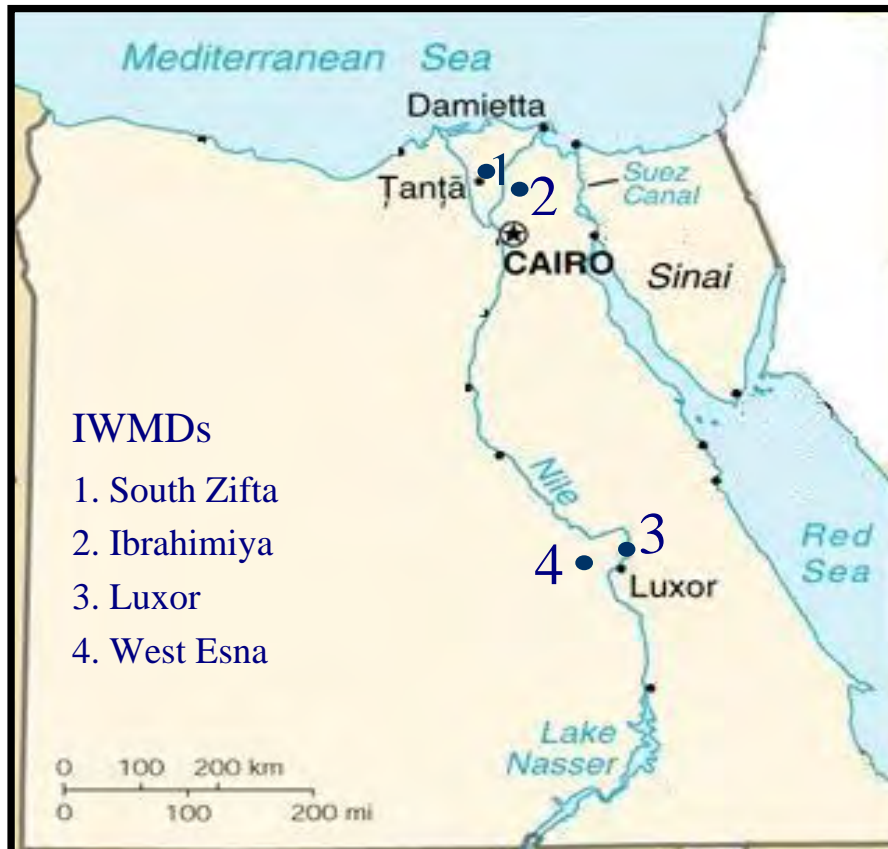
Two additional themes -- decentralization and gender inclusion – complement integration:

- **Decentralization.** The goal is to train District staff to do tasks currently done by Central staff, in this case, the Central Directorate of IAS.

- **Gender.** MWRI policy is to promote gender considerations. In this Activity, the concern was to support women’s active participation in field teams and in BCWUAs.

RSC/WP works in four districts (Figure 1): South Zifta District (Gharbia Governorate), Ibrahimiya District (Sharkiya Governorate), Luxor District (Qena Governorate), and West Esna District (Qena Governorate).

**Figure 1** Project Target Integrated Water Management Districts



### ***Stakeholder Participation (BCWUA Establishment) in the Component***

The objective of the project is to activate farmers’ participation by establishing BCWUAs on all of the secondary canals in the in the four targeted districts.

#### **Strategy to Establish BCWUAs**

The challenges to establish BCWUAs on all branch canals at four IWMDs were 1) to achieve an unprecedented expansion in the number of BCWUAs given limited financial resources and time, 2) to accomplish BCWUA establishment in a way that would be a foundation for later expansion vertically and horizontally, 3) to incorporate the MWRI policies of integration, decentralization, and gender, and 4) to set the standards for similar stakeholder participation activities in Egypt and to document the experience so that it would serve as a model.

The program was designed to establish BCWUAs through a comprehensive, stepwise training effort. IAS has used a ten-step process in three phases to establish the BCWUAs, with supporting activities. The steps of the method are:

- **Entry Phase:** Introduce concepts and promotion to both District staff and water users of the District, and prepare for BCWUAs organizational building
  - Staff Recruitment:: designation of district field staff to activate an IAS unit under the IWMD structure
  - Water Users Orientation
  - Data Collection
  - Stakeholders Analysis and Key Persons Identification
  - Canal Grouping
- **Organizational Phase:** District staff and water users, with central support, build the BCWUAs
  - Issuance of IWMD BCWUAs Initiation Decree
  - Election of BCWUA Representative Assembly
  - Election of BCWUA Board
  - Issuance of BCWUAs Establishment Decrees
- **Memoranda of Understanding Signing Phase:** Introduce and proceed in signing memoranda of understanding (MOU) between the MWRI and the established BCWUAs, to start BCWUA roles and responsibilities and maintain the momentum that was initiated during organization.
  - MOU signing

The implementation plan had two components for each of these steps. The first main component was to train the staff of the Districts so that they could establish BCWUAs and have the capacity to continue the work. The second main component was to train water users and organize the BCWUAs (Appendix C).

IAS staff had the responsibility to train the District staff. Immediately after training, the District staff would go into the field to apply the training. The IAS accompanied the District staff in the initial practical applications to assure quality and to learn lessons for future work.

Supporting activities by IAS and IWMU include oversight, technical assistance, monitoring and the knowledge base for following progress. The supporting activities proceeded continuously while the BCWUAs are being formed. The main supporting activities are the following:

1. **District BCWUA Database.** Develop a database for the established BCWUA to be installed at each IWMD integrated database system,
2. **M&E Knowledge Base.** Gather and analyze documentation on the experience for replication and modification..
3. **Oversight and Planning.** Technical oversight of District implementation

## Institutional Structure for Implementing Stakeholder Participation

The institutions implementing the Stakeholder Participation activity included:

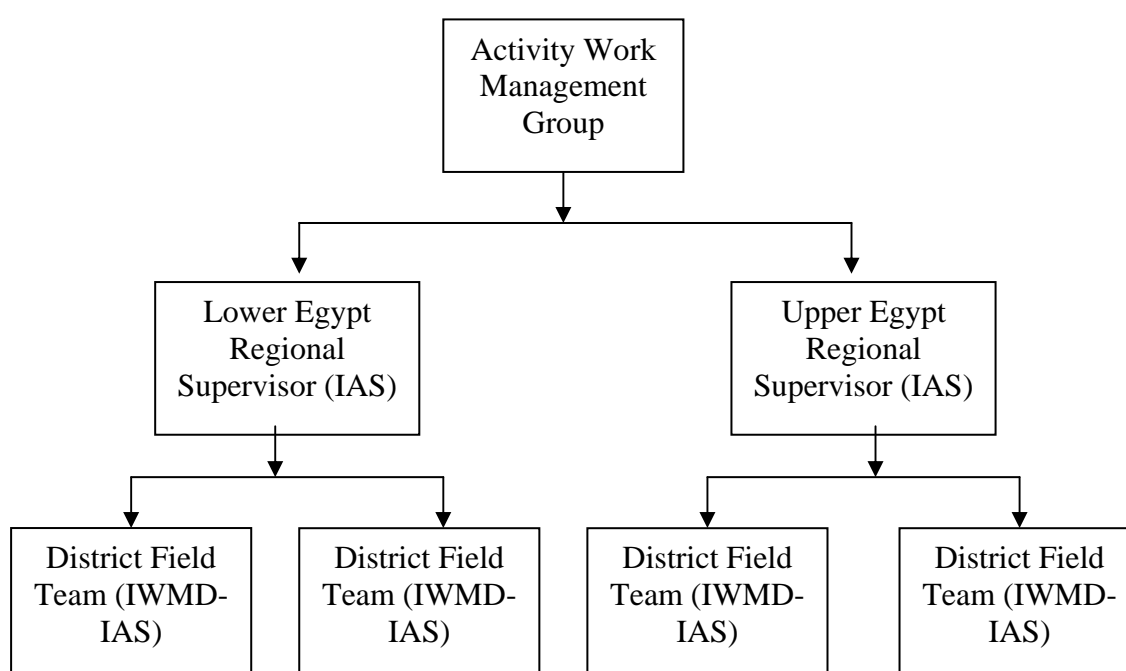
- **Red Sea Sustainable Development and Improved Water Resources Management (RSC/WP)** is the overarching USAID project that includes the IWMP.
- **Improved Water Resources Management Component (IWMP)** is the USAID-funded support for the MWRI/IWMU to implement the integrated policy reform measures at the irrigation district level.
- **MWRI Integrated Water Management Unit (IWMU)** was created by Ministerial Decree number 623 of 2003 to support the Ministry’s responsibilities in the field of integrated water resources management. IWMU provides management and expertise for RSC/WP.

The IWMU and the IWMP have the mandate to train District staff and to increase District capabilities to manage, operate and maintain all water resources under its jurisdiction.

- **MWRI Irrigation Advisory Service (CDIAS)** takes the lead in fostering establishment of BCWUAs.
- **MWRI Integrated Water Management Districts (IWMDs)** provide the staff that directly implements BCWUAs with support of CDIAS. Later, the IWMD is the counterpart of each BCWUA.
- **MWRI Water Communication Unit**, with technical assistance from AED, provides public awareness material to support the effort.

The **Activity Work Team** was composed of the staff from the IWMU, IAS, and IWMDs working on the stakeholder participation task, plus a consultant to provide technical assistance for the training activity. The organization of the work group is shown in Figure 2.

**Figure 2 Activity Work Team Organization**



The **Activity Work Management Group** was the management group for the larger Activity Work Team. The AWMG was responsible for overall planning, financial management, administration, and progress and performance monitoring. It was responsible for all the activity training and capacity-building program activities, development of the activity database system, and drafting needed decrees and memoranda of understanding. Although implementation was decentralized to the district field team under regional supervision, the AWMG intervened as required. The AWMG provided timely coordination, data collection, information exchange, decentralized planning, flexible re-allocation of financial and human resources, and continuous performance monitoring, evaluation, and enhancement.

**Regional supervision** was needed to facilitate implementation, flow of instructions, data, and information between the districts field teams and the core work group. It was responsible also for progress and staff performance monitoring, and for updating field implementation work plans for each district. A regional supervisor was designated from the IAS for Upper and for Lower Egypt.

**District Field Team.** The district field team was responsible for the establishment of BCWUAs in their district command area. The team was mainly from the IWMD staff.

The list of all the activity work team members including work group members, regional supervisors, and field team members for each district is presented in Appendix G.

The structure described here is an important innovation. Historically, water users' associations in Egypt were established by teams from the Central Directorate of Irrigation Advisory Service (CDIAS) of MWRI. Major changes initiated under this project were to train and build the capacity of the IWMD field staff in participatory irrigation management and in establishment of BCWUAs, and to activate an IAS unit under the IWMD structure. This approach provided IWMD staff with the capabilities needed to take responsibility for implementation of BCWUAs establishment. This is expected to enhance the potential for sustainability because of the close working relations built between farmers and IWMD staff.

### **Goals for Stakeholder Participation and BCWUA Establishment**

Goals for Stakeholder Participation were established in the “Improved Water Resources Component Workplan for the Period September 2003 – September 2004”, submitted to USAID 9 October 2003.

The Stakeholder Participation task had two sub-tasks: Activate Stakeholders Using Public Participation Policy Procedures and Establish BCWUA/WBs. In the course of implementation, it was found that the fundamental problem for stakeholders was their lack of standing to negotiate with the MWRI, rather than specific technical issues. Effective interaction between stakeholders and MWRI was found to require a level of formality so that users would be given the attention that they sought. Specifically, Stakeholder Participation would require a formal Memorandum of Understanding on the rights and responsibilities of the parties and would require formal, rather than informal, representation.

To achieve this fundamental goal, the formation of BCWUAs would have to be augmented to reach a capacity to sign a formal MOU with the MWRI, and this stage of stakeholder participation would take the form of signing such an MOU. Further, it was found that establishing BCWUAs would require prior consultation with key

stakeholders, both farmers and non-farmers. Consequently, the sub-tasks were merged.

In specific terms, the goals for establishing BCWUAs were:

- **Beneficiary targets (results)**
  - BCWUAs in four IWMDs
  - BCWUAs in all BCs of the IWMDs (It was estimated there would be 100 BCWUAs; in fact there are 94)
  - Cover estimated 100,000 farmers.
- **Milestones (activities outputs)**
  - BCWUA plans prepared for four IWMDs
  - Field teams identified and trained to establish four IWMDs
  - Orientation training for influential farmers in first four IWMDs
  - Executive Board formed
  - Executive Board implementation plan prepared.

### 3. Activities Implemented, September 2003– August 2004

This section describes the activities implemented for the Stakeholder Participation Activity through August 2004. This report follows the format of distinguishing activities from outputs or results, and the following section describes the results of those activities.

#### ***District Staff Recruitment and Training***

**Staff Recruitment.** The field staff recruitment for this activity was innovative. It was intended to initiate decentralization of IAS activities to the IWMDs.

The Activity Work Management Group recruited the field staff in three steps: 1) district staff general orientation was held, 2) interested district staff were interviewed, and 3) the district staff were selected. The number of field staff needed to implement the activity objectives was determined based on the targeted command areas, layout and extents of these areas, activity period, and male/female representation. In terms of background of the selected field staff, previous experience in participatory related issues and technical and social knowledge of their command areas were considered. Including people with knowledge of the branch canal and including experienced staff on the District teams proved important for success.

The total project team working in the four IWMDs 86 members (full-time equivalents), including 79 on the Field Team and 7 on the managing team. The summation of the experience gained from the FT only due to its work for 8.5 months is 43 years.

A field team of 4 to 5 members was designated for each branch canal including at least one female. The distribution of field teams within the district was reviewed and modified based on the canal-grouping step during the entry phase.

The following table presents the number of working field teams for each district, with the corresponding area and number of BCWUAs:

**Table 6 Staff for BCWUA Establishment**

Position	District							
	South Zifta		Ibrahimiya		Luxor		West Esna	
	IAS	District Staff	IAS	District Staff	IAS	District Staff	IAS	District Staff
Engineers	2	1	2	1	—	1	1	1
Technicians	—	15	—	18	11	15	1	10
Total	18		21		27		13	
Feddan	42,360		59,000		42,850		22,000	

**Staff training.** CDIAS trained the IWMD staff to build local capacity for managing participatory irrigation management and establishing BCWUAs. In the four IWMDs, 90 field staff members were trained.

The staff-training plan included nine main training topics: 1) Staff Orientation, 2) Data Collection, 3) Stakeholders Analysis/Communication Skills, 4) Canal Grouping/Gender Issues, 5) Election of Representative Assemblies, 6) Roles & Responsibilities of Representative Assemblies, 7) Election of BCWUA Board, 8) Roles & Responsibilities of BCWUAs Boards, and 9) BCWUAs Exchange of Experience. Each topic was covered in two classroom courses (one for Upper and one for Lower Egypt). Each course for staff lasted about 4 days, and the training groups were 40 to 50 staff members. (The staff courses were followed by four on-the-job training sessions, one for each district, which will be described in the next section of this report.)

In total, IAS conducted 80 days of classroom training in the four districts. It also prepared a full training package, including modules, agendas, and designs for participatory water management and establishment of BCWUAs.

The success of the program resulted from using both classroom and practical, on-the-job training consecutively in a well-planned and logical program to achieve the activity objectives. The program was flexible; the activity training program modules, subjects, durations, and methodologies were modified to enhance the process overall performance.

Details of the training events are as follows, and the actual modules are provided in Annex C.

**Table 7 Training Report: Staff Training to Build Capacity of MWRI**

Course Topic	Description	Type	Target Group	Number of Days	Dates	Number of Participants	Course Venue
Orientation for Field Staff	Provide required orientation for the Lower and Upper Egypt field staff who will take responsibility for establishment of BCWUAs in IWMDs.	Classroom	IWMDs Activity Field Staff	4	Dec. 7-10, 2003	50	Tanta
				4	Dec. 14-17, 2003	40	Luxor
Data Collection	Provide the Stakeholder Participation Activity field staff in Lower and Upper Egypt with required and needed procedures and tools that assist in data collection for establishment of BCWUAs at IWMDs.	Classroom and Field Visits	IWMDs Activity Field Staff	4	Jan. 17-20, 2004	50	Tanta
				4	Jan. 24-27, 2004	40	Luxor
Stakeholders Analysis	To provide the Stakeholders Participation Activity field staff in Lower and Upper Egypt with the required and needed procedures and tools that assist in stakeholders analysis and identification of key persons for establishment of BCWUAs in IWMDs.	Classroom and Field Visits	IWMDs Activity Field Staff	4	Feb. 8-11, 2004	50	Tanta
				4	Feb. 15-18, 2004	40	Luxor

<b>Course Topic</b>	<b>Description</b>	<b>Type</b>	<b>Target Group</b>	<b>Number of Days</b>	<b>Dates</b>	<b>Number of Participants</b>	<b>Course Venue</b>
Gender Issues/ Canal Grouping	To provide the Stakeholders Participation Activity field staff in Lower and Upper Egypt with the required and needed background of gender issues, and procedures and tools that assist in canal grouping and identification of the number of BCWUAs to be established at the IWMDs level.	Classroom and Field Visits	IWMDs Activity Field Staff	5	Mar. 6-10,2004	50	Tanta
				5	Mar. 13-17 ,2004	40	Luxor
Election of RA	To provide the Stakeholders Participation Activity field staff with the required background on BCWUAs Representative Assembly Election and needed procedures and tools that assist in the election process for the BCWUAs to be established at the IWMDs level	Classroom and Field Visits	IWMDs Activity Field Staff	4	Apr. 3-6 ,2004	50	Tanta
				4	Apr.13-17 ,2004	40	Luxor
Roles & Responsibility of RA	To provide the Stakeholders Participation Activity field staff with the required background on BCWUAs Representative Assembly roles and responsibilities and needed procedures and tools that assist in the BCWUAs support process for the BCWUAs to be established at the IWMDs level.	Classroom and Field Visits	IWMDs Activity Field Staff	5	May 3-7 ,2004	50	Tanta
				5	May 15-19 ,2004	40	Luxor
Election of BCWUA Board	To provide the Stakeholders Participation Activity field staff in Lower and Upper Egypt with the required background on BCWUAs Board election process and needed procedures and tools that assist in the election process for the BCWUAs to be established at the IWMDs level.	Classroom and Field Visits	IWMDs Activity Field Staff	4	Jun. 5-8 ,2004	50	Tanta
				4	Jun. 12-15, 2004	40	Luxor

Course Topic	Description	Type	Target Group	Number of Days	Dates	Number of Participants	Course Venue
Roles & Responsibility of BCWUA Board	To provide the Stakeholders Participation Activity field staff in Lower and Upper Egypt with the required background on BCWUAs Board roles and responsibilities and needed procedures and tools that assist in the BCWUA support process for the BCWUAs to be established at the IWMDs level.	Classroom and Field Visits	IWMDs Activity Field Staff	4	Jul. 3-6 ,2004	50	Tanta
				4	Jul. 10-13 ,2004	40	Luxor
Exchange of Experience of BCWUAs	To provide the Stakeholders Participation Activity field staff in Lower and upper Egypt with the required background on BCWUAs Exchange of experiences and needed procedures and tools that assist in the BCWUA support process for the BCWUAs to be established at the IWMDs level.	Classroom and Field Visits	IWMDs Activity Field Staff	6	Jul. 31 - Aug. 5,2004	50	Tanta
				6	Aug. 7-12,2004	40	Luxor

### **Formation of BCWUAs**

This section describes the sub-activities to form BCWUAs classified in the three phases: entry phase, organization phase and MOU phase. The field or on-the-job training courses are listed for each phase. In addition, district field staff provided informal technical assistance to farmers and residents.

There were 10 field or on-the-job courses with topics corresponding to the nine staff training courses described previously and a follow-up event. In all, there were 226 days of field courses or on-the-job training in the four districts.

#### **Entry Phase**

The Entry Phase is an important preparatory phase that introduces the BCWUA to the IWMD staff, the farmers and residents of the BC and prepares to form the BCWUA.

- **Staff Recruitment.** Staff recruitment, part of the entry phase, has been described in the preceding section on staff recruitment and training.
- **Water Users' Orientation.** As a prerequisite for any field operations, staff provided "water users orientation" for the stakeholders of the IWMD including background on MWRI, IWMD and PWM concepts and policies, and the objectives for establishing BCWUAs. The Activity Work Management Group assigned responsibilities to conduct water users' orientation.

- **Data Collection.** The third step in the entry phase included identification of stakeholders and collecting a complete set of data for each branch canal in the IWMDs command areas, including technical, geographical, and social data. The Activity Work Management Group designed a set of data collection forms to facilitate data collection, unify the types of data collected, and assure that all the needed data would be in hand before proceeding.

The Activity Work Management Group also designed standard activity forms for the field teams. The district field teams collected the required data through a combination of field investigations, visits, individual interviews, and group meetings.

The following standard data collection and processing forms were used: 1) Branch Canal Basic Data, 2) Direct Irrigation Areas, 3) List of Mesqas, 4) Names of Farmers on every Mesqa, 5) List of Key Persons, 6) Minutes of Election Preparatory Meetings, 7) Minutes of Election of Agricultural Basic Units, 8) Minutes of Election of Residential Basic Units, 9) Minutes of Election of BCWUA Board Members, 10) Names of Representative Assembly Members, 11) Minutes of Election of BCWUA Secretary and Treasurer, and 12) Standard Ministerial Decree for BCWUA establishment.

- **Stakeholders Analysis and Key Persons Identification.** An important step in the entry phase was to identify and analyze relevant stakeholders. Stakeholders analysis at each branch canal was done by the field teams after training, including the following procedures: 1) Identification of stakeholders; 2) Categorization of stakeholders (supportive – active – etc.); 3) Identification of key persons at branch canal level; and 4) Approaching and building sustainable communication with key persons.
- **Canal Grouping.** The last step in the entry phase was determination of the number of BCWUAs to be established in the IWMD. The physical structure of Egypt’s irrigation system is complex, allowing some latitude in defining what will count as a branch canal, and the IWMD approach mandates complete coverage of the district. Since earlier projects worked with single BCWUAs, there was no need for reviewing how the IWMD would be divided into BCWUAs. Part of this canal grouping activity was dividing the branch canal into head, middle and tail “reaches” to ensure that each section was represented in the BCWUA assembly. Each reach was divided into a number of agricultural and residential basic units. The number of base units for the whole canal corresponds to its size, and the number in each reach was determined based on hydrological and social conditions -- area served, length, canal scheme, number of users, and social characteristics of users.

The following procedure was followed in the canal grouping activity:

1. Divide each district into “regions” according to the command area of the main canal delivering water to the area (4 regions for S. Zifta, 4 regions for Ibrahimiya, 4 regions for Luxor, and 2 regions for W. Esna)
2. Review the hydrologic and social data collected for branch canals in each region
3. Identify the branch canals that will have BCWUAs

4. Visit each of the regions for final identification of BCWUAs to be established (26 BCWUAs in S. Zifta, 31 BCWUAs in Ibrahimiya, 30 BCWUAs in Luxor, and 7 BCWUAs in W. Esna)
  5. Divide each branch canal into hydrological reaches, and each reach into agricultural and residential basic units.
- **Training Events in the Entry Phase.** Details of the training events are as follows (Table 9), and the actual modules are provided in Annex C:.

**Table 8 Training Report - Water Users Entry Phase**

Course	Description	Type	Target Group	Number of Days	Date	Venue
Orientation for Water Users	To provide the required orientation and introduction of the Stakeholders Participation Activity for branch canal water users in IWMDs.	On-the-job	IWMDs Water Users	7	Dec. 25-31, 2003	Ibrahimiya & S. Zifta
				7	Dec. 25-31, 2003	Luxor & W. Esna
Data Collection for Water Users	To provide and collect the required branch canal data of the Stakeholders Participation Activity from branch canal water users in IWMDs.	On-the-job	IWMDs Water Users	8	Jan. 21-28, 2004	Ibrahimiya & S. Zifta
				8	Feb. 5-12, 2004	Luxor & W. Esna
Stakeholders Analysis for Water Users	To provide the required stakeholders analysis procedures of the Stakeholders Participation Activity for branch canal water users in IWMDs.	On-the-job	IWMDs Water Users	8	Feb. 22-29, 2004	Ibrahimiya & S. Zifta
				8	Feb. 22-29, 2004	Luxor & W. Esna
Gender Issues/ Canal Grouping for Water Users	To provide the required canal grouping procedures of the Stakeholders Participation Activity for branch canal water users in IWMDs.	On-the-job	IWMDs Water Users	10	Mar.20-29, 2004	Ibrahimiya & S. Zifta
				10	Mar.20-29, 2004	Luxor & W. Esna

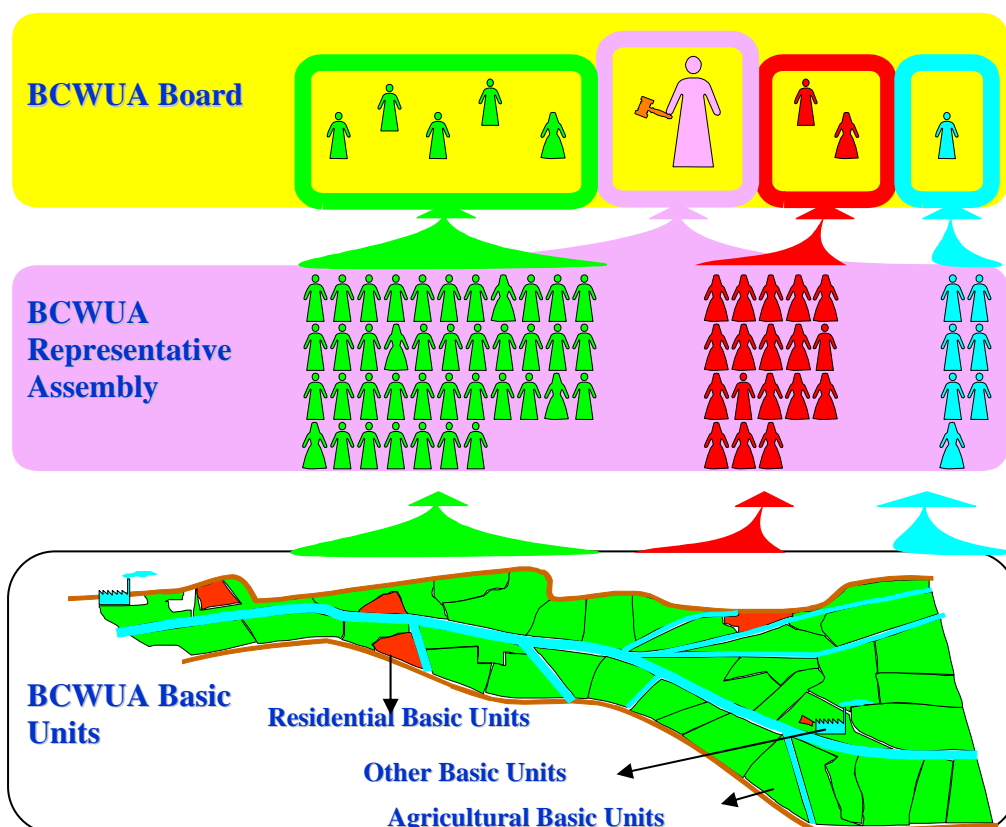
### Organizational Phase

The Organization Phase takes the new BCWUA through 1) Issuance of IWMD BCWUAs Initiation Decree, 2) Election of BCWUA Representative Assembly, 3) Election of BCWUA Board and 4) Issuance of each BCWUA Establishment Decree, as well as preparation for the next phase.

- **Issuance of IWMD BCWUAs Initiation Decree.** As no legal base is in place in national Law 12 for establishing and recognizing BCWUAs, the legal form of the established BCWUAs was provided in a ministerial decree to allow for establishment of these organizations for each branch canal in the four IWMDs. Ministerial Decrees numbers 122, 123, 124, and 125, dated March 16, 2004, were issued establishing the roles of CDIAS and the Central Directorate of Water Resources and Irrigation (CDWRI) at the governorate level for establishing BCWUAs, as well as the major functions of the BCWUAs.
- **Election of BCWUA Representative Assembly.** The BCWUA organization structure (Figure 3) is formed on three levels as follows:

- **Basic Units (BU)** cover all water users on the branch canal, whether they are farmers, residential users or others, if such exist. Every water user at this level is a member in the WUA on this branch canal. Members of each basic unit elect a representative (one for each basic unit).
- The **Representative Assembly (RA)** is composed of the elected members from BU s. The summation of the elected representatives forms the BCWUA representative assembly, highest authority in the BCWUA structure.
- The **BCWUA Board** is the executive of the BCWUA.

Figure 3 BCWUA Organization



- **Election of BCWUA Board.** The BCWUA board is elected from the RA members. It is formed by 1) electing a board chairperson from all RA members, and 2) electing other board members for each reach within the branch canal. After formation of the board, an internal election takes place identifying the board secretary and treasurer. The RA members that were elected in the board no longer vote for their base unit in the RA; they are replaced by others elected by their basic units.
- **Issuance of BCWUAs Establishment Decree.** After designation of each BCWUA’s Board chairperson, secretary, treasurer, and other officers, a decree was issued by the Undersecretary of Water Resources and Irrigation at the governorate level for establishing the BCWUA. This decree recognized the Board officers, as well as their roles and responsibilities for improved water management on their BC.

- **Training Events in the Organization Phase.** Details of the training events in the organizational phase are shown in table 9, and the modules are included in Annex C.

**Table 9 Training Report – Water Users Organization Phase**

Course	Description	Type	Target Group	Number of Days	Date	Venue
Election of RA for Water Users	To provide the required Representative Assembly Election procedures of the project BCWUAs establishment activity for branch canal water users in IWMDs	On-the-job	IWMDs Water Users	10	Apr. 21-30,2004	Ibrahimiya & S. Zifta
				10	Apr. 21-30,2004	Luxor & W. Esna
Roles & Responsibility of RA for Water Users	To provide branch canal water users with the required background on the Representative Assembly Roles and Responsibilities of the project BCWUAs establishment activity in IWMDs	On-the-job	IWMDs Water Users	10	May 21-30,2004	Ibrahimiya & S. Zifta
				10	May 21-30,2004	Luxor & W. Esna
Election of BCWUA Board for Water Users	To provide branch canal water users with the required background on the BCWUAs board election process for the project BCWUAs establishment activity in IWMDs.	On-the-job	IWMDs Water Users	12	Jun. 19-30,2004	Ibrahimiya & S. Zifta
				12	Jun. 19-30,2004	Luxor & W. Esna
Roles & Responsibility of BCWUA Board for Water Users	To provide branch canal water users with the required background on the BCWUAs Board Roles and Responsibilities of the project BCWUAs establishment activity in IWMDs.	On-the-job	IWMDs Water Users	15	Jul. 17-31,2004	Ibrahimiya & S. Zifta
				15	Jul. 17-31,2004	Luxor & W. Esna
Exchange of Experience of BCWUAs for Water Users	To provide the opportunity for the project established BCWUAs to share the experiences and lessons learned with other previously established BCWUAs in other areas inside or outside the IWMDs.	On-the-job	IWMDs Water Users	18	Aug. 14-31,2004	Ibrahimiya & S. Zifta
				18	Aug. 14-31,2004	Luxor & W. Esna
BCWUAs Follow Up for Water Users	To provide the BCWUAs Board members with the needed background to be prepared for the BCWUAs institutional strengthening phase.	On-the-job	IWMDs Water Users	15	Sep. 1-15,2004	Ibrahimiya & S. Zifta
				15	Sep. 1-15,2004	Luxor & W. Esna

### Memoranda of Understanding Signing Phase

To enhance stakeholders' participation and to start activation of the established BCWUAs, a MoU was prepared by the Activity Work Management Group including basic rules and conditions, specific roles and responsibilities, and a period for both the MWRI and the BCWUA. The MoU was signed by the Undersecretary of Water Resources and Irrigation at the governorate level representing the MWRI, and the

Chairman of each BCWUA representing all the BCWUA members. The relevant details are included in the Roles and Responsibilities training course (noted above; the actual module is provided in Annex C).

The MOU Phase prepares the BCWUA to assume functional roles.

### ***Training Modules***

Because of the short time available for this project, training materials were prepared as they were implemented. The project produced nine training modules, one for each of the main courses conducted for staff and water users. The nine modules are designed to transfer the capacity to organize and support BCWUAs to the staff designated each IWMD. Each Module has a classroom component with a summary of experience and practical examples, and a guide for field practice. The intent was to make these modules very useful for practical application, so they were modified using staff feedback as the trainings progressed until they reached their final form. The training modules are available in printed and electronic format, and they are reproduced in Annex C. Each field team has a copy of the training modules.

### ***District Data Base for Strategic Planning***

The IWMD BCWUAs database was developed by CDIAS to record and archive information on all the branch canals and BCWUAs in one package for each district. The CDIAS designed and developed this package as a tool for the IWMDs. It provides a considerable amount of information and basic data for each branch canal, and it archives information that facilitates dealing with BCWUAs.

For each branch canal, the data base includes technical information (such as branch canal name, feeding canal name, location, length, area served, irrigation system, drainage system, water sources, number of mesqas, and number of off-takes) and social information (such as population, number of direct water users, land holdings, and numbers of villages, agricultural cooperatives, schools, and health centers.)

For each BCWUAs, the data base records the names of the basic units, the number of members of the basic units, the names of representative assembly members, the number of such assembly members, the names of board members, number of board members, number of females in the board, and specific dates when the BCWUA reached milestones of establishment, such as associated decrees, election of the representative assembly, election of the board, and signing the MOU. In addition, summaries of the BCWUAs monthly reports are included. The database provides several types of summary reports.

### ***Monitoring and Evaluation Knowledge Base for Replication***

MWRI policy is to decentralize operations to IWMDs in all of Egypt eventually, and USAID has proposed support for establishing BCWUAs in the IWMDs of four governorates in the near future. Therefore, there is a need to look for efficient and effective ways for establishing BCWUAs. The Stakeholder Participation Activity provides a baseline experience.

The Knowledge Base for Replication incorporates interviews capturing the knowledge of participating staff, principally the field staff: IAS agents, District supervisors, and engineers. Interviews with supervising staff provided general lessons about the BCWUA process. The Knowledge Base for Replication has been used to

describe the characteristics of participating staff, parameters for planning future efforts and lessons learned (see annexed report).

### ***Extensive Process Documentation***

The Activity Work Management Group designed formats to help the field staff report each field activity for establishment of BCWUAs. Field staff reported reliably and there is a file of supporting documents for each BCWUA. The files contain: the Ministerial Decree initiating BCWUAs in the relevant District, all data collected for the BC, minutes of all WUA meetings with the field staff, minutes of elections, the Undersecretary (governorate) decree establishing the BCWUA, and the signed MOU establishing the relationship between the BCWUA and MWRI at the governorate level (signed by the Undersecretary for Water resources and Irrigation and the Chairman of the BCWUA). The 94 sets of reports, bound for future reference, are available as Annex B.

### ***Public Awareness Activities***

The Water Communications Unit of MWRI, with assistance from AED, identified communications needs. The priority was a document to serve for promotion of BCWUAs. The Unit has produced “The Branch Canal Water User Associations Informative Handbook.” The Handbook is available as Annex E.

The target audience for the handbook is the BCWUAs’ board and RA members. It starts with an introduction about integrated water management concept, and presents MWRI’s new policy toward decentralization of water resources management for the benefit of water users. It described support for formation of BCWUAs and answers frequently asked questions about BCWUAs. The BCWUA election process and organizational roles and responsibilities are introduced. The booklet states the intention to expand coverage among IWMDs and directorates.

In addition, a pamphlet of “Frequently Asked Questions about Branch Canal Water Users Associations” is being prepared for all the members of the BCWUAs. The pamphlet explains the benefits of a BCWUA and its organizational structure.

## 4. Summary of Results Achieved and Outputs through August, 2004

The activities so far described resulted in establishment of BCWUAs, stronger staff at the District level and the bases for replication of the experience according to MWRI policy.

### ***BCWUAs Established***

The principal result has been establishment of BCWUAs on all 94 BCs of the four IWMDs, as shown in table 10.

**Table 10 BCWUAs Established**

Position	Integrated Water Management Districts				Total
	South Zifta (42,360 feddan)	Ibrahimiya (59,000 feddans)	Luxor (42,850 feddans)	West Esna (22,000 feddans)	
BCWUAs established	26	31	30	7	94
Representative assemblies elected	26	31	30	7	94
BCWUA boards	26	31	30	7	94

The actual schedule of steps to establish BCWUAs was compressed, as shown in table 11.

**Table 11 Calendar of BCWUA Achievements**

Milestone	Integrated Water Management District			
	S. Zifta 26 BCWUAs	Ibrahimiya 31 BCWUAs	Luxor 30 BCWUAs	West Esna 7 BCWUAs
Staff Recruited	Completed (Dec. 2003)	Completed (Dec. 2003)	Completed (Dec. 2003)	Completed (Dec. 2003)
Staff Trained	On-going	On-going	On-going	On-going
Water Users Oriented	Completed (Jan. 2004)	Completed (Jan. 2004)	Completed (Jan. 2004)	Completed (Jan. 2004)
Data Collected	Completed for all canals (Jan.-Apr., 2004)	Completed for all canals (Jan.-Apr., 2004)	Completed for all canals (Jan.-Feb., 2004)	Completed for all canals (Jan.-Feb., 2004)
Stakeholders Analysis & Key Persons Identified	Completed for all canals (Jan.-Apr., 2004)	Completed for all canals (Jan.-Apr., 2004)	Completed for all canals (Jan.-Mar., 2004)	Completed for all canals (Jan.-Mar., 2004)
Canals Grouped	Completed for all canals (Jan.-May, 2004)	Completed for all canals (Jan.-June, 2004)	Completed for all canals (Jan.-Mar., 2004)	Completed for all canals (Jan.-Mar., 2004)
District BCWUAs Initiation Decrees Issued	Completed (Mar. 16, 2004) Decree number 125	Completed (Mar. 16, 2004) Decree number 123	Completed (Mar. 16, 2004) Decree number 122	Completed (Mar. 16, 2004) Decree number 124
Representative Assemblies elected	Completed for all canals (Mar.-June, 2004)	Completed for all canals (Mar.-June, 2004)	Completed for all canals (Mar.-Apr., 2004)	Completed for all canals (Mar.-Apr., 2004)

Milestone	Integrated Water Management District			
	S. Zifta 26 BCWUAs	Ibrahimiya 31 BCWUAs	Luxor 30 BCWUAs	West Esna 7 BCWUAs
BCWUAs Boards elected	Completed for all canals (Apr.-Jul., 2004)	Completed for all canals (Apr.-Jul., 2004)	Completed for all canals (Jan.-June, 2004)	Completed for all canals (Jan.-May, 2004)
BCWUA Establishment Decree issued	Completed for all canals (Apr.-Jul., 2004)	Completed for all canals (Apr.-Jul., 2004)	Completed for 26 canals (Jan.-June, 2004)	Completed for all canals (Jan.-May, 2004)

### ***Stakeholder Participation Established***

Now, 64,593 water users are members of a BCWUA organization, and 1,924 (about 3% of BCWUA members) are serving on a BCWUA board, as shown in table 12.

**Table 12 Participation Achieved**

	South Zifta	Ibrahimiya	Luxor	West Esna	Total
Branch Canals Water User Associations	26	31	30	7	94
Water Users	29,059	11,878	14,691	8,955	64,583
BCWUA Representative Assembly members	474	662	659	129	1924
BCWUA Board Members	158	169	194	55	576

Since the principal obstacle for stakeholder participation encountered in the four pilot IWMDs was lack of standing for the stakeholders to negotiate with the MWRI, an important result of this project was signing MOUs between each BCWUA and the MWRI (table 13). This step also starts activation of BCWUA roles and responsibilities.

**Table 13 Participation Achieved (MOUs)**

Milestone	Integrated Water Management District			
	South Zifta 26 BCWUAs	Ibrahimiya 31 BCWUAs	Luxor 30 BCWUAs	West Esna 7 BCWUAs
MOU Signed	Completed for all canals (August, 2004)	Completed for all canals (August, 2004)	Completed for all canals (August, 2004)	Completed for all canals (May, 2004)

### ***Capacity of IWMD Staff to Deal with BCWUAs Established***

The staff recruitment accomplished for this project initiated decentralization of IAS activities to district staff, particularly for dealing with water users. This may be considered a successful innovation for the Project and the Stakeholder Participation activity.

The four IWMDs now have the capability to deal with participatory concepts and BCWUAs established under their jurisdiction. One engineer and 10 to 18 field

technicians in each IWMD have participated in the Stakeholder Participation activity and can assume IAS responsibilities in their respective districts if so assigned.

Because of this development, IWMDs are seeing a significant reduction in formal complaints lodged by farmers, according to reports to the IWMU (data are available in the IWMDs and reports are expected as part of the IWMD monitoring system).

### ***Women Involved in Substantial Numbers***

One woman participated in each five-person field team, which strengthened the teams. About 13 percent of Assembly Representatives and Board Members are women.

**Table 14 Representation of Women in RAs and Boards**

	<b>South Zifta</b>	<b>Ibrahimiya</b>	<b>Luxor</b>	<b>West Esna</b>	<b>Total</b>
Females in BCWUA Representative Assembly	77	127	42	11	257
Percentage Females of all BCWUA Representative Assembly Members	16.24	19.18	6.37	8.53	13.36
Female/male Ratio	0.19	0.24	0.07	0.09	0.15
Females in BCWUA Boards	30	25	15	4	74
Percentage Females of All BCWUA Board members	18.99	14.79	7.73	7.27	12.85
Female/male Ratio	0.23	0.17	0.08	0.08	0.15

### ***Capacity of CDIAs to Support PIM Increased***

At the central level, there have also been important results. Four distinct products of the Stakeholder Participation activity enhance the capacity of MWRI (CDIAS and IWMU) to support BCWUAs and the IWMDs in the future.

- **Database of BCWUAs.** The database for the established BCWUAs for each district has been created and tested. The developed database will serve the CDIAs to be able to manage, monitor, and evaluate progress of participatory activities in the IWMDs, and will serve the IWMDs as it provides the appropriate setup for coordination, documentation, and tracking of the BCWUAs activities.
- **ME Knowledge Base for Replication.** The output of this subactivity, the knowledge base, is functional and has been used for planning purposes (IIIMP project preparation team consulted the knowledge base to calculate staff requirements for that project). The knowledge base is available as a benchmark for planning other projects, such as LIFE or MWRI replication in other areas.
- **Process Documentation.** The output of this subactivity is the set of volumes for all 94 BCWUAs. This is completed. The eventual result of the subactivity will be use of the volumes, but it is too soon for that result.

- **Training modules.** These are ready for further use or adaptation for new projects.

### ***Tools for Public Awareness Distributed***

“The Branch Canal Water User Associations Informative Handbook” is being printed now with a press run of 2000 copies; it should be ready in September. Copies will be provided to the BCWUA boards and representative assembly members in the four pilot districts (1,924 copies).

The pamphlet “Frequently Asked Questions about Branch Canal Water Users Associations” is being prepared for all the members of the BCWUAs with a press run of 10,000 copies. The pamphlet is expected in September 2004.

## 5. Comparison of Planned and Actual Results through August, 2004

As the Stakeholder Participation Activity met its goals in the four IWMDs (Table 15).

**Table 15 Goals for Sub-tasks for Established Branch Canal Water User Associations**

<b>Beneficiary Targets for Results</b>	<b>Achievements</b>
BCWUAs in 4 IWMDs	BCWUAs established on all BCs of 4 IWMDs
BCWUAs on all BCs of the IWMDs (estimated as 100 BCWUAs; in fact there are 94 BCs)	BCWUAs on all BCs in the IWMDs (94 BCs)
Cover all farmers on BCs of the 4 IWMDs (estimated as 100,000 farmers; in fact there are 64,593)	Coverage of all farmers achieved (64,593 farmers)
	13% of representatives and board members are women
<b>Milestones (Activities Outputs)</b>	<b>Achievements</b>
BCWUA plans prepared 4 IWMDs	BCWUA plans prepared for 4 IWMDs
Field teams identified and trained 4 IWMDs	Field teams identified and trained for 4 IWMDs
Orientation training for influential farmers 4 IWMDs	Orientation training for farmers (Entry Phase events) conducted 4 modules, 8 events.
Executive Council formed	BCWUAs formed, Representative Assembly elected
Executive Council implementation plan prepared	Activation begun with MOU

The original Public Participation Policy sub-task was merged with the BCWUA Establishment sub-task; its goals were substantially achieved by stakeholder identification, stakeholder consultation, training for signing an MOU and actual signing of MOUs in 94 IWMDs.

## 6. Lessons Learned

This section reports elements of the current experience that may be useful for future work with IWMDs and BCWUAs.

### ***Planning Parameters***

The principal planning parameters identified as potentially useful for replication of BCWUA establishment include coverage (water users, feddans per BCWUA), level of effort (LOE in person-days) used for field activities (including training the trainers) and the number of training events (Table 16).

**Table 16 Planning Parameters: Typical Size of a BCWUA**

IWMD	South Zifta	Ibrahimiya	Luxor	West Esna	Average
Water Users per BCWUA	1,118	383	490	1,279	687
Feddans per BCWUA	1,525	2,000	1,428	3,143	1,771

The LOE used for Entry Phase, Organization Phase and MOU Phases in this pilot project is a baseline for future efforts (Table 17).

**Table 17 Planning Parameters: Labor and Training for one BCWUA Entry; Organization and MOU for Two Typical BCs**

Size of BC	District Field Team Staff (person- days)		
	Engineer	Field Staff	Total
1771 feddans (mean of this project)	12.7	101.8	114.8
2235 feddans (mean of IIIMP proposal)	14.7	117.2	131.9

Source: Knowledge Base

As replication proceeds, the level of effort to establish a BCWUA would decrease, given 1) generally higher efficiency because training materials, formats and other investments have been made, 2) shift from engineers' days to field staff days to save costs, 3) shift from field staff days to farmer-to-farmer days to save cost and empower BCWUAs, District-level User Organizations or IWMDs.

Further, the parameters are for establishment year. The Activation Phase (see Recommendations, below) for a BCWUA will also require intense support, at least in the early years of a follow-on project. As a BCWUA learns its activities, it will require less and less support until the IWMD remains with monitoring, regulatory, and informational roles.

### ***Keys for BCWUA Success***

Some conclusions drawn from the Stakeholder Participation activity will be useful for planning replication or expansion.

## Ministry Support and Team Organization

**MWRI Support and Team Organization.** There was full cooperation, participation, and support from the relevant MWRI management units, notably the IWMD managers, the general directors, and the undersecretaries. They were the institutional counterparts for implementing water resource participatory management

The benefits of such support were to show the unified orientation among MWRI institutional levels towards stakeholder participation policy. This provided a positive environment for implementation, and it is likely to enhance sustainability. The unified support demonstrated to water users enhanced their active and productive participation. When problems occurred, unanimity of policy helped to resolve the issues. The MWRI organization for Stakeholder Participation, as described in this report, was successful and should be included in future plans.

## Planning Considerations

**Planning Considerations.** a) The establishment of BCWUAs was part of integrated water management at the district level, rather than a separate activity. b) Planning for implementation was adjusted for **site-specific conditions**, including canal/drain system layout and the social conditions of users and stakeholders, but there were some difficulties that could be solved using satellite images or better maps. c) The effort to establish BCWUAs provided opportunities for regional and local stakeholders, including governmental and non-governmental organizations, to participate in the process. The agricultural cooperative agents helped the activity, especially during data collection. d) Planning should go beyond the MOU phase to achieve the benefits that WUAs can provide.

- The Stakeholder Participation activity was part of the broader support for IWMDs, rather than a separate activity. Stakeholder Participation was coordinated with the other aspects of integration in the District, including administration, water resources, and information. This worked well and this approach should be continued.
- General plans for training and BCWUA formation came to be modified in light of **site-specific conditions**, including canal and drain layouts and the social conditions of users and stakeholders. The canal-grouping phase noted in this report, supported by prior data gathering, was very important.

At times, the boundaries of the branch canals were not clear. Ideally, mesqas and agricultural base units should be compatible, but there were some ambiguities and difficulties related to long, wandering mesqas. This phase of operations may be improved if reliable maps and satellite images are available. Time, expertise, and acquisition of data should be programmed for future efforts.

- A third element of planning for future efforts would be to continue local participatory consultation. The activity provided opportunities for other regional or local stakeholders, including governmental and non-governmental organizations, to participate in establishing BCWUAs. The agricultural cooperatives were supportive. This inclusionary strategy is likely to enhance sustainability of the BCWUAs. In the future, such consultation should be continued.

- Finally, planning should include the activation phase of the BCWUA development. One way of doing that it to assist BCWUAs to assume important functions. In part, this should be self-financed, but seed financing may be appropriate.

### **Selection of Staff**

Staff candidates were nominated by the District and selected by the Activity Work Management Group. The District nominated a pool of candidates larger than the needs of the WUA effort so that the staff could be selected from candidates. Prior experience and areas of interest came to guide selection. Once a competent team was selected, changes only caused problems.

Criteria for selection evolved and came to include a) District nominated the person, b) interview showed an active individual with capacity to communicate, c) previous work on the same canal, d) live in the area, e) has no conflicting private work, f) has a motorcycle, g) has previous knowledge of associations and IAS. The staff balanced h) age and experience, i) temporary and established service, and j) gender. Some members knew k) computer skills. Good staff l) did well in the initial trainings

When a district staff member was assigned to the activity, he or she usually received a formal decree from the relevant Director General. This avoided problems that have been experienced in other projects.

Staff organization included a) field teams of four or five individuals, b) development of work plans by every field team, c) individual tasks assigned for each staff member

The core management team was multidisciplinary, including experts in technical, social, economical and financial, and capacity-building areas.

The agricultural cooperative agents helped the activity, especially during data collection. In the future, the MALR staff should be more formally recognized because of their presence on the ground so that they continue a positive attitude towards the BCWUAs.

### **Continuous Monitoring and Evaluation with Fast Response**

Continuous monitoring and evaluation of both implementation process and staff were crucial for success. Quick response and frequent re-planning maintained implementation progress and took into account the sensitivity of dealing with water users. In the early phases of entry and organization, showing problem-solving skills was necessary to maintain water user attention and promote their enthusiasm for effective participation.

### **Gender**

Women participated fully in the Stakeholder Participation activity, both as water users and as outreach staff. The degree of participation exceeded expectations and contributed especially with residential unit representation in the assemblies.

### **Participation**

Farmer participation was more enthusiastic than expected. Based on this experience, there is an expectation that the BCWUAs will result in effective participation in decisions. The frankness and transparency of the activity also worked well. Local training events fostered participation.

## 7. Recommendations

First, the successful aspects of this project should be replicated, as listed in Lessons Learned.

### ***For BCWUAs Established under RSC/W***

In an astonishingly short time, and with considerable farmer enthusiasm, the BCWUAs have been formed and arrived at the point of achieving participation in water management decisions in IWMDs.

However, they have not yet taken that step. This is also true for the BCWUAs formed by the Irrigation Improvement Project.

The progression of the BCWUAs may take the following path:

1. Entry                   As done in the Stakeholder Participation activity
2. Organization       As done in the Stakeholder Participation activity
3. Activation           BCWUAs a) undertake important tasks for canal operations and maintenance, b) develop their administrative capacity, including management of resources, c) represent farmer concerns to the MWRI, including effective expression of priorities for MWRI annual work plans; this may be done directly or through a District Water Board or Advisory Council, d) learn to monitor water delivery and O&M implementation, e) begin to resolve allocation issues among mesqas, and f) may undertake small, complementary agricultural environmental activities.

Government support includes training, seed financing, and small-scale contracting of O&M tasks formerly done by government or government contractors.

4. Transfer             BCWUAs a) share or replace MWRI for O&M activities, b) have transparent and sufficient administrative organizational capacity to manage activities and funds, c) show organizational capacity as participatory organizations with ability to undertake technical tasks, d) represent farmer concerns to the MWRI, including effective expression of priorities for MWRI annual work plans; this may be done directly or through a District Water Board or Advisory Council, e) monitor water delivery and O&M implementation, e) resolve allocation issues among mesqas, and f) may undertake complementary agricultural or environmental tasks. Government shares management of O&M with BCWUAs and includes them in contracting decisions.

Government support includes training, facilitation of access to credit, and medium-scale contracting of O&M tasks formerly done by companies or government. Policy changes are required: legal recognition of BCWUAs and reducing the scope of O&M contracts.

5. Continuing operations BCWUAs operate normally and government supports and regulates their activities. By this time, the BCWUAs should be members of organizations that span whole command areas.

This report recommends that the BCWUAs be supported in the Activation and Transfer Phases to see how far they can go to provide important benefits to members: AO&M tasks, improve water delivery (or drainage), or reduce conflict over water; c) become effective representatives of farmers, d) become the most effective and efficient implementers or partners in support of agricultural development, and e) deliver other benefits to members.

The BCWUAs include representatives of residential areas and farmers. This feature should be preserved as long as irrigation and drainage, or agriculture more broadly conceived, continues to be the principal focus of the BCWUAs.

Legal reform to recognize BCWUAs should be supported. When the BCWUAs become legal entities, they will face important choices. Will they manage money, and if so, from what sources? Will they legally take on AO&M tasks? The current experience is not enough to support a recommendation in these areas, but the alternatives will become real possibilities soon.

### ***For MWRI in Four Pilot Districts***

The IWMDs should continue their current development, engaging in self-evaluation and outside evaluation as the IWM experience continues.

The IWMDs should maintain their trained and skilled staff within each of the district organizational sections. In this case the field teams should be maintained in the IWMD section responsible for assuming IAS responsibilities to the BCWUAs.

### ***For Project and Program Planning***

These recommendations address the use of the Stakeholder Participation activity to help guide development of projects.

### **Replication and Expansion of This Activity**

**How many BCWUAs?** Formation of BCWUAs as part of IWMDs is MWRI policy. Implementation of that policy should now enter a new phase of replication.

The minimal goal for the next five years should be to expand the number of IWMDs with their respective BCWUAs by 75 Districts, including 24 with financing of USAID and MWRI, 20 with financing of IIIMP and MWRI, and 30 with other financing, including GOE/MWRI funding.

How does this goal compare to the area to be covered? There are 206 Districts in Egypt, so a goal of 75 districts would be to cover at least 36 percent of the Districts within five years. There are about 8,500,000 feddans of irrigated land in Egypt. The mean area per BC in the four pilot districts is 1,771 feddans. The BCWUAs of the IIP experience in the Delta are larger (Mahmoudia 3,138 feddans and Meet Yazid 3,020 feddans). The mean of the projected IIIMP areas is 2,235 feddans per BC. Supposing a hypothetical working average of 2,235 feddans, the number of BCs in Egypt would be 3,800. A goal of 36 percent of those would be 1,369 BCs or BCWUAs.

If, following the experience of this project, it would take about 132 days of FT effort to organize a BCWUA of 2,235 feddan, then 650 MWRI FT staff could handle the

job, with additional staff for supervision, monitoring, etc. If a team twice that size were to be devoted to both forming the BCs, activating them and supporting the BCWUAs after establishment, then the task of forming and supporting BCWUAs on 36 percent of the irrigated area could be borne by 1.3 percent of the total existing MWRI staff of 97,610 (MWRI figures reported by M. Svendsen).

**Alternative institutional methods.** The institutional model presented here – IWMD reorganization, recruitment of willing staff, the Activity Work Management Group to provide support, participation of governorate-level undersecretaris, limited amounts of outside technical support – should be considered a sound model for larger projects and programs. Smaller efforts may not need as much regional or national managerial inputs.

The methods used here should be expected to evolve because the BCWUAs have not taken on their potential O&M functions. These functions, including water allocation and conflict resolution, will become more important in the coming years as the limited supply of water meets the growing demand caused by urban growth and opening new lands to irrigated cultivation. Further, as they become more experienced and well established, BCWUAs will become more active and will develop new understandings with their MWRI IWMDs.

**Is the organizational model right?** The BCWUA model here, which incorporates elements of the Water Boards model (representatives from residential areas, for example), is proving viable, at least at these early stages. It may have to be modified for ground water systems. More work needs to be done to make the BCWUA and base agricultural units more compatible with the structures of the main canals.

The model should be used for replication with certain caveats. 1) Participatory irrigation management is compatible with this structure if and only if irrigation, drainage and agriculture are the primary focus of the organization. 2) The agricultural base units should be defined to be compatible with the mesqas along the branch canal because allocation of water among mesqas is a fundamental function of a BCWUA. This is not always easy, because of direct irrigation, large farms that may cover more than one mesqa and other factors. However, WUAs that correspond to hydrological units, from the mesqa up, are necessary for the WUA to assume O&M functions.

**How to support new functions.** If BCWUAs assumed no new functions, they would be valuable if they actively represent farmer interests to the MWRI district. However, the coming shortages of water and the world experience with WUAs suggest that they can do more. The means to encourage BCWUAs to undertake specific functions need to be tried and then replicated. Tools for manual maintenance are a good start. The Stakeholder Participation activity did not support environmental actions by Water Boards, though other projects have found this to be feasible. As part of the Activation phase, the BCWUAs should be supported to implement pilot maintenance and environmental activities.

### **Use of BCWUA Database**

The BCWUA Data Base should be used for planning, and it should be updated. This data base should become the basic document source for planning agricultural, hydrological and marketing efforts on each BC. The method should be replicated for expansion of the BCWUA coverage.

## **Use of Knowledge Base of Planning Parameters and Expansion to Measure Impact**

Initial planning for replication of the BCWUA experience reported here should be done using the planning parameters derived from the current experience, modified in the following ways to reflect increasing efficiencies: 1) District Staff will become more efficient with increasing experience and farmers will know about BCWUAs from the experiences of their neighbors; 2) as farmers gain capacity, the very BCWUA can become an institutional partner to reduce the work load on the IWMD; the level of support for new BCWUAs may be constant but farmers may take on some of the work, thus reducing costs; 3) supporting central staff will become more efficient given that the training modules, data base forms, and knowledge base are in place.

The Knowledge Base should continue its work to document the progression of costs for establishing BCWUAs and development of BWUAs as they assume new functions.

Therefore, this report recommends 1) that the function of the Knowledge Base be expanded to cover analysis of impact; 2) that it include analysis of the impact BCWUA, IWMDs and mesqa WUAs; 3) that it cover other project areas (IIIMP, Water Boards), and 4) that it measure the several dimensions of BCWUA development, including a) stakeholder participation in hydrological and related decisions, b) assumption of Administration, Operations and Maintenance tasks by water users, c) increased agricultural production and income associated with BCWUA operations.

## **Use of Process Documentation**

The Process Documentation should be copied for each BCWUA. Process documentation, and monitoring in general, should be continued for a minimum of three years. The computerized BCWUA database is a requirement if MWRI is to implement its decentralization policy nationally.

## **Use of Training Modules**

The Training Modules are ready to use for BCWUA formation. They may be evaluated and modified with increasing experience. They should be presented to the national and international community of experts for comparison with other participatory projects.

Additional training modules should be developed during the Activation Phase.

## ***For Public Awareness***

The plans to provide booklets to the 2,000 members of representative assemblies should proceed, as should the plan to provide 10,000 copies of a pamphlet for members. When specific benefits have been achieved, wider dissemination will be welcome to facilitate replication of the BCWUA/IWMD model. So far, public awareness has been part of implementing BCWUAs in limited areas. As they become more common and as their functions develop, their existence will be of importance to more people, and the public awareness effort would become correspondingly more important.