IMPLEMENTING DISTRICT LEVEL INTEGRATED WATER MANAGEMENT WITH STAKEHOLDER PARTICIPATION

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ABSTRACT

Increasingly it is understood that water management is best served by an integrated package of services and practices delivered at the local level. The Egyptian Ministry of Water Resources and Irrigation (MWRI) is decentralizing its internal functions and devolving its authority to the local level. Consolidation of MWRI district offices and integration of water management functions at this level supports the decentralized management goal.

Forming Branch Canal Water Users' Associations (BCWUA) promotes stakeholders' participation. Historically, teams from the MWRI headquarters established water users' associations in Egypt. A change initiated under this project was to build the participatory management skills of the Integrated Water Management Districts (IWMD) and to delegate to them the responsibility for implementing the program establishing BCWUAs in their district. This approach enhances the potential for sustainability because of the close working relations built between farmers and IWMD staff; project districts are seeing a significant reduction in the number of formal complaints from farmers.

Memoranda of understanding defining the roles and responsibilities of the respective signatories are signed by the MWRI and the established BCWUAs. This approach has been used to establish 94 BCWUAs, covering all branch canals within the command areas of four IWMDs, about 145,000 acres.

INTRODUCTION

In recent years, water managers around the world have concluded that water management is best served through an integrated package of services and practices. It is also widely accepted that more effective water management policies can be made by decentralizing operation to local coordination entities. The MWRI, the primary agency charged with management of water resources in Egypt, has a long-term goal to reorganize its internal functions and operations

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through a process of local consolidation and ministry-wide decentralization, including devolution of authority to the local level. The MWRI has adopted a policy to integrate all water management functions at the district level to support decentralized management. To support implementation of the policy, the MWRI formed the Integrated Water Management Unit (IWMU) in December 2003.

The US Agency for International Development (USAID) and the MRWI jointly designed a Water Policy Results Package that integrated water policy and institutional reforms through privatization and decentralization. These policy reforms resulted in an improved environment for private sector participation through the formation of BCWUAs and established a solid basis for MWRI decentralization through the formation of IWMDs.

With USAID and project contractor assistance the MWRI began implementing these policy reform measures in four irrigation districts. MWRI district offices were consolidated and tasks were integrated. Stakeholders' participation was promoted through the formation of BCWUAs.

Implementation included a process of planning and plan adjustment driven by site-specific conditions and available human and financial resources. Establishing four IWMDs and 94 BCWUAs was achieved in a nine-month period. This paper will discuss lessons learned from an accelerated implementation program and early plans for strengthening the four IWMDs and 94 BCWUAs formed and expanding the program to cover four directorates, covering about 1.1 million acres, comprising an additional 23 districts and about 1,000 branch canals.

INTEGRATED WATER MANAGEMENT DISTRICTS

Use of water resources at the district level is plagued by inefficiency: poor management of resources, lack of accurate and timely information, weak management institutions, and no user involvement all contributed to water quality and physical system problems.

A second major problem is that management of water resources use is not integrated. Districts work to match their Nile water allotment with the demand of the command area. The use of groundwater and reuse of drainage water are not considered in the district's water balance, even when these sources are used by farmers to supplement water from the Nile.

The MWRI is vertically organized in line departments with directives and functions flowing from MWRI headquarters to lower line offices at the directorate, inspectorate, and district levels. Policy reform objectives were to reorganize MWRI internal functions and operations and devolve authority to the district level. In the process, district offices become organizationally flatter and inefficiencies and redundancies are reduced. An operational IWMD is expected

to achieve the following targets: improved water use efficiency, well-maintained irrigation and drainage systems, and improved service delivered to users.

An IWMD is defined as an entity that has sufficient manpower, material, and fiscal resources to operate and maintain all water resources and pertinent facilities under its jurisdiction to deliver water to users equitably. All divisions support the water distribution and maintenance process and all the various district water entities are merged to constitute a single entity referred to as an IWMD.

Consolidating the multiple MWRI offices within a district creates an Integrated Water Management District with one office, one staff, and one unified budget. Consolidation requires unification of authority and administrative boundaries, preparation of a new organizational structure, an intensive training program, and the development and installation of a database system to monitor and assist the newly established BCWUAs in the district.

Specific steps taken to form an IWMD are outlined below. Steps four and six through nine are also training clusters, indicated in bold type. Training program instructors came from the MWRI and had long experience with the subjects being taught; they could blend practical experience with theoretical knowledge. The program was comprised of formal courses and on-job-training (OJT).

1. Identify and decree administrative boundaries – For single office integrated management of all water resources within the new district, the boundaries for irrigation and drainage command areas must coincide as closely as possible.
2. Develop an organizational structure – The organization is headed by the District Officer and has four sections: water management and distribution, maintenance, planning and follow-up, and administration.
3. Orientation Training – Provides a basic background on IWRM concepts and activities to district engineers, technicians, and stakeholders.
4. **District Consolidation** – The IWMD concept requires consolidation of organizations, staff, equipment, facilities, transportation, budgets, and administrative plans. IWMD staff received a project orientation and training in administration, water management, and consolidated maintenance of the irrigation and drainage systems.
5. Comprehensive Assessment – Determine district's potential water resources and establish an integrated operations program for surface water, drainage water, groundwater, rain, and treated wastewater. IWMD staff should be able to assess and match water supply and demand.
6. **Water Monitoring** – Promote "measurement-based management", where information on water quantity and quality can be used for irrigation system management. Canal monitoring, groundwater monitoring, and water quality monitoring were included. Ten formal and five OJT courses were used.
7. **Information System** – Provide the capability to manage all data and information needed to support decentralized and integrated water management

decision-making at the district level including: data integration procedures, databases, electronic forms/reports, electronic-mapping system, and specialized software. Seven formal and three OJT courses were used. Private sector providers taught the basic computer skills courses, but MWRI staff taught the use of specialized software.

8. **Performance Monitoring and Evaluation** – Identify and document baseline conditions; develop procedures and protocols to assess changes resulting from the institutional reforms; and provide guidelines for computer-based monitoring systems established in the IWMDs. One formal course and one OJT course were presented wherein the staff conducted a survey of water users to assess benefits gained from the IWMD.
9. **Stakeholders' Participation** – Increase stakeholder and farmer awareness of opportunities to participate and to share responsibilities in the management of water resources. Nine formal courses and ten OJT courses were developed and used. These courses covered in-depth the procedures for establishing BCWUAs.
10. Commodity Procurement – Procure items that are essential to ensure implementation of integration activities and support IWMD establishment such as: computers and peripherals, communications & IT, specialized software, water monitoring equipment, training support equipment, and office equipment.

Early results

Considerable progress in decentralization of water resources management has been made. Over this short nine-month period of implementation there are reportable results.

- Integrating physical, institutional, and service aspects of water management at the district level has led to improved institutional and physical efficiencies and a significant decrease in the number of users complaints related to water.
- Training of IWMD staff has improved functional coordination at the local level for water allocation and distribution, drainage, and physical operation and maintenance.
- Guidelines and training materials prepared to implement institutional reorganization and decentralization of the MWRI at the local level are available for program expansion.
- The MWRI Irrigation Advisory Service (IAS) and IWMU, with project assistance, developed for each IWMD a database of information and prepared complete process documentation for each BCWUA established in the district.
- The government has come to realize that the authority of IWMD Officers must be defined and formalized and linkages with directorates redefined. The Minister has appointed a high level committee to address these issues.

- Installation of Internet capabilities at IWMD offices with links to directorates and MWRI headquarters has facilitated the flow of data and information.

FORMATION OF BCWUAS

A critical component of the IWMD is stakeholder 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. It provides opportunities for cooperation and coordination between the government and stakeholders, which builds trust and collaborative relationships. Stakeholder participation was activated by establishing BCWUAs on all of the secondary canals in the four-targeted IWMDs. Documented benefits to users include increased productivity, positive changes in cropping intensity, improvement in financial impact performance indicators, resolution of water-related conflicts, and a positive environmental impact.

Historically, teams from the IAS established water users' associations in Egypt. Major changes initiated under this project were for the IAS, supported by the project and IWMU, to train and build the capabilities of the IWMD field staff in participatory irrigation management and they then establish branch canal water users' associations. This approach provided IWMD engineering and technical staff with the capabilities needed to take responsibility for establishing BCWUAs in their district. One engineer and 10 to 18 field technicians in each IWMD participated in the Stakeholder Participation activity and can assume IAS responsibilities in their respective districts if so assigned. The number of IAS staff assisting each of the IWMDs ranged from two to eleven. Each four- to five-person field team was strengthened with one female trainer and was responsible for specific branch canals, i.e., for a given branch canal, stakeholders interacted with the same team for the entire process. The MWRI Water Communication Unit, with project assistance, provided public awareness material to support the effort. The potential for sustainability is enhanced because of close working relationships built between farmers and IWMD staff.

The challenge was to establish BCWUAs on each of the 94 branch canals of the four IWMDs during a project time horizon of 13 months. This was the first time MWRI had attempted to form BCWUAs on all branch canals within a single district. Given limited financial resources and time it was necessary to develop a strategy that would provide replicable procedures to enable expansion vertically and horizontally; incorporate the MWRI policies of integration, decentralization, and gender; set the standards for similar stakeholder participation activities in Egypt; prepare modularized training and public awareness materials; and maintain a complete documentation of the process so that it could serve as a model for future efforts.

The Stakeholder Participation program was designed to establish BCWUAs through a comprehensive, stepwise training effort. The IAS team designed a ten-step process in three phases to establish the BCWUAs.

Entry Phase: Introduce the BCWUA concept to both district staff and water users and prepare for BCWUA organization building. The implementation plan had two activities for each step. First, train district staff so they could establish BCWUAs and continue their work in the district. This meant that district staff were forming BCWUAs while their district was undergoing the IWMD transformation. Second, train water users and organize the BCWUAs.

IAS staff was responsible for training district staff. Key steps and training included: staff recruitment and designation of district field staff to activate an IAS unit under the IWMD structure, water users' orientation, data collection, gender issues, stakeholder analysis and identification of key persons, and canal grouping for BCWUA representative elections. Immediately after training, the District staff went 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.

Organization Phase: District staff and water users, with central support, build the BCWUAs: issue IWMD and BCWUA initiation decrees, elect BCWUA representative assemblies and BCWUA boards, issue BCWUA establishment decrees. Formal and OJT courses were used. These courses covered: election of representative assembly, roles & responsibility of the representative assembly, election of the BCWUA board, roles & responsibility of the BCWUA board, exchange of experience among BCWUAs, and follow-up for water users (BCWUA board only).

Signing Memoranda of Understanding Phase: The memoranda of understanding (MOU) between the MWRI and the established BCWUAs is introduced and signed. The MOU defines the roles and responsibilities of each party. After completion of this phase, the BCWUA is ready to undertake the basic functions and to represent water user members on water issues with the IWMD. Training on roles and responsibilities was given during the preceding phase.

Completion of the MOU phase was accomplished in August 2004. Next year a period of institutional strengthening will ensure sustainability and full activation of the BCWUA. Activation will be followed by the transfer of selected responsibilities from the IWMD and MWRI to the BCWUA.

Institutional Strengthening: Capacity building for BCWUAs will consist of developing their administrative capabilities; improving their representation of user concerns to the IWMD, including effective expression of priorities for MWRI

annual work plans; undertaking some canal operation and maintenance tasks; learning to monitor water deliveries and operation and maintenance implementation; and beginning to resolve allocation issues between mesqas.

Transfer: Capacity building continues as needed. BCWUAs share and/or replace IWMD staff for operation and maintenance activities, participate with MWRI in contracting decisions and contract performance monitoring, have transparent and organizational capacity to manage activities and funds, and have ability to resolve allocation issues between mesqas and to undertake technical tasks. This phase cannot happen until the amendments to Law 12/1984 Irrigation and Drainage[3] have been approved and the BCWUAs receive legal status. It is not envisioned that the BCWUAs will take over ownership of any irrigation or drainage infrastructure currently owned by the Government of Egypt. They will however be contracted to operate and maintain the infrastructure subject to MWRI supervision and inspection. It is expected that as the BCWUA gains experience in operations and maintenance the degree of MWRI oversight will diminish.

Four distinct products of the Stakeholder Participation activity enhance the capacity of MWRI headquarters and directorates and within IWMDs to support establishment and strengthening of future BCWUAs.

- A **BCWUA Database** was created, tested, and installed at each of the four districts. The database will help the IAS manage, monitor, and evaluate the progress of participatory activities in the IWMDs, and help the IWMDs provide coordination, documentation, and tracking of BCWUA activities.
- A **Monitoring and Evaluation (M&E) Knowledge Base** was developed by interviewing field and management staff. The M&E Knowledge Base includes: parameters for field team formation (age, experience, gender, team structure, performance rate), and BCWUA establishment process requirements (time, resources, planning, data collection, communications, and etc.). The M&E Knowledge Base provides a benchmark for planning other BCWUA formation efforts. This effort will be expanded with knowledge gained during the Institutional Strengthening and Transfer phases.
- During the implementation of each BCWUA complete **process documentation** was prepared. This information is being used to improve the BCWUA formation process. Process documentation will continue to be prepared during the Institutional Strengthening and Transfer phases.
- All training materials were prepared in modular format. These **training modules** are ready for use or adaptation for new projects.

[3] Three amendments in the legislative process will: give water users' organizations at all levels of the delivery system legal status; permit them to obtain financial resources through service fees and grants; and to contract with the MWRI for the operation and maintenance of contractually defined parts of the irrigation and drainage networks.

Early Results

There are 94 BCWUAs covering about 145,000 acres with 64,583 water user members, of which 1,924 (about 3%) are voluntarily (no compensation) serving on a BCWUA board. These associations were established within a nine month period from December 2003 to August 2004.

About 13 percent of Assembly Representatives and Board Members are women.

"The Branch Canal Water User Associations Informative Handbook" is being provided to BCWUA boards and representative assembly members in the four pilot districts. The pamphlet "Frequently Asked Questions about Branch Canal Water Users Associations" is being prepared for all BCWUA members. In the future these materials will be distributed early in the establishment process.

The principal obstacle for stakeholder participation encountered in the four pilot IWMDs was stakeholder's lack of standing in negotiation with the MWRI. An important result of this project was signing MOUs between each BCWUA and the MWRI. This step also starts activation of BCWUA roles and responsibilities.

Decentralization of IAS activities to district staff was initiated and has proven effective for assisting water users.

Staff of the four IWMDs understand participatory concepts and have the capability to work with BCWUAs established under their jurisdiction.

Lessons Learned

From experience gained during the project and from the knowledge base survey, the Stakeholder Participation Task Group has learned lessons that can improve efficiency in forming future BCWUAs.

1. As replication proceeds, establishment of BCWUAs will become more efficient due to: previous investment in developing training materials and formats, transitioning from engineers to field staff as implementers, transitioning from field staff to farmers as trainers, and empowering BCWUAs and IWMDs to assist in the establishment process.
2. The principal planning parameters for replication of BCWUA establishment include the number of water users and the area covered, the level of effort for field activities (including training the trainers), and the number of training events. On average, a BCWUA with 687 members covering 1,771 acres required a District Field Team staff of 13 people and 115 person days of effort.
3. Establishment of BCWUAs is an integral part of district restructuring.

4. Implementation plans should be modified for site-specific conditions, e.g., canal/drain system layout and social conditions.
5. Establishing a BCWUA provides opportunities for regional and local stakeholders, including governmental and non-governmental organizations, to participate in the process.
6. Criteria developed in the Monitoring and Evaluation Knowledge Base should be used to form new BCWUAs.
7. Given the opportunity, women are able to participate fully as water users and as outreach staff. The degree of participation exceeded expectations.
8. Farmer participation was more enthusiastic than expected. There is an expectation by farmers that the BCWUAs will result in effective participation in decisions.

Recommendations

1. BCWUAs should be encouraged to assume operation and maintenance tasks, improve water delivery or drainage, reduce conflict over water, become effective representatives of farmers, become effective partners in support of agricultural development, and deliver other benefits to members.
2. Agriculture should remain the principal focus as BCWUAs assume operational tasks, with the environment, solid waste management and water quality improvement, as important secondary concerns.
3. Legal reform to recognize BCWUAs should be supported.
4. The institutional model based on IWMD reorganization, including recruitment of willing staff, providing support through the Activity Work Management Group, participation of governorate level undersecretaries, and 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.
5. The BCWUA database should be maintained and used for planning. This database should become the basic document source for planning agricultural, hydrological, and marketing efforts on each branch canal.
6. The Knowledge Base should continue its work to document the progression of costs for establishing BCWUAs and development of BCWUAs as they assume new functions. The Knowledge Base should be expanded to cover analysis of the impacts from the BCWUAs, IWMDs, and mesqa WUAs, cover other project areas (Integrated Irrigation Improvement and Management Project, Water Boards), and measure the multiple dimensions of BCWUA development. These dimensions include stakeholder participation in hydrological and related decisions, assumption of administration, operations and maintenance tasks by water users, and increased agricultural production and income associated with BCWUA operations.
7. Process documentation should be prepared and maintained 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.

8. Public awareness efforts should be expanded to facilitate replication of the BCWUA/IWMD model. To date, public awareness has been limited to the area wherein BCWUAs are being implemented. As they become more common and as their functions increase, their existence will be of importance to more people, and the public awareness effort becomes correspondingly more important.

Recognized Concerns

- Improve/formalize modes of coordination between the BCWUAs and the IWMDs. Approval of amendments to Law 12/1984 and refinement of the MOU will help define the relationship.
- Define a procedure or process for a BCWUA to take over full responsibilities for actual daily requirements for maintenance and operations.
- Address MWRI organizational and staffing issues, e.g., redundancy, arising as BCWUAs take over more responsibilities for operations and maintenance.
- Develop procedures for interministerial coordination to resolve overlapping authorities and responsibilities and to promote cooperation in the water sector.

REFERENCE

Integrated Water Management Unit. 2004. "Stakeholder participation activity in Integrated Water Management Districts." Red Sea Sustainable Development and Improved Water Resources Management Project, International Resources Group.