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***MWRI POLICY ON IRRIGATION  
MANAGEMENT TRANSFER***

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**Water Policy Program**

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**Nile Consultants**

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MANAGEMENT TRANSFER***

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## Executive Summary

This report and its accompanying set of appendices presents the results of the work carried out in completion of Benchmark 4 of Section C of the agreement between the Government of the Arab Republic of Egypt (GOE) and USAID/Egypt for Tranche IV (FY 99/00).

The results, findings and recommendations of this benchmark were presented to the MWRI Water Policy Steering Committee at the final Tranche IV Benchmark Workshop held on Nov. 9-10, 2001. The draft version of this report and its appendices were made available to the Steering Committee members and other key officials of MWRI, USAID and other involved GOE entities. Following comprehensive discussion and deliberation, the draft report was adopted by the Steering Committee. The Steering Committee subsequently forwarded its recommendations for this benchmark to H.E., the Minister of MWRI, for approval.

The benchmark states:

***“The GOE (MWRI) will adopt a policy and strategy for transferring management of selected sections of the irrigation system to stakeholders and/or the private sector.”***

The two Verification Indicators for the benchmark are:

- 1. The MWRI will develop a policy on irrigation management transfer, to include a plan for phased implementation and to identify legal requirements, by 31 December 2000.*
- 2. Application of the policy will be initiated in two selected pilot areas by 31 December 2001.*

To carry out the work of this benchmark, the IMT Working Group was established, led by the EPIQ senior sociologist, and with members representing the Water Policy Advisory Unit and key units from the Irrigation Sector, Horizontal Expansion & Projects Sector, Drainage Authority, Mechanical & Electrical Department, and Irrigation Advisory Service. A work program was developed to cover activities for Phase 1: October 1999 to December 2000, culminating in promulgation of an MWRI policy on Irrigation Management Transfer (IMT); and Phase 2: January 2001 to December 2001, which tested the policy in four pilot areas. This work program was incorporated into the overall EPIQ/MWRI work plan. Under the APRP program of USAID, policy reforms were achieved during 1997-1999 that strengthened the process of expanding user participation at secondary levels of the irrigation/drainage system. MWRI promulgated a policy allowing for the formation of secondary-level *Branch Canal Water User Associations (BCWUAs)*. One of the seminal recommendations from that BCWUA policy was to develop and pilot-test a policy on transferring selected water management and operational functions from GOE to the users.<sup>1</sup>

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<sup>1</sup> Simultaneous with the APRP IMT program, the MWRI launched a pilot program under assistance from the Netherlands Government, on establishment of Water Boards.

As in the case of Egypt, governments around the world are attempting to reduce their recurring expenditures on irrigation and stabilize deterioration of scheme infrastructure without sacrificing the productivity of irrigated agriculture. Many governments assume that the transfer of management responsibility to farmer organizations will improve the accountability of the irrigation service to farmers, make the service more cost-efficient, motivate farmers to invest more in maintaining irrigation systems and, ultimately, make irrigation systems and irrigated agriculture more sustainable. The GOE transfer of major management responsibilities for sections of the irrigation system above the *mesqa*-level to stakeholders and/or the private sector is a bold advance toward the goal of participatory management and privatization of the irrigation system. Although IMT is now a major feature of irrigation delivery in many other countries, it is only now being launched in Egypt. Successful implementation of this benchmark has been seen as a major turning point for this process to take hold at the grass-roots level of the GOE.

As a result of IMT, the role of the GOE in water management can be expected to change significantly, although there will continue to be an essential management role for the GOE, in particular for MWRI. There is also expected to be a rationalization of the respective roles of government and users in water management. This present report, which presents an example of how management functions can be shared between irrigation users and the GOE, is an example of "win-win" dynamics for all the partners.

Unlike earlier irrigation improvement efforts in Egypt (e.g. EWUP, ISM, and IIP), which can be classified as "*farmer participation in irrigation improvement*", the principle of the IMT model allows the private sector to take managerial and financial control over operation and maintenance. This will result in direct and immediate reductions in government expenditures, freeing government funds for tasks the private sector is unable to effectively undertake.

This benchmark was implemented over a two-year period and was divided into two phases. Phase I focused on the following:

- Analyzing IMT experiences in other countries;
- Assessing the impact of the program in Egypt to develop BCWUAs and Water Boards;
- Preparing a clear understanding and consensus view regarding which components of irrigation and drainage are to be included in the Egyptian IMT program;
- Developing the results of these analyses into a set of prioritized directional guidelines and policy for Egypt;
- Identifying an IMT strategy or multiple strategies suitable to the Egyptian context and incorporating this into the IMT policy;
- Considering all approaches and strategies for IMT involving the private sector, especially water users and their organizations in all land categories (new, old, old-new, groundwater, etc.); and
- Issuing a policy document on IMT with a plan for phased implementation in the selected areas, focusing on the following priority issues:
  - administrative aspects of IMT,
  - harmonizing all relevant GOE laws with the IMT process,

- assessing water user interest in, and expectations of, the IMT process,
- estimating potential private sector capability in water delivery and O&M, and
- evaluating irrigation and drainage practices in each study area.

Phase II focused on the following major activities and outputs:

- Enactment of IMT implementation plan at four pilot sites;
- IMT Socio-Economic Baseline Study;
- *Process Documentation* on formation of pilot BCWUAs;
- Training plan for BCWUAs in O&M;
- Memoranda of Understanding (MOUs) between MWRI & BCWUAs;
- Implementation of pilot canal physical rehabilitation assessment and planning requirements;
- Assessment of IMT global experiences and impacts;
- Analysis of major IMT international experience;
- IMT multi-media public awareness campaign material; and
- MWRI institutional arrangement for IMT post-APRP.

Based on the above, the following were the discrete outputs for the second phase of this benchmark:

- IMT Phase II Implementation Plan
- IMT Socio-Economic Baseline Study Report
- IMT Irrigation/Drainage System Physical Assessment & Rehabilitation Report
- Process documentation of first year of IMT implementation on four pilot BCWUAs
- Ministerial Decrees issued by the MWRI Under-Secretaries in the pilot IMT governorates
- BCWUA/MWRI Memoranda of Understanding regarding IMT
- IMT Public Awareness campaign material
- Final Report on Findings and Conclusions of Benchmark

The MWRI policy statement, with twenty policy clauses detailing procedures and processes, has been approved as follows<sup>2</sup>:

***In a phased process of application, the MWRI will transfer selected sub-sections of Egypt's irrigation and drainage network to users and/or the private sector acting on behalf of the users.***

The IMT policy statement objectives are to:

- Determine the prerequisites for introducing handing over of management responsibilities to stakeholders and/or the private sector in Egypt;

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<sup>2</sup> The complete policy and its subordinate clauses can be found in Appendix A.

- Define the strategies and steps required to implement partial, incremental and total management transfer in all categories of land, including old lands. These are based on a phased transfer process beginning with a period of negotiated joint management prior to system hand-over; and
- Consider roles and responsibilities of MWRI in the transfer process, particularly in each of the various stages of transfer.

The IMT phased implementation plan includes the following elements:

- Legal changes required to support the IMT process, including contracting and assessment capabilities;
- Definition of roles and relationships between public and private sector entities as they relate to IMT;
- Definition of administrative and financial management systems for O&M;
- Training of staff and development of plans for organizational restructuring;
- Arrangement for provision of support services;
- Development of Branch Canal Water User Associations;
- Upgrading of the physical irrigation/drainage infrastructure as part of the transfer process.

The IMT Working Group assisted the task group responsible for drafting the revised law in areas directly affecting user participation and management transfer. The relevant sections of the draft law are indicated in Articles 32, 33, 34 and 35. MWRI will undertake the process of formalizing the legislation before it is officially enacted. The primary distinguishing feature of the revised law lies in its inclusiveness with respect to levels of the irrigation system and types of entities that may be assigned managerial and operational aspects of the irrigation and drainage network. The relevant Articles of the proposed revised law are found in Chapter 6 of this report.

BCWUAs were formed by ministerial decree at the four IMT pilot areas. This activity was implemented with the active involvement direction of the Irrigation Advisory Service (IAS) and entailed a multi-stage process of intensive meetings and negotiations over a period of several months, resulting in the issuance of Under-Secretarial decrees from each governorate formalizing the registration and signing of *memoranda of understanding* (MOUs) between the BCWUAs and the MWRI.

An *IMT Baseline Socio-Economic Study* (see Appendix G) was carried out in the four IMT pilot areas prior to initiation of the BCWUA organizing process and before meetings with stakeholders in each area. The purpose of the *IMT Baseline Socio-Economic Study* is to describe, analyze, and explain farmers' agriculture behavior and provide a baseline data source that can be used to assess levels of program impact. As has been noted, the subject of IMT had not been introduced to any of the areas prior to the collection of interview data. Therefore, the views expressed in this report do not reflect any level of understanding of IMT concepts, objectives and procedures.

The study covered eleven major areas of data collection: 1) background information (i.e., the socio-demographic and economic characteristics of the respondents such as gender, age,

education, occupation, marital status, and individual income); 2) other members of the household (household was defined as all those living under one roof and eating in the same kitchen); 3) patterns of land holdings examining farmers' access to land; 4) the crop structure of both seasonal and permanent crops, as well as farmers' reasons for cultivating such crops; 5) the conditions of irrigation, including the issue of fragmentation, farmers' views on the impact of shortages on crop yields, the methods used to compensate, and irrigation technology and the disputes associated with its use; 6) farmers' attitudes toward irrigation maintenance; 7) the perceived abilities of the water users, the government, and the private sector to perform various maintenance functions; 8) the perceived expectations by farmers resulting from transfer on the performance of the irrigation network; 9) drainage issues, focusing on the farmers' view of current drainage management, abuse by the farmers and the forms it takes, and the potential impact of transferring the management of the drains to the WUAs, including tile drainage; 10) post-transfer of the system to users, especially the role of water users and the state in the management and maintenance of the irrigation network; and, 11) the impact of the current irrigation system on elements of the social fabric and on issues pertaining to social conflict and conflict resolution, and the anticipated impact of the irrigation transfer project on these issues.

*A Public Awareness Campaign (PAC)* was developed by the EPIQ Water Policy Team's IMT Working Group with active participation and input by all stakeholders in the IMT process. The PAC includes a comprehensive strategy and a set of communication tools to educate all targeted audiences on how to participate in and support IMT. The purpose of the IMT/PAC is to promote a better understanding of IMT, support the ongoing development of this program, and motivate people to remain continuously involved.

*A Pilot Physical Assessment and Rehabilitation Plan* was carried out under the aegis of the IMT Working Group. The assessment and rehabilitation of the physical systems is an integral part of the transfer process -- experience from other countries clearly demonstrates that before a system is to be transferred it needs to be brought up to an acceptable condition and performance standard. This assessment and plan involved all BCWUA members from the four pilot areas and MWRI staff to determine the scope and scale of rehabilitation required to upgrade the four physical infrastructures. In each case, the terms and conditions for the rehabilitative work were negotiated between the BCWUA and MWRI and comprise part of the memorandum of understanding. The work to be carried out varies considerably from one location to another and ranges from basic maintenance features to improvements requiring significant investments.

A major feature and achievement of this component is cost-sharing, with the BCWUA being responsible for covering all infrastructure costs in excess of those related to simple maintenance. The MWRI will recover the cost of rehabilitation works from the water users, as per the regulations stipulated in Law 213 of 1994.

In a document dated November 29, 2001, H.E. the MWRI Minister signed an executive order instructing the Chairpersons of the Irrigation Department, the Mechanical and Electrical Department, and the Drainage Authority, to proceed with the program for rehabilitation of the four IMT pilot canals. The order, attached in Appendix A, authorizes the three departments to undertake the work in consultation with the BCWUAs and in accordance with the budgetary and technical requirements detailed in Appendix E of this report.

The project carried out a review of IMT performance history by studying reported experiences and visiting several countries that have introduced IMT programs. This *global experience* is particularly useful in terms of establishing performance parameters for the Egyptian context.

The need to formalize the IMT process within the MWRI is central to sustaining its growth and progress. The IMT transfer process is not under the purview of any one agency of the MWRI. The Irrigation Department, the Drainage Authority, and the Mechanical & Electrical Department are the major agencies within MWRI to implement, support and coordinate the transfer process. It is suggested that the Office of the Minister provide overall policy guidelines and performance tracking through continuation of the *IMT Steering Committee*, and that the Irrigation Advisory Service (IAS) take the lead in coordinating IMT programs at the field level, with an assigned liaison officer to each of the main line departments.

Additional recommendations to assure effective application of the IMT policy are:

1. MWRI will complete procedures to amend laws on water management in order to
  - 1) formalize transfer of parts of the system to users and/or the private sector, and
  - 2) allow formation and registration of WUAs in all categories of land and among primary, secondary and tertiary levels of the irrigation system.
2. MWRI will expand its pilot program in line with the approved phased implementation schedule plan approved in this report.
3. MWRI should continue to support and strengthen the role of the inter-disciplinary ministerial IMT Working Group under the direction of the IMT Steering Committee, which reports to the Minister.
4. MWRI will formally take necessary action to incorporate *mesqa*-level and branch canal irrigation and drainage functions as part of the mandate for the management transfer entities.
5. As part of its support to the IMT program, the MWRI should formally undertake a program to establish, with BCWUA cooperation and cost-sharing, strategically-located maintenance centers for spare parts, equipment and other O&M material used in irrigation and drainage at the branch canal level.
6. In conjunction with the objectives of the MWRI plan for Integrated Water Management Districts, BCWUAs and field engineers will jointly plan, design and implement branch and distributary canal improvements in the command area and establish continuous flow and downstream water level control.
7. A branch canal O&M cost-sharing plan process (as described in the Tranche III APRP Water Policy Report No. 17 on Branch Canal Water User Associations) should continue to be refined and adopted as a standard feature of the BCWUA management transfer implementation process.

8. Regular coordination should be maintained with all other projects working in this sector, e.g. the Irrigation Improvement Project, the Water Boards Project, etc., and with the MWRI committee on water user participation.
9. Awareness-building programs for BCWUAs and MWRI engineers, technicians and field agents need to focus on priority IMT objectives and issues. MWRI staff will need basic introductory training on IMT as well as periodic refresher training in a number of key subjects.
10. To ensure quality and minimize duplication of services following management transfer, local level coordination with other public and private sector agencies needs to be formalized, e.g. with Agricultural Extension, Drainage Authority, cooperatives, banks, growers' associations, local councils, research institutes, etc.
11. Management transfer (IMT) should not be restricted to irrigation activities only; transfer should be implemented in a holistic modality and extend to all aspects of water resource (irrigation, drainage, groundwater, etc).
12. With respect to expansion of IMT beyond the pilot stage, MWRI should examine the improvement projects and the rehabilitation works needed in these areas and how to differentiate between improvement and rehabilitation.
13. A major Public Awareness Campaign needs to be launched specifically for the IMT effort. MWRI will need to fund and manage the implementation of the PAC. The strategy and details of such a campaign are included as Annex H.
14. MWRI must establish an IMT Monitoring and Evaluation System, which will be particularly important at the time of IMT expansion. The MES will serve three primary functions: 1) track implementation efforts for problems and bottlenecks, 2) confirm and verify progress and achievements, and 3) provide the basis for assessing post-facto beneficiary impact.
15. MWRI will need to study alternative methods of financing expansion of the IMT pilot program nationwide, including public/private co-financing, establishment of a Water Partnership Fund, and government loan mechanisms to bring MWRI, private sector entities and NGOs together in a cooperative effort to expand IMT.
16. MWRI will need to evaluate the various pilot programs dealing with management transfer and establishment of WUAs to define a policy for such efforts, including institutionalizing implementation under one unit within MWRI to build upon the successes achieved to date, to expand these programs nationally and to ensure sustainability.

## List of Abbreviations and Acronyms

APRP	Agricultural Policy Reform Program
BCWUA	branch canal water user association
EPADP	(MWRI) Egyptian Public Authority for Drainage Projects
EPIQ	Environmental Policy Indefinite Quantity
EWUP	Egypt Water Use Project
GOE	Government of Egypt
HCDWI	Head of the Central Directorate for Water Resources & Irrigation
HEPS	(MWRI) Horizontal Expansion & Projects Sector
IAS	Irrigation Advisory Service
IDRC	International Development Research Council
IDS	irrigation and drainage system
IDSBA	Irrigation & Drainage System Beneficiary Association (equivalent to BCWUA)
IFAD	International Fund for Agricultural Development
IIP	Irrigation Improvement Project
IIS	(MWRI) Irrigation Improvement Sector
IMT	irrigation management transfer
INPIM	International Network on Participatory Irrigation Management
IRG	International Resources Group, Ltd.
ISM	Irrigation Systems Management Project
JICA	Japan International Cooperation Agency
MALR	Ministry of Agriculture and Land Reclamation
M&E	monitoring and evaluation
MED	(MWRI) Mechanical & Electrical Department
MOTS	Ministry of Trade and Supply
MPE	Ministry of Public Enterprise
MWRI	Ministry of Water Resources and Irrigation
NWRC	(MWRI) National Water Research Center
O&M	operations and maintenance
PAC	public awareness campaign
PRA	participatory rural appraisal
TORs	terms of reference
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WPAU	Water Policy Advisory Unit
WPRP	Water Resources Results Package
WUA	water user association

# 1. Introduction

## 1.1 Overview

The Ministry of Water Resources and Irrigation (MWRI) is the primary government agency charged with the management of water resources in Egypt. Escalating population growth, a desire for agricultural expansion, and increasing demands on surface water supply play significant roles in water delivery capability. Both MWRI and USAID are aware of the need to develop policy reform that will effectively address these and other issues that determine utilization efficiency, productivity, and protection of water resources.

During FY 96/97 the MWRI and USAID developed a “water resources results policy package” that focused on producing four major results:

- 1) improved irrigation policy assessment and planning process,
- 2) improved irrigation system management,
- 3) improved private sector participation in policy change, and
- 4) improved capacity to manage the policy process.

The MWRI and USAID designed the water resources results package with the following objectives:

- To increase MWRI’s ability to analyze and formulate strategies and policies related to integrated water supply augmentation, conservation and utilization, and protection of Nile water quality.
- To improve water allocation and distribution management policies for conservation of water while maintaining farm income.
- To recover the capital cost of *mesqa* improvements and establish a policy for the recovery of O&M costs of the main system.
- To increase users' involvement in system O&M.
- To introduce a decentralized planning and decision-making process at the irrigation district level.

In early 1997 the water resources results package was integrated into USAID’s Agricultural Policy Reform Program (APRP). APRP is a broad-based policy reform program involving five GOE ministries (MWRI, Ministry of Agriculture and Land Reclamation (MALR), Ministry of Trade and Supply, Ministry of Public Enterprise, and Ministry of International Cooperation). APRP has the goal of developing and implementing policy reform recommendations in support of private enterprise in agriculture and agribusiness.

USAID supports the MWRI in five program activities under APRP. These five activities are: 1) water policy analyses, 2) water policy advisory unit, 3) water education and communication, 4) main systems management, and 5) Nile River monitoring, forecasting and simulation. USAID

supports the Ministry's efforts through technical assistance and cash transfers (annual *tranches*) based on achievement of policy reform benchmarks.

Technical assistance for the water policy analyses is provided through a task order (Contract PCE-I-00-96-00002-00, Task Order 807) under the umbrella of the Environmental Policy and Institutional Strengthening Indefinite Quantity Contract (EPIQ) between USAID and a consortium headed by the International Resources Group, Ltd. (IRG) and Winrock International. Local technical assistance and administrative support is provided through a subcontract with Nile Consultants.

## **1.2 Purpose of the Report and Background**

A memorandum of understanding between the Arab Republic of Egypt (GOE) and USAID listing mutually agreed policy reform benchmarks for the APRP Tranche IV period (1 September 1999 to December 31, 2001) was signed on September 28, 1999. Benchmark 4 of Section C of the APRP medium/long term policy goals, "Agricultural Land and Water Resource Investments, Utilization and Sustainability" states:

***"The GOE (MWRI) will adopt a policy and strategy for transferring management of selected sections of the irrigation system to stakeholders and/or the private sector."***

The two Verification Indicators for the benchmark are:

1. The MWRI will develop a policy on irrigation management transfer, to include a plan for phased implementation and to identify legal requirements, by 31 December 2000.
2. Application of the policy will be initiated in two selected pilot areas by 31 December 2001.

In support of this policy benchmark activity, the IMT Working Group was set up, led by the EPIQ senior sociologist, and with members representing the Water Policy Advisory Unit and key units from the Irrigation Sector, Horizontal Expansion & Projects Sector, Drainage Authority, Mechanical & Electrical Department, and Irrigation Advisory Service. A work program was developed to cover activities between October 1999 and December 2001. This work program was incorporated into the overall EPIQ work plan.

The IMT benchmark had a two-year implementation program prospectus, with the verification indicators clearly designated for Year 1 and Year 2. The IMT Working Group developed a methodology that allowed for acceleration of the pilot identification process (primarily Year 2 activities), while focussing on formulation of a policy on irrigation management transfer. It was decided by the Steering Committee to work on Year 2 designated program activities during the first year in order to foster an IMT policy that benefits from initial pilot implementation efforts. Work on this benchmark policy reform started September 1999 and was to be completed before the end of December 2001. Activities relating to the second year program and to the second verification indicator, i.e. pilot implementation, are being reported in this final benchmark report.

### **1.3 Organization of this Report**

Following the Introduction of this report, there is a general overview of participatory irrigation management experiences in Egypt (Chapter 2) resulting in the present management transfer program. A description of the IMT benchmark methodology is presented in Chapter 3. Chapter 4 summarizes the MWRI policy on irrigation management transfer and is followed by the MWRI plan for phased implementation of IMT (Chapter 5). The proposed provisions in the national water law that are being made to give IMT a legal foundation comprise Chapter 6. Chapter 7 contains the results of the organizing process of four IMT pilot Branch Canal Water User Associations (BCWUAs). A summary of the IMT Public Awareness Campaign comprises Chapter 8. Chapter 9 describes the results of the IMT pilot physical assessment and rehabilitation. Chapter 10 details lessons learned from IMT experiences in other countries. The necessary capacity building for successful IMT implementation in Egypt is described in Chapter 11, followed by proposed IMT institutional arrangements in MWRI (Chapter 12). And Chapter 13 puts forth other recommendations for the future of IMT in Egypt.

The report has eight sets of appendices, which comprise the complete documentation of the results summarized in the main report.

### **1.4 MWRI Approval of the IMT Results and Report**

The results, findings and recommendations of this benchmark were presented to the MWRI Water Policy Steering Committee at the final Tranche IV Benchmark Workshop held on Nov. 9-10, 2001. The draft version of this report and its appendices were made available to the Steering Committee members and other key officials of MWRI, USAID and other involved GOE entities. Following comprehensive discussion and deliberation, the draft report was adopted by the Steering Committee. The Steering Committee subsequently forwarded its recommendations for this benchmark to H.E., the Minister of MWRI, for approval.

## 2. Background and Problem Description

### 2.1 Overview of Water User Participation in Water Management in Egypt

The primary Government of Egypt agency responsible for water resources management is the Ministry of Water Resources and Irrigation. As such, it is mandated to plan, construct, operate, manage, and maintain the irrigation and drainage network in Egypt. The MWRI distributes irrigation water to Egypt's "old lands" by diverting water at various points from the Nile River to principal canals, which, in turn, feed a complex network of main canals. Water is generally supplied throughout the network below the surrounding farm ground level, which requires farmers to lift water (using pumping devices) from the watercourse supplying their farms.

In 1981, the MWRI initiated the Irrigation Management Systems (IMS) Project with USAID funding. The IMS Project was amended in 1984 to take advantage of the seven-year Egypt Water Use and Management Project (EWUP, 1977-84), an interdisciplinary project implemented by the MWRI. The recommendations of that project related to farmer participation in irrigation management were:

- Farmers should be involved in improvements to the water delivery system.
- Farmers must play a role in ensuring more efficient operations, improved maintenance and protection of physical works.
- Farmers should become involved in management of water.
- There is a need for a special, well-trained cadre of professionals (IAS) for generating new farmer responsibilities related to water delivery, water use and organization of farmers and to train farmers in these skills.
- Continued farmer involvement is essential for improved operations, water scheduling, *mesqa* improvements and renovations of branch canals.

As a successor to EWUP, the Irrigation Improvement Project (IIP) was added as a component of IMS in 1987. IIP has since evolved organizationally to sector status within MWRI with a number of projects for irrigation improvement assisted by several donors and international lenders. Participatory irrigation management began in a formal way under the IIP. While many lessons have been learned, insufficient monitoring and evaluation were carried out to document the impact. A successor phase of the IIP, funded with assistance from KfW and the World Bank, is being carried out as part of a seven-year program. Proposals are underway, with cooperation from other funding resource agencies, for expanding the IIP development package to other command areas.

Under the APRP program of USAID, policy reforms were achieved during 1997-1999 that further strengthened the process of expanding user participation at secondary levels of the irrigation/drainage system. MWRI promulgated a policy allowing for the formation of secondary-level *Branch Canal Water User Associations*. One of the seminal recommendations from that BCWUA policy was to develop and pilot-test a policy on transferring selected water management and operational functions. The GOE transfer of major management responsibilities for sections of the irrigation system above the *mesqa*-level to stakeholders and/or the private

sector is a bold advance toward the goal of participatory management and privatization of the irrigation system. Although IMT is now a major feature of irrigation delivery in many other countries, the program under discussion is the first attempt to introduce IMT in Egypt. Successful implementation of this benchmark will be a major turning point for this process to take hold at the grass-roots level.

Unlike earlier irrigation improvement efforts in Egypt (e.g. EWUP, ISM, and IIP), which can be classified as “*farmer participation in irrigation improvement*”, the IMT model allows the private sector to take managerial and financial control over operation and maintenance. This will result in direct and immediate reductions in government expenditures, freeing government funds to focus on those tasks the private sector is unable to effectively undertake. In the approximately 30 countries where IMT has been introduced so far, the types of reported impacts include:

- An overall reduction in the cost of irrigation,
- Enhanced financial self-reliance of irrigation schemes,
- Expansion of service areas,
- Greater irrigation water efficiency,
- Higher quality technical services to end-users, and
- Increased cropping intensity and yields.

As a condition of handing over responsibilities, management transfers are often accompanied by physical rehabilitation of the systems. In most countries, service quality improvement and sustainability of such efforts have remained constant or have improved. The incentives for the GOE and farmers to undertake this initiative, therefore, are clear and compelling.

Under IMT models in other countries, private sector entities assume managerial control, but not ownership, over the physical infrastructure and its operations. These management entities normally operate over relatively large areas and can be in the form of water user associations, irrigation districts, water management districts, private irrigation authorities, cooperatives, or shareholder enterprises. They are usually financially autonomous, within parameters established by enabling statutes or decrees, and are able to hire or contract for technical operational and management services. Management transfer can be partial, incremental or total. During Tranche III, a plan for partial transfer through branch canal O&M cost sharing was negotiated with two BCWUAs and the GOE.

Through this IMT policy initiative, MWRI has set in motion a long-term evolutionary process that will allow the GOE to significantly reduce its costs while continuing to expand its coverage and services in other areas. Management transfers that occur in a supportive socio-technical context result in improved quality and efficiency of irrigation water delivery, which in turn will enhance profitability of irrigated agriculture and decrease the cost of irrigation.

Additional innovative strategies of management transfer are also being implemented. These pilot strategies are mandated by the MWRI Policy on IMT and will be supported by the revised water laws.

## **2.2 Objectives and Expected Impact of IMT Policy Reform**

The objectives of this benchmark are that:

- GOE formally determines the prerequisites for introducing the hand-over of management responsibilities to stakeholders and/or the private sector, in light of international experience;
- GOE defines the strategies and steps required to implement partial, incremental and total management transfer in all categories of land, including old lands;
- MWRI issues a policy document on transfer of irrigation management responsibilities to the private sector; and
- MWRI establishes two pilot implementation sites to test the IMT policy.

There are many positive examples of management transfer programs in countries as diverse as Mexico, Colombia, India, Nepal, Turkey, Senegal, the United States and Indonesia. A literature review suggests that there are certain principles that tend to exist in successful secondary level user associations in many countries. These include:

- Clearly stated aims and purposes in a charter backed by appropriate legislation and policies;
- Clear incentives for water users who devise their own rules and clear sanctions for those who violate these rules;
- Improved services to water users if they are expected to mobilize financial and other resources for O&M and irrigation improvements;
- Clear roles and responsibilities for water suppliers and users; accountability and transparency of irrigation agencies and Water User Association (WUA) members;
- Time and flexibility so that water users and suppliers can learn to be successful; and
- Monitoring (process documentation) to chronicle the records for future reference.

## **2.3 IMT Experiences from Other Countries**

The world's environment and food security are linked to irrigation design and management. The transfer of management of irrigation systems to WUAs is not the ultimate goal of IMT. Rather, the ultimate goal is a higher level of performance of irrigated agriculture through improvement of operations and services. IMT experiences in other countries have shown a considerable improvement in the collection of water charges and, therefore, in the recovery of O&M costs. Some projects claim a substantial increase in irrigated area and/or agricultural yield. In most cases, these projects were performing very poorly before transfer. In these cases transferring management to WUAs may have greatly reduced the anarchy in water distribution or the level of inequity between head and tail-enders. In projects previously managed by irrigation agencies according to well-established engineering rules, the impact of IMT on agricultural productivity and water use is much less evident. In this latter case, the irrigation agencies have transferred their operating practices to the WUAs.

Some improvements in level of service after transfer, such as a reduction of the interval between the time of water demand and time of delivery, have been made through simple changes such as an improved communication system, computers, and low-cost repairs of the control infrastructure. However, to reach a higher level of performance, more fundamental changes are needed. Outdated design and practices still govern the management of many irrigation systems in both developed and developing countries. Irrigation agencies have been slow to adopt improved design and management for several reasons: aversion of staff to change, lack of incentives, poor understanding of irrigation modernization, and, very often, lack of training in basic hydraulics and hydrology. Opportunities for improving irrigation performance are created by the full transfer of irrigation management responsibilities to WUAs.

Individual farmers have very little leverage to convince irrigation agencies to make the required improvements. Interventions by large, influential farmers often result in short-term solutions that benefit only the individual farmers. WUAs responsible for managing systems serving large areas (5,000 ha to 35,000 ha in Turkey and Mexico) have the financial and managerial ability to make substantial changes. They are able to mobilize enough financial resources for a phased modernization. The new technical and management staff recruited by these associations are often willing to improve the service and the procedures, as they are ultimately accountable to the water users. User associations also have a strong financial interest in the renewing of aging irrigation infrastructure. Simply replacing the existing infrastructure with identical structures is often not the best choice. Careful diagnosis of the system can reveal opportunities to create better and more effective irrigation systems.

By contrast, small associations or water groups responsible for O&M at the tertiary or secondary level have little capability to make major improvements to the system unless members participate in a main canal-level federation. Improved canal control can create significant labor savings to a WUA. The quality and effectiveness of labor are likely to improve as some of the less efficient manual tasks are eliminated. Many projects have staff living next to control structures that are adjusted only occasionally, once a week or less. Canal operators of a U.S. Bureau of Reclamation project estimated that more than half of their time each day was spent driving from site to site, but that they only needed to make adjustments at about 10 percent of the sites visited.

As the era of new water projects is coming to an end in most countries, upgrading existing projects is increasingly important. Most policies and institutional reforms cannot be fully implemented without the right physical environment. Implementing these reforms requires both the users' confidence in the water delivery service and the proper water control to provide that service. Physical and institutional improvements in irrigation are not isolated actions; rather, they support one another. Any strategy for improving performance of the irrigation sector should consider the inter-relationship between the design of user associations and their functions and the plans for a better level of service. Transfer of management of irrigation systems to user associations is not an end in itself but the beginning of a potential water revolution.

## **2.4 IMT Working Group and Steering Committee**

The work of this benchmark is being carried out by the members of the Working Group under the supervision of the Steering Committee and IMT Task Force. The IMT Steering Committee is comprised of MWRI Steering Committee members with additional support provided by the Chairmen of the Mechanical and Electrical Department and Drainage Authority of MWRI. Several local consultants have assisted the Working Group. Technical input also has been provided by consultants from MWRI experienced in water user participation, ministerial institutional management, and physical/mechanical operations.

This benchmark is being implemented over a two-year period and is divided into two phases. Phase I focused on the following:

- Analyzing IMT experiences in other countries;
- Assessing the impact of the program to develop BCWUAs and Water Boards in Egypt;
- Preparing a clear understanding and consensus view regarding which components of irrigation and drainage are to be included in the Egyptian IMT program;
- Developing the results of these analyses into a set of prioritized directional guidelines and policy for Egypt;
- Identifying an IMT strategy or multiple strategies suitable to the Egyptian context and incorporating this into the IMT policy;
- Considering all approaches and strategies for IMT involving the private sector, especially water users and their organizations in all categories of land (new, old, old-new, groundwater, etc.); and
- Issuing a policy document on IMT with a plan for phased implementation in the selected areas, focusing on the following priority issues:
  - administrative aspects of IMT,
  - harmonizing all relevant GOE laws with the IMT process,
  - assessment of water user interest in, and expectations of, the IMT process,
  - estimate of potential private sector capability in water delivery and O&M,
  - evaluation of irrigation and drainage practices in each study area,
  - feasibility of alternative IMT strategies, including partial vs. complete transfer.
- Conducting a study tour to selected countries with major experiences in IMT, providing useful lessons for Egypt to review conceptual framework, approaches to IMT, and initial results and impact.
- Assessing the legal requirements for formal implementation of management transfer.

Early in the process a high-level ministerial Steering Committee on IMT under the aegis of the EPIQ project Steering Committee was established. The IMT Steering Committee has been given decision-making authority and direct liaison with the Minister's office relative to the importance of future MWRI program and policy decisions. Steering Committee members have participated in a series of activities providing exposure to various international experiences in transferring irrigation management to the private sector, as well as in techniques and methods of institutionalization.

## 2.5 Cooperating Agencies for IMT Policy Reform

Transfer of water management functions requires a multi-disciplinary approach involving a number of agencies and authorities. The IMT benchmark Steering Committee and Working Group have representation from the following units of MWRI:

- Project Steering Committee and IMT Task Force
- Irrigation Department
  - Irrigation Advisory Service
  - Irrigation Improvement Sector
  - Groundwater Sector
  - Horizontal Expansion & Projects Sector
  - Mechanical & Electrical Department
  - National Water Research Center
  - Water Communications Unit
  - Drainage Authority (EPADP)
  - Water Policy Advisory Unit

In addition, the IMT Working Group maintains regular contact with other agencies and donors also involved in privatization and user management. Among these are:

- American University in Cairo (Desert Development Center),
- Multilateral Donors: UNDP, IFAD, World Bank, IDRC, and
- Bilateral Donors: USAID, JICA, GofNetherlands, KfW, GofItaly

### 3. IMT Policy Development Program Approved by IMT Steering Committee

The chief benchmark output for the first year was the IMT policy statement and its supporting clauses. In preparing this policy statement MWRI took into consideration performance shortcomings, assessment of stakeholder participation options and capacity, identification of water management units and functions to be transferred, identification of changes to be made in MWRI units, and changes in legislation to support the IMT process.

The IMT policy comprises the following features:

- Objectives and justification of the IMT policy;
- Legal basis for the IMT policy;
- Aspects of the system to be transferred;
- Management functions to be transferred;
- Operational functions to be transferred;
- Types of entities to take over from MWRI;
- Process and method of organizing and formally registering new entities;
- Phased implementation timeframe for pilot-testing new policy, and thenceforth, wider application of policy;
- Responsibilities to be transferred based on an integrated hydraulic command area combining irrigation and drainage functions;
- IMT initiatives should be carried out according to the following land classification priority:
  - old-new lands
  - new lands
  - old lands (especially improved and partially improved command areas)
- It is advised to launch pilot programs simultaneously in more than one land category because it is important to test the IMT model under different water management conditions.
- The IMT Steering Committee defined *stakeholders* as the Irrigation Department, the Egyptian Public Authority for Drainage Projects (EPADP), MED, and WCU, private companies, and all categories of water users.
- The IMT Steering Committee believed the management transfer process should be carried out in two phases:
  1. Phase 1 is an agreement between MWRI, the BCWUAs and the private sector.
  2. Phase 2 would be a direct agreement between the BCWUAs and the private sector.

Phases 1 and 2 above assumed that rehabilitation of the physical infrastructure would be carried out as part of the transfer process, on a negotiated cost-sharing basis, and be monitored by a joint

committee of technical units from the MWRI Irrigation Department, the Drainage Authority, and the Mechanical and Electrical Department.<sup>3</sup>

The private sector and/or user-groups' capability to take on O&M responsibilities has four dimensions: technical and/or physical, organizational, financial, and willingness. Before any field activities were undertaken in the four pilot areas, an IMT Baseline Socio-economic Study was conducted.<sup>4</sup> An assessment was carried out through multiple focus-group meetings at the four designated pilot areas to determine the viability of secondary-level organizations to take on water O&M responsibilities. This assessment dealt with water users' financial capability and willingness dimensions. It is presumed that the technical dimension would be satisfied by technical support and advice from MWRI specialists. The farmers' organizational capability is already evident based on the establishment of a broad network of WUAs through the IIP program, the successful formation of BCWUAs under the APRP project and other projects.

The following points emerged from a number of focus group meetings held with BCWUAs, and are reflected in the process documentation (see Appendix F):

- Generally BCWUAs identify cleaning and weed removal from the branch canal as an activity that farmers could take on immediately, and that the removal of encroachments into the canal could be better handled by the BCWUA.
- BCWUAs feel they can perform these activities at a lower cost than a private company or contractor. In addition to the cost savings from taking over O&M responsibilities, the BCWUA would also benefit in the following ways:
  - Higher quality work,
  - Improved speed and scheduling of maintenance operations.
- Most farmers and engineers believe that gains in farm income due to increased crop productivity are likely to be higher than the savings in O&M costs.
- Farmers expect yields will increase if branch canal O&M activities are coordinated so as not to conflict with satisfying crop water requirements.
- More equity in water distribution could be attained by better coordinating deliveries with needs.
- There is an opportunity for improved environmental conditions and environmental stability in the continuous on-site management that a BCWUA could provide.
- The BCWUA will need technical and financial support from MWRI (Irrigation Department and IAS) during the transition period.

### **3.1 Pilot Site Selection: Summary of Process and Outcome**

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<sup>3</sup> The detailed assessment of the physical infrastructure, designs for improvement based on a negotiated agreement with MWRI and the BCWUAs can be found in Appendix E, accompanied by MWRI tender documents.

<sup>4</sup> cf. Appendix G of this report for the complete IMT Baseline Socio-Economic Study Report.

The IMT Steering Committee, upon recommendation from the IMT Benchmark Working Group, determined that the following steps should be taken as part of the program preparation for the implementation phase:

- It was decided that four pilot IMT areas representing three land categories be selected, instead of two as specified in the MOU. Site selection criteria should focus on the highly problematic areas where improvement of the management system is needed; though problems should not be so complicated that they hinder the transfer process.
- The selected sites should be used as viable demonstration areas for testing IMT policy and should be representative of their land category in terms of position, accessibility, infrastructure, services and facilities; and
- There should be demonstrated willingness and commitment on the part of stakeholders (including farmers, officials, political entities, and People's Assembly representatives) to support and fully participate in the IMT process.

Pilot areas selected according to the above criteria include:

- New Lands: New Shabab in Sharqaiya (high water delivery cost)
- Old Lands: El Nazl area of El Bahr El Sagheer in Mansoura (partially improved tertiary command area); Beni Abeid of Serry Canal, El Minya (improved system under USAID-funded IIP)
- Old-New Lands: South Tahrir in Beheira (opportunity for integrated water resources, surface and ground water)

A Ministerial Decree designating the pilot areas was issued by the MWRI Minister, and later followed by under secretarial-level decrees for detailed implementation and memoranda of understanding. Copies of these decrees can be found in Appendix A.

## 4. Policy on Irrigation Management Transfer

The policy statement on IMT focuses on the major management and operational responsibilities of the irrigation and drainage network sections above the *mesqa*-level. This policy is consistent with, and supportive of, overall GOE objectives toward increasing private sector involvement in all levels of the irrigation and drainage network.

### 4.1 Objectives of the Policy Statement

The IMT policy statement objectives are to:

- Determine the prerequisites for introducing the handover of management responsibilities to stakeholders and/or the private sector in Egypt;
- Define the strategies and steps required to implement partial, incremental and total management transfer in all land categories, including old lands; and
- Consider the role and responsibilities of MWRI in the transfer process.

The formulation of this policy entailed consideration of the following variables:

- IMT experiences in other countries;
- Priority focus on the water users' role in IMT during the initial phase;
- Strengthening the program in Egypt to develop BCWUAs; and
- Harmonizing all relevant GOE laws with the IMT process and objectives.

### 4.2 Policy on Irrigation Management Transfer

The official English translation of the policy statement is provided below.

*In a phased process of application, the MWRI will transfer selected sub-sections of Egypt's irrigation and drainage network to users and/or the private sector acting on behalf of the users.*

The complete policy and the subordinate policy clauses can be found in both Arabic and English translation in Appendix A.

## 5. IMT Phased Implementation Plan

A major feature of the IMT policy is a phased implementation plan that addresses the major issues likely to be encountered. The IMT Working Group implementation plan includes the following elements:

- Legal changes required to support the IMT process, including contracting and assessment capabilities;
- Clear definition of roles and relationships between public and private sector entities as they relate to IMT;
- Clear definition of administrative and financial management systems for O&M;
- Training of staff and development of plans for organizational restructuring;
- Arrangement for provision of support services;
- Development of Branch Canal Water User Associations;
- Upgrading of the physical irrigation/drainage infrastructure as part of the transfer process.

### 5.1 IMT Implementation Plan Activities - Year 2001

During the first year following promulgation of the MWRI IMT policy, a number of major issues are to be addressed, including:

- All legal reforms that support the IMT process should be finalized. The MWRI will review the laws and regulations to determine which might slow progress in the transfer process and need to be amended or changed. The IMT Steering Committee will approve recommendations to the Minister of MWRI.
- The mobilization of political support at all GOE legislative and executive branch levels.
- Support among all stakeholders is to be generated through multiple focus group meetings, workshops and conferences.
- IMT pilot program staging activities: Four pilot areas are to be the focus of the IMT policy testing process. These areas represent a variety of locations and water management environments, socio-economic characteristics, land-holding patterns, and technical issues.
- Branch Canal Water User Associations to be organized by the IAS.
- Stages and categories of transfer to be negotiated for each pilot system, with provision made at all levels including *mesqas*, branch canals, secondary and primary drains, and main canals.
- Training of stakeholders to be incorporated into all planned activity areas, particularly those O&M functions that are to be transferred.
- Consensus agreement on methods of revenue generation, including direct assessment and contracting for works and services.
- Consensus agreement on physical rehabilitation works required as part of transfer process and method of cost-sharing for same.

- Issuance of ministerial decree sanctioning the method of revenue generation for the pilot areas.
- Transfer timetable to be negotiated between BCWUAs and MWRI.

It is expected that the BCWUAs will assume responsibility for carrying out major works and will bear their costs, after having received adequate training and on-site supervision. The Irrigation Department and Drainage Authority will continue to supervise and provide on-going technical assistance as follows:

- Monitoring and Evaluation of IMT process using combined economic, engineering and PRA methods.
- Process Documentation by IAS on the 4 pilot areas.
- Training and capacity building.
- Incorporating accountability and transparency into BCWUA activities.
- Reviewing and refining MWRI IMT policy based on results of the pilot phase first year.

## **5.2 IMT Implementation Beyond Initial Pilot Phase**

The revision to Law 12 on irrigation and drainage provides the legal basis for long-range planning to transfer sections of the irrigation system to users or their representatives. An evaluation of the pilot phase, to be carried out by the end of 2002, will provide direction for IMT process replication and expansion. By 2012, it is expected that several main canals and main drains will be identified for phased transfer. Each branch canal or secondary drain on the main system will be turned over to users in preparation for the transfer at the main level. The IMT Working Group recommends that MWRI prepare a master plan for the transfer of the irrigation and drainage network sections to the year 2025.

## **5.3 IMT Organizational Process Documentation**

Documentation of the irrigation management restructuring process is critical for allowing participants to maintain a history of their local institution, and for service entities such as the Irrigation Department to understand the nature of the organization. *Process Documentation*, therefore, was a major aspect of the IMT pilot work plan. The IAS coordinated the process documentation. The process documentation can be found in four volumes comprising Appendix F of this report.

## **5.4 IMT Under Secretarial Decrees for BCWUAs**

In order to formally certify the legitimacy of the new pilot IMT BCWUA, the governorate Under-Secretary for MWRI will issue a registration certificate. This document, authorized by the ministerial decree, is to be issued to the BCWUA upon submission of its membership charter, list of members, by-laws and plan of action.

## **5.5 IMT Memoranda of Understanding**

A critical milestone in the process of IMT is the official agreement, or Memorandum of Understanding (MOU) between the MWRI and each BCWUA, detailing the plan, procedure and terms of the transfer of responsibilities. In the four pilot IMT areas, MOUs were formulated following protracted negotiations. In each case the terms of the MOU are specific to the particular operating environment. Copies of the signed MOUs are attached as **Appendix C**.

## **6. Proposed Revisions in Water Law in Support of Irrigation Management Transfer**

MWRI has drafted a revised national water law, amending Law 12 (12/1984 & amendment 213/1994) on irrigation and drainage. The draft is currently under formal review. The IMT Working Group assisted in the revisions in areas directly affecting user participation and management transfer. The relevant sections of the draft law are included in Articles 32, 33, 34 and 35. MWRI will undertake the process of formalizing the legislation before it is officially enacted. The primary distinguishing feature of the revised law lies in its inclusiveness with respect to levels of the irrigation system and types of entities that may be assigned M&O aspects of the irrigation and drainage network. The Articles of the draft revised law are as follows:

### **Article (32):**

The Ministry of Water Resources and Irrigation is authorized to manage and regulate on private intakes and openings, the distribution of water from all sources for all uses. The Ministry may determine or modify the systems of water resource use to fit the purpose of such use. The Ministry also determines the methods to be adopted for water management and distribution and announces such methods by administrative means through local general departments.

### **Article (33):**

The Ministry of Water Resources and Irrigation regulates the method of participation by the farmers and water users and makes available the necessary private and government funding for irrigation and drainage-related construction, replacement, rehabilitation, operation, and maintenance works. The Ministry shall establish corporate water user associations in the old and new lands in respect of private or public irrigation networks and shall establish corporate Water Boards in certain lands of specific geographical borders and public water sources. The Minister of Water Resources and Irrigation, or whomever the Minister may delegate, establishes by decision such water user associations and Water Boards as provided by the Executive Regulation of this Law.

### **Article (34):**

The Ministry of Water Resources and Irrigation may entrust to a specialized company or a certain water user association or Water Board the responsibility of constructing, managing, operating, and maintaining - at the water users' cost - parts of the irrigation and drainage networks; groundwater wells; joint reservoirs and dams; or systems of improved irrigation and tile drainage.

### **Article (35):**

Where an emergency so requires for the public interest, the competent general manager may order at any time -- even during on-periods -- that no water be taken from a public canal(s) or a groundwater well(s) to ensure that the water is fairly distributed or that no excessive water be given or wasted to farmed lands.

The competent general department may take the necessary procedures to prevent the violation of the decisions issued pursuant to the previous paragraph; and may, in particular, prevent by administrative means the passage of water into a *mesqa* or its branches and may obstruct by appropriate method the water lifting.

## **7. Organization of Pilot Branch Canal Water User Associations**

The process used to set up each of the BCWUAs for operation under the IMT pilot program entailed the following common procedures as derived from the MWRI IMT Policy of 2001:

1. Basic information needed to organize and register BCWUAs for IMT was collected:
  - a. Profile of each branch canal
  - b. Other data such as maps, area served, agronomic and water delivery data
2. The branch canal was divided into natural hydrological reaches (i.e. head, middle and tail).
3. Influential persons were identified on each reach for initial entry-point contact.
4. Irrigation district and IAS field teams held several individual and joint meetings with influential farmers on each reach. Field teams held additional meetings with branch canal stakeholders on each.
5. Farmers on each reach nominated representatives to sit on the BCWUA Executive Council.
6. An Executive Council of BCWUA Officers (Chairman, Vice-Chairman, Treasurer and Secretary) were selected from among the Executive Council members.
7. The Governorate MWRI Undersecretary of State issued a decree formalizing the formation and registration of each BCWUA for IMT.

### **7.1 Establishing a BCWUA on Al Azema Canal**

Al Azema canal is one of four canals selected by the MWRI to pilot test the new strategy of IMT. Al Azema canal is supplied by water from Al Tahady canal at km 1.8 on the left side, and its length is 4.8 km. Sprinkler is the dominant irrigation system in the area through a mechanism of eight booster pumps. Each booster pump irrigates an area between 480 and 700 feddans, through four main asbestos pipelines. The system was implemented during the early 1960's and underwent some minor repairs and rehabilitation during the early 1990's. The current irrigation system on the canal comprises seven stations with total area ranging from 425 to 680 feddan.

Initially the canal was divided into three reaches; however, farmers preferred to have two so that the hydraulic division would mirror the two agriculture cooperatives in the area. Therefore, the canal is divided into two hydraulic reaches. The first reach represents Al Azema cooperative and contains stations 10, 11 and 12. The second represents Al Itman cooperative and contains stations 13 - 17.

IAS staff held meetings with key persons in the area to help convey the purpose of establishing WUA on the canal to other farmers. This system proved very successful in delivering the project objective and methodology and saved time and effort.

IAS staff held more than 150 individual meetings and 25 meetings with groups within reaches. Results from meetings with individuals were analyzed, and farmers on each reach with the same interests and problems were grouped together. IAS staff introduced IMT and its strategy to the

influential persons and explained ministerial decree 285 of August 8, 2000. IAS staff listened to problems and potential solutions from water users' perspective. The water users asked about the how they will participate, the role of the executive council of BCWUA and if it has the legal entity, and how to improve coordination between MWRI and other concerned ministries.

The inside reach meetings were instrumental in getting water users together to discuss their role in O&M for the reach and canal. Individual and group meetings revealed some complaints regarding:

- system performance
- deterioration in pump discharge
- missing fittings and accessories in the main pipelines
- complaints from tail users for insufficient delivery
- conflicts among farmers regarding maintenance
- cutting of electricity
- villages through garbage into the canal
- lack of weed and silt control in Al Azema canal

### Election

The reach committee and executive council were elected by the stakeholders. The first reach committee has three members and the second reach committee has five. The two reach committees met together and elected the executive council of the BCWU; then the executive council elected a chairman, vice chairman, and secretary. IAS staff and district engineers attended these meetings.

### The IMT BCWUA establishment decree

The Beheira MWRI Undersecretary issued decree number 5 on January 20, 2001 formalizing the formation and registration of the Al Azema BCWUA.

## **7.2 BCWUA for El Nazl Canal (Dakhaliya Governorate)**

El Nazl canal serves 7,700 feddan and takes water from Al Bahr Al Sagheir canal at 28.80 km on the left side. El Nazl canal is 9.70 km long.

There are four branches: Al Manasher, El Nazl branch, El Badry and Old El Nazl. It has eight bridges and 23 *mesqas*, 17 of which were improved during the Canadian "Integrated Soil and Water Improvement Project". Few of the *mesqas* are still working.

The *mesqas* command areas range from 50 to 300 feddans. Two main drains serve the area: Kafr Qannish and El Hudduda drains. Laterals and collectors for subsurface and drainage were implemented by PVC pipes and buried manholes.

Land-holdings along the canal are very small. Intensive rice cultivation results in additional pressure on the system and water availability.

In forming and strengthening the BCWUAs MWRI and IAS developed the following steps:

1. Collection of basic information.
2. Maps and other data were collected. A map for the whole canal and its branches with scale 1:25000. The map includes a cross section along the canal indicating ownership, a cross section at 5.800 km where the siphon of Bashmor drain intersects with the canal, a longitudinal section for the whole canal, a list of off-takes, a plan and front view for the intake, and models for the bridges along the canal.
3. The canal was divided into two hydrological reaches: the first reach from intake 0.00 km to El Bashmor drain, which intersects with the canal at 5.80 km; the second from 5.80 km to the end. The first reach is called El Nazl reach and the second one is Mansheyat Al Gammal, corresponding to the main villages inside each reach. IAS staff introduced the IMT and its strategy to influential persons and explained ministerial decree 285. IAS staff listened to the water users' problems and proposed solutions. The water users asked about how they will participate and the role and legal status of the executive council.
4. IAS field staff held more than 160 individual meetings at *mesqa* level and 95 group meetings within reaches were held.
5. Both of the reaches elected representatives to the BCWUA. Both reaches have six members in the BCWUA. Some local council members attended these meetings, which were held at the youth center.
6. The election of the Executive Council took place at El Nazl village on November 12, 2000. IAS staff and district engineers attended the meeting.

A focus group workshop was held in Mansoura on Feb. 14, 2001, and the executive council asked for:

- maintenance of the drainage and cleaning of the canal,
- necessary equipment,
- legal status the Association,
- cover over the *mesqas* that go through villages, and
- sources of financial support for the association.

The Dakahliya MWRI Undersecretary issued decree number 15 on January 20, 2001 formalizing the formation and registration of the El Nazl BCWUA. A Memorandum of Understanding was signed between the Dakahliya MWRI Undersecretary and the Chairman of El Nazl BCWUA.

### **7.3 BCWUA for Branch 5 Mollak Canal, New El Shabab Canal, Sharqaiya Governorate**

Basic profile data of the canal was collected from a number of different sources such as the

Irrigation Department, the Drainage Authority, field surveys, and meetings with stakeholders. The primary data profile is as follows:

Branch 5 Mollak Serves a command area of 4,710 feddans and is supplied by water from Shabab canal at 10.50 km on the left side. The total length of the branch canal is 8.00 km with 6 stations numbered as 23, 24, 25, 26, 27 and 28. Station number 23 is owned by many individual farmers while other stations are owned by companies (one station per company except numbers 24 and 25, which are owned by the same company).

There are electric pumping units at the intake of Shabab canal, discharging water to RC pipes 15m in diameter. These pipes supply the water to low-lined cross sections that, in turn, distribute water to the main branches. Users lift water from these branches to their fields by pumps. Modern irrigation systems are used in all of the branch stations, including many sprinkler and drip systems. The general soil classification is sandy, and the major crops planted are citrus (with the exception of Ahaly station, No. 23, which has traditional crops under cultivation).

The costs related to establishing developed and undeveloped networks are 2,000 LE/Fed and 2,500 LE/per feddan, respectively. O&M costs, on a per feddan basis, can be briefly summarized as follows:

Electricity	10 LE / month
Manpower	30 LE / month
Annual maintenance	80 LE / month

The existing irrigation and drainage systems in the command area are considered by the stakeholders to be basically in good working order, with the exception of several critical points:

- The intake gate is fully closed at night (6 pm in the summer and 4 pm in winter). When it is opened in the mornings, weeds and garbage are carried by the high speed of the flow and clog the filters of the drip irrigation sets.
- The intake of the canal has been changed to the existing one but the slope of the canal exists as it was before. This leads to some obstruction of the water flow, especially to station number 23.
- A surfeit of weeds and garbage under the bridges crossing the canal often obstructs water flow.
- The high level of water in El Watan drain threatens the agricultural land in the area by flooding over its embankments.

#### Canal Division and Introductory Meetings

As an initial step in the organizing process, the branch canal was divided into two hydrological reaches. The first of these reaches includes stations 23, 24, 25, and 26. The second reach includes stations 27 and 28. Key persons who have influence on other farmers were identified in each reach. Staff introduced the IMT concept and its strategy to these key stakeholders, and

explained ministerial decree 285 and its implications. During these meetings major issues were covered:

- The manner in which the stakeholders will participate in the process of developing the BCWUA, as well as in the cost recovery and cost-sharing mechanisms required for physical rehabilitation, and recurring expenses related to annual operations and maintenance.
- The role of the Executive Council of the El Mollak BCWUA and the support provided through the legal framework, currently under modification.
- Ways of establishing good coordination between MWRI and other concerned ministries, such as MALR and the Electricity Authority.

### Individual Reach Meetings

The field team held more than 20 individual meetings followed by 6 inside-reach meetings. Farmers with the same interests and problems were categorized in the same groupings within each reach. Meetings inside the reaches helped to consolidate the relationships between farmers with the same interests. It helped considerably to allow each group of stakeholders to discuss their role in O&M of each reach.

### Establishment of Executive Council

A committee representing each reach was elected by the stakeholders. The reach committees then elected the Executive Council using a clustered sample mechanism. The Executive Council held an internal election for the chairman, the secretary, and other posts. The election of the Executive Committee was held on October 22, 2000, using the venue of station number 24. The members of the reach committees managed the election process and field teams, and the district engineers attended this event merely as observers. Four members out of a total of seven reach committees attended the election; two of the absentees were performing Omra in Saudi Arabia, while the third member had an emergency preventing his participation, although a proxy was offered in his stead. This election is considered legal because attendee land ownership exceeded 30% of the branch canal total area, as specified by Law 12 and Law 213. Station 26, Samir El Nagar, has been selected as a permanent location for the association.

### Establishment of the BCWUA

The MWRI Undersecretary for Sharqaiya issued decree Number 30 on Feb. 3, 2001 formalizing the establishment and registration of the BCWUA on El Mollak branch canal. The decree also highlights tasks and responsibilities assigned to the association such as:

- Monitoring and follow-up of irrigation and drainage conditions in the area.
- Proposing suggestions to increase efficiency of irrigation and drainage systems.
- Executing water distribution programs with assistance of IAS and under the supervision of the specified irrigation directorate.

- Planning the maintenance program for irrigation networks and branch drains and collaborate in the execution.
- Supporting WUA establishment on the *mesqa* level.
- Managing financial and administrative affairs.
- Managing problems and conflicts.
- Proposing priorities and setting time schedules for implementation according to budget.
- Follow-up works and reporting to irrigation directorates to deliver these works, and
- Implementing training programs in collaboration with IAS staff.

#### 7.4 BCWUA Beni Ebeid Canal, El Minya

Bani Ebeid canal serves 5,027 feddans and takes water from Serry canal at 12.5 km. The canal is 12.6 km long. There are two down-stream control gates (avio): Garris at 3.87 km and Bakhaty at 10.5 km. The three branches are called Moharam, Nahal and Bakhaty. All the *mesqas* are improved, and each *mesqa* has an elected water user association. The canal has six sub-branches with lengths ranging from 1,400m to 4,300m and a command area from 240 to 860 feddans. The command area and physical system were improved under the IIP in the 1990s, and subsurface tile drainage is widely practiced.

Water Users Associations were formed and are operational at the *mesqa* level. An attempt was made in 1998 to organize a branch canal level federation, although it is not supported under the provisions of Law 213. Maps and other data were collected, including a map of the canal with cross sections indicating ownership, a list of *mesqas* and the area served by each *mesqa*, cooperatives and villages, and irrigation methods.

The canal was divided into three hydrological reaches: the first reach from intake 0.00 km to Garris gate 3.87 km, the second from Garris gate 3.87 km to Bakhaty gate 10.50 km and the third from Bakhaty gate 10.50 km to the end at 12.60 km. Influential persons were identified in each reach. IAS staff introduced IMT and its strategy to these people and explained ministerial decree 285. IAS staff held more than 300 individual meetings at the *mesqa* level and 200 inside-reach meetings. IAS staff started with individual meetings then results of those meetings were analyzed and farmers with the same interests and problems was categorized together as small groups inside the reach. The inside-reach meetings helped to get water users together to discuss their role in O&M of the reach and canal.

Each of the three reaches elected committees of five people including a chairman, vice chairman, secretary, treasurer and member. The three reach committees met together and elected the Executive Council of the BCWUA; then the Executive Council elected a chairman, vice chairman, and secretary. IAS staff and district engineer attended these meetings.

The Executive Council asked to have training to discuss in detail its and MWRI's role in Minya. Other major issues pointed out by the assembly included:

- The irrigation and drainage law needs to be modified to give legal status to the Executive Council.
- IAS should provide support to the Executive Council in all areas.
- More discussion is needed to secure financial support for the Association.
- The Executive Council requires assistance to spread environmental awareness messages.

The El Minya MWRI Undersecretary issued decree number 15 on January 21, 2001 formalizing the formation and registration of Beni Ebeid BCWUA for IMT. A Memorandum of Understanding was signed between the El Minya MWRI Undersecretary and the Chairman of the Beni Ebeid BCWUA.

## 8. IMT Public Awareness Campaign

In order for IMT to work properly, there must be a free-flow of information between all participants: farmers, MWRI officials and field staff, the government and other ministries, the press and media, and the general public. Good communications are essential at all stages of the process. A *Public Awareness Campaign* (PAC) has been developed by the IMT Working Group. The PAC includes a comprehensive strategy and a set of communication tools to educate all targeted audiences on how to participate in and support IMT. The purpose of the IMT/PAC is to promote a better understanding of IMT, support the ongoing development of this program, and motivate people to remain continuously involved.

### 8.1 Methodology

The IMT program has short, medium and long-term goals clearly defined in Section V of Report No. 36 (MWRI Policy on Irrigation Management Transfer: Phase I). The IMT/PAC will work in parallel with this phased implementation plan, scheduling educational and informational activities in coordination with those of larger the program. The IMT plan is using the following schedule:

Short-term:	September 2001 - December 2002
Medium-Term	January 2003 – December 2007
Long-term:	January 2008 - December 2022

The process of designing and implementing the IMT/PAC has been divided into three phases. Phase I is *Analysis and Strategy Development*. Phase II is *Design and Production of Program Prototypes*. Phase III is *Implementation, Dissemination and Evaluation*.

In phase I, target audiences were identified along with goals that the program hopes to achieve at each level. Target audiences' perceptions and misperceptions were examined, as well as their attitudes and information deficits. The incentives and disincentives for each group to participate in or support IMT were also identified and categorized. A study was undertaken of the media environment in Egypt. A variety of possible professional and community networks for disseminating information about IMT were discussed. The strategy development follows from this analysis and sets the plan for the IMT/PAC. The strategy defines the communication tools for each of the target audiences, the content, tone and approach, and the modes for disseminating the information.

Following the approval of the strategy for the PAC, design of program material began. In Phase II, the communications tools outlined in the strategy were designed for the *IMT/PAC Pilot Program*. Prototypes of the basic elements for the print program were completed by early September 2001. Print production will also begin during Phase II.

Material production is followed by Phase III: Implementation, Dissemination and Evaluation. Preparation for this final phase of the IMT/PAC in the short-term should begin immediately.

The IMT/PAC cannot succeed without an aggressive and effective dissemination effort. Since there are limitations in terms of staff and budget for the IMT/PAC, the MWRI Communications Unit will have to play a major role, relying on itself, the press and broadcast media and a variety of formal and informal networks to get the information into the hands of the appropriate audiences.

## **8.2 Situation and Opportunity Analysis**

The analysis of the obstacles and opportunities, the informational needs, attitudes and characteristics of the target audiences in Egypt provided the basis for the development of this communications strategy and the design of the IMT/PAC. The analysis resulted in the identification of six target groups of the IMT/PAC -- those audiences whose support and participation are believed to be essential to the success of IMT.

1. Farmers
2. Press and Media
3. Religious Groups
4. MWRI Officials
5. Engaged Public:  
Other Ministries, NGOs, Politicians, Donor Organizations, Industry
6. General Public

Because IMT is new to Egypt, there are enormous information deficits that will require an aggressive effort to fill. Farmers need to be educated on the role IMT will play in securing water sources for them, increasing efficiency, and raising production and profit margins. They will need considerable encouragement to participate. An orchestrated effort will involve schools, mosques, field staff and a number of existing outreach networks. The engaged target groups and the press and media must be given accurate, transparent information and be encouraged to become partners in the program.

The analysis found that misconceptions and reservations about participating in and supporting IMT exist among all target groups. The IMT/PAC will attempt to overcome these obstacles by addressing the groups directly and making an aggressive effort to distribute timely relevant information to all audiences.

## **8.3 The Communications Strategy**

The following are some of the basic principals that should guide the development and implementation of the Public Awareness Campaign

- Build a broad consensus in Egypt in favor of IMT and the efforts of MWRI.
- Emphasize efficiency in water usage, conservation and the positive contribution IMT will make for future security of water availability.
- Be direct, forthright, open and positive in presentation. The credibility of the communication program is one of its primary assets.

- Information should be factual and presented in a neutral tone, with a clear presentation of benefits.
- In as many ways as possible, the IMT/PAC should try to incorporate techniques and strategies used for commercial marketing, without becoming commercial or promotional.
- The IMT/PAC team must develop formal and informal systems for listening to the various audiences. The IMT/PAC should regard collecting information as important as distributing it.

#### **8.4 The Pilot Program**

The Pilot Program focuses on a set of communications tools, including a logo, a graphic identity program, and a set of brochures that will be used collectively to disseminate information to target audiences. The IMT/PAC and its expansion will benefit from the feedback on and impact of the initial materials. The following items have been designed and produced in low-resolution prototype format, within one design and under an attractive graphic identity system:

- Introductory brochure
- Frequently Asked Questions (FAQ) Brochure
- Farmers' Series FAQ (4)
- Field Staff Guide
- Fact sheets (3)
- Posters (5)
- Sample stickers (2)
- Activity booklet
- Stationery, envelopes and business cards

The printed materials will be used as a foundation for all the other media to insure a level of accuracy and quality control and to reinforce the MWRI's brand awareness. An introductory video will be used as a centerpiece for TV "talk shows" and news programs. It will also serve to set a standard for the quality of information transferred to target audiences at seminars, conferences, focus meetings and information days.

To move forward, produce the materials and organize the activities needed for the short-term, three approaches are being proposed. Each approach relates directly to the amount of participation the MWRI Communications Unit can contribute. One has the IMT/PAC Team created in full cooperation with private sector professionals; the second has partial cooperation; and the third approach has the MWRI Communications Unit implementing the program entirely on its own. The ideal approach would be the first one in which there is a full collaboration between the Communications Unit and private sector professionals in the creation of an IMT/PAC Team. This would involve contracting four full-time staff to take-on the many responsibilities of the IMT/PAC Team.

An efficient IMT/PAC will have increased chances of attracting corporate and industrial sponsorship of future MWRI outreach in the medium and long-term. Achieving good results in the short-term will attract many partners to the effort in later stages.

## 9. IMT Pilot Physical Assessment and Rehabilitation

As an integral part of the management transfer process, MWRI undertook an assessment to review the physical condition of each pilot area irrigation/drainage scheme prior to the transfer of operation and management from MRWI to the private sector entity. In accordance with the implementation requirements of Tranche IV Benchmark C.4 on Irrigation Management Transfer, and the Steering Committee recommendations and directives, the working group established a physical assessment task force.

System rehabilitation is a standard tool used by governments prior to handing over systems to users for O&M. Under the IMT model actual ownership of the systems is retained by the Government, but management, operations and financing are transferred to user control. As evidenced by the signed MOUs (cf. Appendix C) farmers are in agreement to repay the costs as per the provision of the government procedure on cost-recovery stipulated in GOE Law 213/1994. Farmers were involved in all aspects and phases of this physical assessment for the four pilot areas, and this chapter of the final benchmark report reflects their consultative input as well as those of the MWRI officials at the district level.

A three-phase assessment/design process was developed by the IMT benchmark working group:

Phase I	Inspection, Monitoring and Survey
Phase II	Design and Costing
Phase III	Preparation of Bidding Documents and Procedures

The task group was comprised of technical officials from Telemetry, MED, EPADP, Horizontal Expansion and Irrigation Department (Design Unit). The task group carried out a detailed physical systems assessment, conducted a number of focus group meetings with stakeholders (farmers and MWRI staff) and evaluated and considered prerequisites for rehabilitation. The work for this assessment was aided considerably by the Mechanical & Electrical Research Institute of the National Water Research Center. The following summary

### **Al Azeema Branch Canal (Beheira Governorate)**

- Visual and hydraulic tests revealed:
- Deterioration in pump discharge and heads (Q&H).
- Overall efficiency is in the range of 40-60%.
- Deteriorated and/or missing fittings and accessories
- Misuse of the physical hardware, coupled with improper water management and irrigation practices.
- Conflicts between farmers regarding delivery and maintenance.
- Complaints from tail users regarding insufficient delivery to end of system.

- Absence of well organized WUAs, and no training or orientation in improved irrigation system management practices.
- Replacement and/or rehabilitation of the pump units.
- Rehabilitation and maintenance of the main pipelines, especially the fittings and control systems.
- Prepare a negotiated plan to split and/or divide the system infrastructure (i.e. pumps, pipelines and command areas).
- Aggressive maintenance (weed and silt control) of the main branch canal (El-Azima) needs to be carried out.
- Urgent need to establish WUAs on the main (BCWUA) and secondary levels (the branch canal as a whole and the pump pipelines which are equivalent to *mesqas*).
- Need for Irrigation Dept, MED and Water Communications Unit to prepare a brochure or pamphlet for South Tahrir system operation, maintenance and improved irrigation practices for use of the WUAs.
- The objectives are to 1) split and minimize the area served and the length of the pipelines, 2) using smaller new pumps from the local Egyptian market capable of securing the discharge and head requirements, 3) minimize the number of pump users on each sub-unit, and therefore reduce the number and intensity of conflicts between farmers, 4) develop a program for technically appropriate and economically viable O&M of the system, and 5) assure the existing pipeline has a static head of about 80 m, while the new divided pipelines have 50 m of static head.

As a result of the analysis, the MWRI approved a program for installation of new and smaller pumps, dividing areas and pipelines, securing Q&H, less cost for Q&M). Detailed designs and costings are found in Appendix E).

### **El Shabab Pilot Area (Sharqaiya Governorate)**

The El-Mollak No. 5 branch canal of this system has a length of about 8.0 km and a drip irrigation system is served through 5 booster pumps (no. 24 to 28), each pump having four main asbestos pipelines. The system is operated by farmers who have used sound methods of drip irrigation at low pressures. The major systemic issues related to branch canal maintenance (silt and weed control), were water availability with proper discharge and levels during night times and early morning, the water turbidity clogging drippers, and the reverse gradient on the right side of the canal. It was found that improved water management practices are needed to ensure continuous flow with suitable discharge and levels, de-silting and weed control must be regular, high velocity and turbulent flows at intake and upper reaches need to be regulated in order to control water turbidity, dredged earth materials need to be hauled away and embankments strengthened, and dredging of the canal the right side portion of the canal gradient should be implemented. In addition, training on BCWUA and WUA organizing of farmers is needed in order to allow them to take over and run the system properly and efficiently.

### **El Nazi Branch Canal (Dakhalaiya Governorate)**

This branch canal has four sub-branches and 23 *mesqas*. It underwent “improvements” during the implementation of the Government of Canada-assisted Integrated Soil and Water Improvement Project (ISAWFP) during the 1980’s. Improvements consisted of open drains, canals and *mesqas* improvements. Subsurface drainage was also introduced to the area. The analysis showed that the main branch canal is in proper condition and are operating under a rational system (continuous flow was foreseen in the ISAWFP project), five out of six elevated PVC *mesqas* have been abandoned by the farmers, who in turn have resorted to using the old *mesqas*, many valves and outlets need repair or replacement, pumping systems are out of order and have been abandoned, there is a absence of properly formed and viable WUAs, and little or no thought given to how to sustain the systems once they are handed over to the farmers. There appears to have been little or no real farmer organizing of WUAs by the ISAWFP. Hence, the WUAs that were registered are by and large paper organizations only, and quickly fell apart once the civil works were completed. There was no cost recovery built in for the physical works, and in the absence of strong WUAs the water scheduling often meets with internal conflicts and disputes over amounts of water and timing of delivery. Intensive rice cultivation results in additional pressure on the systems and water availability.

Pipelines and other related accessories need to be rehabilitated and/or replaced and modified, routine and optional open system canals and drains and subsurface maintenance should be carried out, priority should be given to the organizing of farmers into strong WUAs using the IIP/IAS approach, and this should be followed by intensive training to the farmers in water management practices, organizational skills, and system O&M.

### **Beni Ebeid Branch Canal (El Minya Governorate)**

The Beni Ebeid canal has six sub-branches with lengths ranging from 1400-4300 m, and command areas from 240-860 feddan. The system comprises 64 *mesqas*, of which 27 are buried pipelines. The command area and physical system were improved under the IIP in the 1990’s, and subsurface tile drainage is widely practiced. Water User Associations were formed, and are functionally operational at the *mesqa* level. An attempt was made in 1998 to organize a branch canal level federation, although it is not supported by the provisions of Law 213. The efforts of this trial federation will form the foundation for organizing a BCWUA. Generally, the irrigation and drainage systems are working well, however, some modest repairs and rehabilitation need to be undertaken to bring the system up to a satisfactory operational standard: 1) dredging and weed control for open canals and drains, 2) subsurface drainage requires maintenance, 3) open canals and drains banks need stabilization and strengthening, 4) introduction of a telemetry system, 5) establishment of a maintenance equipment workshop and small office, and 6) provision of fencing around all of the pumping facilities.

Detailed proposals as well as tendering and contracting documents were be produced for the physical system rehabilitation program, and are approved by the Steering Committee for implementation per procedures in Law 213/1994. This will be followed by intensive farmer training, involvement by farmers in the actual rehabilitation process with the contractors, and finally system turnover to the farmers.

## 10. Review of International Experiences in IMT

The IMT Working Group studied the results of some international IMT experiences in order to best advise MWRI on a strategy appropriate for the Egyptian operating environment. Country experiences were drawn from India, Colombia, Sri Lanka, Mexico, Senegal, Nigeria, Philippines, Nepal, Pakistan, and Indonesia, among others. In addition, study tours to Mexico, USA and Turkey yielded an important set of data that is reflected in this document. Some of the primary questions that were addressed included:

- What are the main strategies for IMT that are being implemented worldwide?
- What are the impacts of IMT strategies?
- How should IMT be organized and implemented to produce successful results?
- What has happened when transfer actually occurred (i.e., when government staff are removed from scheme management and government expenditures for O&M are cut off or reduced significantly);
- What have been the results when transfer occurred at least four or five years before this Benchmark?
- What are the implications of applying a phased process of transfer, beginning with a joint-management stage, followed by gradual introduction of other transfer mechanisms?

Some of the major issues addressed include:

- *The extent to which IMT can reduce government expenditure for O&M.* In most cases, the reductions were considerable, with the qualification that IMT sometimes did not directly cause the reduction but at least generally supported a broader policy of reduction. IMT was part of an overall policy of reducing government expenditure on recurring costs of irrigation in Sri Lanka, Colombia, Mexico, Indonesia and India.
- *Improvements in the quality of irrigation service to farmers.* Generally speaking, IMT did not cause dramatic changes in irrigation intensity or in the adequacy or equity of water distribution during the first three to five years after IMT. There is evidence from two countries that pump irrigation delivery efficiency did improve after IMT. Farmers in all countries reported improvements in communications and responsiveness to their needs by management staff.
- *Improvement of maintenance of water management infrastructure after IMT.* In this area, the results appeared to be linked to the condition of the system at the time it was transferred and to the level of continuing government partnership. This latter point is particularly true for Sri Lanka, Indonesia and for expensive lift schemes in Colombia, where it became apparent that some continuation of government subsidy or a more clear policy about rehabilitation is needed.

- *Higher agricultural productivity after IMT.* In general, where changes did occur, they were not dramatic. It is clear that IMT has not had a detrimental impact on agricultural productivity.
- *Higher economic productivity after IMT.* IMT has not undercut the profitability of irrigated agriculture (which is affected by many factors). Indeed, in the long run, it is likely that IMT can stimulate cost savings and new technologies that can indirectly have a positive effect on the economic productivity of irrigated agriculture. Evidence from the USA, Turkey and Colombia suggests that IMT can facilitate the adoption of new water-saving technologies.
- *Increased costs to farmers for irrigation after IMT.* The results show that farmers do pay more initially. But the cost of irrigation to farmers relative to the gross value of the output of irrigated agriculture declines over time after IMT. This is due to more cost efficient management techniques and an overall increase in economic productivity.

The research results suggest that management transfer by itself can have measurable impacts on management procedures, cost of irrigation to government and farmers, cost efficiency and financial viability of irrigation management and quality of O&M. However, IMT by itself tends to have little direct impact on agricultural and economic productivity, which are more affected by other factors (such as use of inputs, labor constraints and soil and water conditions). In any given case, it may take a much longer time horizon, e.g., 10 to 20 years, to determine impacts of IMT on agricultural and economic productivity.

### **10.1 Lessons for farmers**

One of the major impacts seen in all instances was improved communications between farmers and management staff. As a result of better communications, staff became more responsive to farmers and the bureaucratic hassles of arranging water deliveries and making payments of water charges were reduced. In cases where more complete control over irrigation financing was devolved to the farmer organization farmer representatives tended to make a concerted effort to improve the cost efficiency of irrigation management through reductions in staff and other means.

To motivate farmers to invest in the long-term maintenance of their irrigation scheme, strong legal recognition of the water user organization is needed and must include a water right and a contract defining the irrigation service between the agency and farmers.

IMT can provide more flexible management of water and an enhanced capacity of farmers to change their cropping patterns. In order to take full advantage of the opportunities to increase the economic value of irrigated agriculture, farmers will need to concentrate on high-value crops, as well as facilitate group business transactions such as bulk purchasing and cooperative marketing.

## 10.2 Sustainability of Infrastructure

The question of who bears the cost of rehabilitation closely related to recurring maintenance cost. If WUAs think that the system rehabilitation cost will eventually be borne by the government, WUAs may have a tendency to defer maintenance in order to lower the recurring costs. In the absence of data concerning pre-IMT conditions, one has to rely on data relating to the post IMT position. In the case of Colombia, with one exception that has peculiar maintenance problems, schemes show that 11 percent of the infrastructure is dysfunctional. In Sri Lanka, only five percent of all structures were dysfunctional, though 15 percent of the main canal length that was inspected proved dysfunctional, which was relatively high. However, at the distributary level (under WUA control) the defects observed were three to 15 percent. The same exercise carried out in the Indonesian systems showed excellent canal conditions.

The systems represented a wide range of agro-climatic regions having different characteristics, crops and cropping patterns, water distribution patterns, water resource availability and management style. The measurements per unit command show that systems that mostly grow rice with low cropping intensity are found in the low range value. Middle range value is represented by rice with high cropping intensity of 200 percent. High range values are found in orchards, industrial crops and some cereals. Measurements per unit cropped indicate that non-rice producing irrigation systems can be more productive than the rice producing irrigation systems by 100 to 200 percent. The findings per unit of irrigation supply indicate the lowest value for purely rice based systems. Irrigation systems that grow rice during rainy seasons and other crops during the dry season obtain middle range values. The highest value is obtained by systems that grow orchards, cash or industrial crops, and vegetables.

## 10.3 Lessons Learned Thus Far in the IMT Implementation Process

Comprehensive IMT, as opposed to partial IMT, may produce better outcomes on management efficiency, financial viability, and quality of operations and maintenance. The following has been drawn from various international reports, as well as from documents provided during the IMT study tours to Mexico, USA and Turkey. Evidence from case studies suggests that the structure and comprehensiveness of devolution is more important than the process of change itself.

1. Management transfer is often incomplete (partial) because of resistance of line agencies and/or lack of comprehensive strategic planning. However, in the case of Egypt, transfer is scheduled to take place in a phased manner. Governments not fully committed to reform often attempt to transfer *responsibility* but not the full *authority* for management. Where agency staff continues to exercise partial control over water distribution or O&M budgets after transfer, farmer organizations lack the incentives or ability to optimize management for the long term. This can create a false sense of failure about IMT, which can encourage further resistance.
2. When comprehensive elements of IMT are in place, less emphasis will be needed by the government to persuade, motivate and raise the consciousness of farmers to

“participate.” Primary emphasis should be placed on introducing the above elements where they do not yet exist. This may require dramatic change at the policy level. However, at the field level--since these are demanding requirements and great variation often exists among schemes and regions--management transfer should be dealt with as an institutional evolution. Accordingly, it will more often require negotiation and experimentation, rather than imposing rigid short-term requirements to meet quotas.

3. There is often a lack of clarity about whether farmers or the agency will be responsible for rehabilitation after the turnover and under what terms and conditions. It is often assumed that the government will be primarily, if not totally, responsible, thereby encouraging farmers to defer maintenance.
4. Rehabilitation is often done just before the turnover of management. Where this is implemented without meaningful participation and investment by farmers, it can reinforce a perception among farmers that the irrigation system belongs to the government. By contrast, having farmers take the lead in setting priorities for repairs and improvements, while investing a significant amount of their own labor and materials, can be an effective means of changing farmer perceptions about who is and who will be primarily responsible for the system after turnover.
5. Irrigation systems originally designed for management by engineers to maximize their flexibility of operation, may need some design alterations to make the infrastructure more compatible with the management capacities of farmers. For example, adjustable sluice gates can be replaced with fixed proportional division structures or fixed diameter pipe outlets, and gated intakes can be replaced with a fixed-size intake and a flood prevention wall. Such changes may result in less flexibility, but they are more predictable in water distribution and require a lower level of management intensity.
6. IMT often results in a net increase in the cost of agricultural production for farmers. They may be reluctant to take over management of irrigation schemes unless they perceive that they will be able to improve system performance enough so that increases in productivity will more than compensate for increases in the cost of irrigation.
7. After IMT, farmer organizations often seek to replace their lost government subsidies with income from sideline enterprises, such as renting out equipment, selling excess water, bulk purchase or sale of agricultural inputs, marketing services, etc. Some observers view this as a threat to management performance in that it distracts the organization from its primary function of irrigation management. Others see it as a means to increase farmer group support for their organization. In any case, farmer organizations often spontaneously diversify their functions, regardless of outsiders' advice (e.g. in the Philippines, Sri Lanka, Indonesia, China, Colombia and the USA).

8. Farmer organizations rarely raise long-term capital replacement funds. They tend to emphasize cost containment to the point of neglecting preventive maintenance of their infrastructure. Taken together, these two trends constitute an emerging threat to the sustainability of irrigation systems, particularly where the ability of governments to finance rehabilitation in the future is uncertain.
9. Farmers do not always want to maximize their participation in all ways, and for many good reasons. For example, IMT may bring the possibility of future civil liabilities, taxation or financial obligation to rehabilitate the system. Where farmers' opportunity costs are high due to other employment options, they may not want to takeover the direct management tasks of the system.
10. Inculcation of a strong sense of environmental awareness into the BCWUAs is important and should be promoted with the formation of farmer-based management entities at the level of irrigation systems. IMT cannot convey important benefits to farmers if local system-level management problems are being overwhelmed by competition for water and environmental degradation at the resource base. Environmental problems may include salinization, rising sodicity, declining water quality, water-logging, soil erosion and subsequent siltation of irrigation canals, loss of soil water retention capacity due to the elimination of trees and foliage in the catchment area and water-related health problems.

Currently in Egypt, the MWRI provides for the operation and maintenance of the main and secondary canals, while WUAs are responsible for managing the tertiary level of the system. Farmers generally have negligible responsibility for the water upstream from their *mesqa* outlets. The conventional management division in large irrigation systems is that the state takes responsibility for O&M of the head-works such as a dam or river diversion, and the main, secondary, and larger tertiary canals, while farmers are responsible for managing water distribution and maintenance along the lowest level canals.

#### Case studies: Mexico, Nepal, Turkey, Philippines

In some countries, associations of water users enter into contractual agreements with state water agencies for the provision of specific water services. In the case of Mexico, the National Water Commission manages the head-works and main canals, while legally recognized water user associations employ their own technical staff for the management of the secondary and tertiary levels of the canal networks. Farmers pay their associations for the water, and a small portion of that fee is passed on to the National Water Commission for their services. In the Hill regions of Nepal most of the irrigated area is in the hands of local communities who have constructed their own canal systems, generally tapping small stream flows. Similar examples of local, farmer-managed systems can be found in nearly every country where irrigation is important, and the rules and customs of such systems provide a valuable pool of local knowledge that can be tapped in developing new irrigated areas.

During the course of implementing this benchmark the example of Mexico was studied. In the mid 1980s, Mexico was in the throes of a debt crisis, and the government was bankrupt. The large irrigation districts under federal control suffered as maintenance was deferred and the productivity of under-paid, demoralized engineering staff declined. Out of necessity, the government reorganized the state irrigation agency to create the National Water Commission with a mandate to turn over the management of the irrigation districts to associations of users created specially for this purpose.

In 1990, Mexico transferred the first irrigation district to the users. By 1995, more than two-thirds of the country's 3.2 million ha network, divided into 80 irrigation districts, had been transferred to 316 irrigation associations. The transfer program was initially in the most productive irrigation districts, which were best organized and with the most commercially oriented farmers. The most important criterion for selecting districts was the potential of the user organization became financially self-sufficient, with users paying the fees to cover the costs of operations, maintenance, and administration.

What could the government offer the farmers as an incentive to accept higher costs for their irrigation? In fact, there was a carrot as well as a stick. The carrot was management autonomy. The farmers would be free to set their own rules for when to clean the canals, and how to distribute the water. The farmers would hire their own technical staff -- engineers and accountants -- to run their system. The canal would be theirs on a 20-year concession, which is in practice a transfer of ownership. But there was also a potential cost to users. If farmers refused to take over management, the government could offer no assurance that the canal network could be kept in repair. The government in effect threatened to default on its conventional understanding with farmers regarding levels of subsidy in the irrigation sector because it no longer had the financial means to do so. The government, however, also promised and provided technical, organizational, and legal assistance in realizing the transfer.

Many farmers, and particularly the commercially oriented ones, could not accept the risk that the irrigation infrastructure might collapse. They preferred to takeover the management, and are paying much more for their water without the government subsidy, but the reliability and responsiveness of their new management structure is considered to be well worth the price. For users and for government it is a "win-win" situation. Major rehabilitation and physical improvements will continue to be handled by the state, although the associations can determine what is done within their areas.

In Turkey, the legal framework had long permitted transfer of management from the government to farmers but only after the government adopted new policies in 1993 were there enough incentives to encourage farmers to request transfer. One new policy, for example, was that farmers who agreed to form an association to manage the system were excused from paying irrigation fees to the government. These incentives, plus an accompanying publicity campaign, were enough to stimulate the process. Local government leaders encouraged and assisted farmers to establish new irrigation associations.

In the Philippines, once the policy decision was taken towards a participatory approach, a complicated process was followed involving many different kinds of training. Irrigation agency staff had to be trained to consult with farmers and work through local leaders; the farmers had to be encouraged and helped to create associations that would assume management responsibilities previously handled by the agency; and a new cadre of social organizers was recruited and trained to help farmers organize themselves into legally recognized associations.

## 11. Capacity Building To Implement IMT

Generating popular support for IMT in Egypt requires identifying and addressing the various stakeholders of irrigation systems. Those with a “stake” in the irrigation sector are not confined to agency staff and farmers, but include other agencies, NGOs, local government, the business community, politicians, journalists, researchers, donors, and the general public. Each stakeholder, if aware of the issues and the logic of IMT becomes a potential supporter of IMT policies. IMT training programs and public awareness campaigns need to target the full range of stakeholders. Some media, such as TV broadcasts, can reach nearly all stakeholders simultaneously; a video documentary or drama depicting IMT is one approach. For many stakeholders, particularly BCWUA members, targeted workshops or seminars will be most effective. In almost all cases, stakeholder workshops, focus group meetings, and seminars for different kinds of farmers will offer a fruitful way to listen and respond to the interests of the ultimate beneficiaries.

An essential element in the process is to make certain that clear incentives to both farmers and agency staff are put in place. For the latter groups, these can be negative incentives (Mexico: support the program or be fired) or positive incentives (Turkey: support the program and be re-assigned from O&M to construction). A strong legal framework is important, but not necessarily a pre-condition for transfer. Old laws may be adequate (as in Turkey), or new laws can be worked on even as transfer is taking place (as in Mexico). In Egypt, the laws are presently undergoing revision and a process of harmonization, which will allow for considerable flexibility as the IMT efforts move forward.

Beneficial impacts of IMT in other countries were discussed above. Some of the problems experienced by other countries also provide illustrative lessons. In some cases, the newly created user organizations suffer from financial shortfalls, insecure water rights, competition from urban/industrial use, and need for rehabilitation and improvement of the infrastructure. The Egypt MWRI program on IMT recognizes these shortfalls and has incorporated measures to safeguard against their undermining the IMT potential. There is a continuing need for technical assistance and management expertise, both in the form of specific support services and training. On the service provider side, there is often a loss of technical capacity due to downsizing, and a general loss of morale is also a danger. MWRI will need to take into account personnel retrenchment in the context of alternative employment schemes, particularly involving the private sector.

Part of capacity building requires a serious commitment to participation at all stages of project planning, design, and implementation. This commitment should drive the process, with intensive inputs of staff time and extensive partnerships with local groups who may represent or can communicate with the users who are the prospective managers of the irrigation infrastructure. When farmers are directly involved in the design process, whether for new systems or rehabilitation of old ones, they will provide useful design input and they will come away with an understanding of the design logic of the system they will be managing. During construction, BCWUA (i.e. farmer) input has the functions of quality control (ensuring design standards are

met), cost savings (guarding against needless spending, and substituting some costs with farmers' own labor), and construction knowledge. Knowing how the system is constructed will help in repairs later on. The advantage of farmer inputs into O&M, either as direct managers or as the overseers of technical managers, is a central feature of the MWRI policy on IMT. Capacity building for participatory irrigation management needs to be a central feature of irrigation investments and integrally linked to the physical components of the project. Similarly the technologies employed should be manageable by the farmers. The MWRI staff and the BCWUA officers need new skills and understandings before the management divide can migrate upstream. Training needs to precede and parallel project investments.

The BCWUAs and Water Boards that farmers establish constitute a form of social capital that can have spin-off effects in other aspects of social and economic life. The network of contacts among agency staff and the water user organization leadership, for example, can bring the farming community into closer touch with related services, such as credit, educational opportunities, or even political access. And the skills that farmers learn through their experience with their water user organization -- accounting, budgeting, planning, organizing -- that can be used in many other productive endeavors. To help foster this objective, the MWRI is proposing to establish a Water Development Fund and hopes to secure collaborative support from major donors, including USAID.

### **11.1 A Model Stakeholder Training Curriculum Plan**

The training to BCWUA stakeholders is a very important part of the process of building strong farmer-based institutions capable of taking over management responsibilities. Training to these stakeholders has been designed for three sessions in order:

- To illustrate to the BCWUA members the methods of administering and operating a branch canal level association of users,
- To formulate *Operation Plan* and a *Maintenance Plan* for the BCWUA based on participatory approach, and
- To discuss and plan for increased participation by all categories of water users in water management and water quality control, with special attention to the MWRI/USAID Tranche IV benchmark on *Irrigation Management Transfer* to the private sector, and development of Branch Canal Water User Associations.

The BCWUA officers, all of whom are private sector stakeholders, will for the most part be hearing for the first time the information to be imparted to the participants during the course of the training sessions.

The major output from this training will be an innovative Operation Plan and a complementary Maintenance Plan for each BCWUA Training design and method will focus on the following agenda:

## **Training Tranche I (Main Objectives, Administrative and Financial Management)**

### **Day 1:**

- Opening and Introduction. Objectives of Training.
- MWRI Policy Concerning Irrigation Management Transfer
- Role of MWRI and BCWUAs management transfer process
- Structure and responsibilities of BCWUA executive council
- Developing internal rules and by-laws for each BCWUA: process and practice
- Open Discussion & Summary of the Day

### **Day 2:**

- Methods for Conducting Successful BCWUA Meetings and Work Sessions
- Techniques of Internal Communications and Establishing and Sustaining Communications Linkages with other major GOE and NGO entities.
- Methods of Conflict Resolution: Case Examples on IMT
- Group Work: What Are Specific Problems That Can Be Solved through Farmers' Participation in the BCWUA?
- Reporting Methods
- Open Discussion & Summary of the Day

### **Day 3:**

- Methods of Record Keeping
- Methods for Mobilization of Stakeholder Contribution and Collection of Fees
- Procedures for Establishing Bank Account
- Procedure for Preparing Financial Reports for Members & MWRI
- Open Discussion & Summary of the Day
- Summary, Evaluation & Winding Up of Training Tranche I

## **Training Tranche II (System Maintenance Planning and Execution)**

### **Day 1:**

- Introduction to System Maintenance
- Maintenance Problem Identification: Stakeholders Using PRA-type Methods
- Methods of Weed Growth Control: Manual and Mechanical
- Branch Canal Maintenance: Cleaning, Bank Fortification and Maintenance, & Structural Maintenance
- Group Role Play on Maintenance Planning

### **Day 2:**

- Pumping Device Maintenance: Routine, Exceptional and Extraordinary
- Case Examples of Different Classifications and Capacities of Pumping Units
- Group Role Play in Planning for Pumping Unit Maintenance
- Open Discussion & Summary of the Day

### **Day 3:**

- Field Trip to Pump Manufacturing Plant. Demonstration of Operating techniques and Continued Discussion of Techniques for Maintenance.

**Day 4:**

- Techniques for Development of a Maintenance Plan
- Group Discussions and Sessions for Site Specific Annual Maintenance Plan
- Presentation of Plans and Open Discussion / Summary of the Day
- Summary, Evaluation and Winding Up of Training Tranche II

**Training Tranche III (Planning for Operations)**

**Day 1:**

- Introduction to Concepts of Operational Requisites
- Basic Water Management Problems and Techniques
- Identifying Main Players in Operations: Irrigation System, Drainage System, Irrigation & drainage Directorates, & Farmers
- Role of Farmers in Improving Water Management
- Open Discussion & Summary of the Day

**Day 2:**

- Technical, Agricultural & Organizational Benefits from Implementing Improved Water Management
- Water Management: Partnership Between Farmers and Government
- Water Pollution Control – Key Issues and Methods
- Methods of Water Allocation and Distribution
- Factors Affecting Water Availability
- Options for Water Distribution and Supply
- Open Discussion & Summary of the Day

**Day 3:**

- Water Scheduling Methods
- Water Scheduling Monitoring and Reporting Methods
- How to Develop an Operational Plan for the Branch Canal
- Work Group Discussions to Develop Site-Specific Operational Plan
- Group Presentations
- Final Training Summary & Training Evaluation

**Training Methodology:**

- ✓ Analysis of Study Tour Observations and Lessons Learned
- ✓ Working Group Discussions
- ✓ Lecture/Discussion
- ✓ Technical Field Trip
- ✓ Field Demonstrations

## 12. Proposed IMT Institutional Arrangements in MWRI

The members of the IMT Working Group envision IMT as a permanent entity within MWRI. Factors were considered taking into account bureaucratic and administrative aspects, financial obligations, organizing of water users into branch canal-level associations, logistics, capacity for physical improvements and strong political support necessary to push the IMT objectives forward.

The majority of opinions reflect a view that IMT should not be under the purview of any one department within MWRI, but should be under the overall guidance, direction and oversight of a Steering Committee reporting to the Minister, and with implementation coordinated and implemented through the Irrigation Advisory Service. This would guarantee absence of institutional overlaps and duplications, conflicts in administration and budget, and continuous coordination and advising a broad-based from the Minister's Office.

<u>IMT Location</u>	<u>Justification and Comments</u>
1. Under Minister's Office	<b>a. To provide physical coordination and linkages between ID, EPADP &amp; MED</b> <b>b. Extend IMT activities to more areas over time</b> <b>c. M&amp;E of IMT performance/impact</b> <b>d. Plan nation-wide replication of IMT</b>
2. Under Minister's Office	<b>A separate IMT Department under Minister's Office</b>
3. Under Minister's Office	<b>IMT Unit in Minister's Office to ensure proper coordination and resource utilization. Also, to minimize political interference in IMT process.</b>
4. Under the IAS Central Directorate	<b>IAS already responsible for farmer participation at <i>mesqa</i> level.</b>
5. Under the Minister's Office	<b>To work under the proposed Privatization Unit under the office of the Minister, with cooperation of MED, IAS, ID, and EPADP.</b>
6. Under the Minister's Office	<b>A separate IMT Cell in the Minister's Office to minimize administrative conflicts with ID, EPADP, MED, Planning Sector, IAS, and HEPS. If Irrigation and Drainage are combined in the future under one Authority or Department, IMT could be there.</b>
7. Under the IAS Central Directorate	<b>Supported by high-ranking Steering Committee</b>
8. Under the Minister's Office	<b>As part of the proposed Privatization Unit, with participation of MED, EPADP, and ID.</b>
9. Under the Minister's Office	<b>One member of present IMT Working Group nominated to head the IMT Unit.</b>
10. Under the Minister's Office	<b>To coordinate and facilitate all future IMT activities between different authorities, sectors, and even departments of the Ministry, to avoid bureaucratic conflicts. With a high-level Steering Committee under the Chairmanship of HE, the Minister.</b>

It is recommended that IMT be situated institutionally in the Office of the Minister, with consideration given to having the active guidance of HE, the Minister and highest-ranking

officials of MWRI. In terms of practical implementation, it is sensible to utilize the existing resources in MWRI: the Water Policy Steering Committee, and the Irrigation Advisory Service. It is recommended that an IMT Liaison Officer be situated in each of the key departments of the MWRI in order to provide the coordination and communication linkages necessary for the IAS to carry out this role. The Office of the Minister would provide the overall policy and legislative support needed and would serve as a technical backstopping forum.

### 13. Recommendations for the Future of IMT

The following are recommendations made for the future enhancement and sustainability of the IMT process initiated during Tranche IV.

- Having drafted and approved the revision, MWRI will formalize the amendment to Law 12 on water management with the concerned GOE authorities and legislative bodies, in order to 1) formalize transfer of parts of the system to users and/or the private sector, and 2) allow formation and registration of WUAs in all categories of land and among primary, secondary and tertiary levels of the irrigation system.
- It is recommended that IMT be situated institutionally in the Office of the Minister, with consideration given to having the active guidance of HE, the Minister and highest-ranking officials of MWRI. In terms of practical implementation, MWRI should utilize the existing institutional resources in MWRI: the Water Policy Steering Committee that will report directly to the Minister, and the Irrigation Advisory Service.
- MWRI will expand its pilot program in line with the approved phased implementation schedule plan approved in this report.
- MWRI should continue to support and strengthen the role of the inter-disciplinary ministerial IMT Working Group under the direction of the IMT Steering Committee, that reports to the Minister. This may be achieved by issuance of a ministerial decree.
- MWRI will formally take necessary action to incorporate *mesqa*-level and branch canal irrigation and drainage functions as part of the mandate for the management transfer entities.
- As part of its support to the IMT program, the MWRI should formally undertake establishment, with BCWUA cooperation, of maintenance centers for spare parts, equipment and other O&M material used in irrigation and drainage at the branch canal level.
- In conjunction with the objectives of the MWRI plan for Integrated Water Management Districts, BCWUAs and field engineers will jointly plan, design and implement branch and distributary canal improvements in the command area and

establish continuous flow and downstream water level control.

- A branch canal O&M cost-sharing plan process (as described in the Tranche III APRP Water Policy Report No. 17 on Establishment of Branch Canal Water User Associations) should continue to be refined and adopted as a standard feature of the BCWUA management transfer implementation process.
- Coordination should be maintained with all other projects working in this sector, e.g. the Irrigation Improvement Project, the Water Boards Project, etc.
- Awareness-building programs for BCWUAs and MWRI engineers, technicians and field agents need to focus on priority IMT objectives and issues.
- MWRI staff will need basic introductory training on IMT as well as periodic refresher training in a number of key subjects.
- To ensure quality and minimize duplication of services following management transfer, local level coordination with other public and private sector agencies needs to be formalized, e.g. with Agricultural Extension, Drainage Authority, cooperatives, banks, growers' associations, local councils, research institutes, etc.
- Management transfer (IMT) should not be restricted to irrigation activities only; transfer should be implemented in a holistic modality and extend to all water resources (irrigation, drainage, groundwater, etc).
- With respect to expansion of IMT beyond the pilot stage, MWRI should examine the improvement projects and the rehabilitation works needed in these areas and how to differentiate between improvement and rehabilitation.
- A major Public Awareness Campaign needs to be launched specifically for the IMT effort. MWRI will need to fund and manage the implementation of the PAC. The strategy and details of such a campaign are included as Annex H.
- MWRI must establish an IMT Monitoring and Evaluation System, which will be particularly important at the time of IMT expansion. The MES will serve three primary functions: 1) track implementation efforts for problems and bottlenecks, 2) confirm and verify progress and achievements, and 3) provide the basis for assessing post-facto beneficiary impact. A draft Terms of Reference for developing the MES is included in this report.
- MWRI will need to study alternative methods of financing expansion of the IMT pilot program nationwide, including public/private co-financing, establishment of a Water Partnership Fund, and government loan mechanisms to bring MWRI,

private sector entities and NGOs together in a cooperative effort to expand IMT.

- MWRI will need to evaluate the various pilot programs dealing with management transfer and establishment of WUAs to define a policy for such efforts, including institutionalizing implementation under one unit within MWRI to build upon the successes achieved to date, to expand these programs nationally and to ensure sustainability.

## **APPENDICES**

### **APPENDIX A: MWRI POLICY ON IRRIGATION MANAGEMENT TRANSFER (DECEMBER 2000) AND MWRI DECREES:**

- 1. OFFICE OF THE MINISTER MWRI**
- 2. MWRI UNDERSECRETARY, BEHEIRA**
- 3. MWRI UNDERSECRETARY, DAKHALAIYA**
- 4. MWRI UNDERSECRETARY, SHARKAIYA**
- 5. MWRI UNDERSECRETARY, EL MINYA**
- 6. EXECUTIVE ORDER dated November 29, 2001:  
Authorization  
& Approval to Proceed, by MWRI Minister for Rehabilitation of  
Four Pilot IMT Branch Canals**

### **APPENDIX B: PHASED IMPLEMENTATION PLAN FOR IRRIGATION MANAGEMENT TRANSFER (ARABIC)**

### **APPENDIX C: IMT MEMORANDA OF UNDERSTANDING (ARABIC AND ENGLISH)**

- 1. MWRI UNDERSECRETARY, BEHEIRA**
- 2. MWRI UNDERSECRETARY, DAKHALAIYA**
- 3. MWRI UNDERSECRETARY, SHARKAIYA**
- 4. MWRI UNDERSECRETARY, EL MINYA**

### **APPENDIX D: DRAFT TERMS OF REFERENCE FOR ESTABLISHING IMT MONITORING & EVALUATION SYSTEM (MES) IN MWRI**

**THE FOLLOWING APPENDICES ARE LOCATED IN SEPARATELY BOUND VOLUMES OF THIS REPORT:**

**APPENDIX E: IMT PHYSICAL ASSESSMENT FOR REHABILITATION (VOLS. 1-4)**

**APPENDIX F: IMT BCWUA PROCESS DOCUMENTATION REPORTS (VOLS. 1-4)**

**APPENDIX G: IMT SOCIO-ECONOMIC BASELINE STUDY**

**APPENDIX H: IMT PUBLIC AWARENESS CAMPAIGN**

## **Appendix A: MWRI Policy on Irrigation Management Transfer**

- 1. English language translation of MWRI Policy on IMT**
- 2. Official MWRI Policy, dated November 2000, in Arabic**
- 3. MWRI Executive Order dated November 29, 2001, in Arabic**  
**(This order authorizes and instructs the Chairpersons of Irrigation, MED & Drainage, to proceed with rehabilitation work on the four pilot IMT branch canals, in accordance with the detailed budgets and specifications found in Appendix E).**

## **Appendix A: MWRI Policy on Irrigation Management Transfer**

*(The official Arabic language MWRI version follows this English translation)*

***In a phased process of application, the MWRI will transfer selected sub-sections of Egypt's irrigation and drainage network to users and/or the private sector acting on behalf of the users.***

- ***IMT Policy Clause 1.*** Under this policy IMT is in an evolving state, in that dynamics and features of the policy will not change, although implementation strategies and impacts may be reviewed and considered at regular intervals.
- ***IMT Policy Clause 2.*** The IMT policy is applicable in all categories of land in Egypt.
- ***IMT Policy Clause 3.*** MWRI may maintain a permanent IMT Task Force, to advise and assist in the implementation and monitoring of the IMT policy.
- ***IMT Policy Clause 4.*** To effect a transfer, MWRI and the transfer entity will enter into an agreement. The agreement will detail the conditions of transfer, functions and responsibilities are to be transferred, and timetable for implementation.
- ***IMT Policy Clause 5.*** Under the IMT policy model, private sector entities will take over managerial control over the physical infrastructure and its operations. Ownership of the physical infrastructure of the system will remain with the Government.
- ***IMT Policy Clause 6.*** Transfer of operations and maintenance will be made to user-based institutions operating at the secondary level, e.g. branch canal water user associations or their representative bodies, private irrigation companies, registered cooperatives, or registered shareholder enterprises. It is expected that such institutions would be financially autonomous, within parameters established by enabling statutes or decrees, and able to hire or contract for technical operational and management services.
- ***IMT Policy Clause 7.*** Management transfer can be partial, incremental or total, and will be determined on a case-by-case basis in the process of negotiation. Relevant factors to be weighed include, 1) size of command area and discharge, 2) technical complexity of the sub-system, 3) technical and managerial capabilities of the users, and 4) current and projected resource base of the local institutions. Management transfer in future phases of the process may focus on larger areas or higher levels in the water resources network.
- ***IMT Policy Clause 8.*** An IMT strategy for special development areas, e.g. El Salaam Canal, Bostan, Toshka, etc., may be identified as these areas become populated and irrigated agriculture is initiated.
- ***IMT Policy Clause 9.*** As a prerequisite to entering into the agreement, MWRI and the transfer entity will assess the condition and performance criteria of the physical system to determine what modifications/improvements are required to upgrade the system to an acceptable technical level. The agreement will specify the nature of the work to be carried out, the timeframe, and the method for financing the work.

- IMT Policy Clause 10. MWRI, in consultation with stakeholders, including local authorities, will assess socio-economic criteria to determine if a user association is ready to assume O&M responsibilities.
- IMT Policy Clause 11. Reclaimed lands and areas improved under the IIP may be given priority for IMT implementation during the early stages, as strategies are perfected for application in old lands.
- IMT Policy Clause 12. As part of the evolutionary policy on IMT, the IIP and EPADP tertiary programs should be harmonized into a single developmental package for simultaneous implementation.
- IMT Policy Clause 13. The agreement between MWRI and the transfer entity will identify the roles that the MWRI technical units and their staff will assume in relation to the transfer entity. These include technical, supervisory, monitoring, and legal enforcement functions.
- IMT Policy Clause 14. The revised Law on Water Resources and its by-laws, when finally approved, will support the IMT process. Until such time as the new law is officially enacted, the undersecretary of state in each governorate will officially sanction a ministerial decree for the formation of the pilot branch canal water user associations.
- IMT Policy Clause 15. The Irrigation Advisory Service (IAS), under the MWRI Irrigation Department, will have primary responsibility for the organization and preparation of the transfer entities involved in the transfer process. The organizing process follows the MWRI policy on BCWUAs, established June 1999.
- IMT Policy Clause 16. The IAS will apply an eight-step BCWUA strategy for IMT, to include the following:
  1. Collection of basic information needed to organize and register BCWUAs for IMT:
    - Profile of each branch canal
    - Data collection (e.g. maps, area served, agronomic and water delivery data)
  2. The branch canal will be divided into natural hydrological reaches (i.e. head, middle and tail).
  3. Influential persons will be identified on each reach for initial entry-point contact.
  4. Irrigation district and IAS field teams will hold several individual and joint meetings with influential farmers on each reach. Field teams will hold additional meetings with branch canal stakeholders on each.
  5. Election of reach committee: farmers on each reach will nominate representatives to sit on the BCWUA Executive Council.
  6. Establishment and convening of Executive Council of Branch Canal Water User Association. Officers (Chairman, Vice-Chairman, Treasurer and Secretary) will be selected from among the Executive Council members.
  7. Governorate MWRI Undersecretary of State issues a decree formalizing the formation and registration of Branch Canal Water User Association for IMT.
  8. BCWUA will establish and equip an on-site office.

- IMT Policy Clause 17. As part of the organizing process the IAS will train the stakeholders in managerial, administrative, fiscal, and technical aspects of the transfer process and operation of the system.
- IMT Policy Clause 18. Overall BCWUA role and responsibilities in the IMT process:
  1. As part of the irrigation management transfer process the Executive Council will assume operational and managerial control over the BCWUA, inclusive of planning, monitoring, fiscal management and implementation. Additionally, the EC liaises with other major stakeholders in the process, including the District Engineer, the IAS and other critical units of MWRI, (including EPADP and MED).
  2. Monitoring irrigation and drainage performance and requirements and the water level in the area served by the branch canal.
  3. Regularly preparing observations and recommendations on branch canal issues for joint review with MWRI officials.
  4. Scheduling and water deliveries between branch canals and *mesqas*.
  5. Regularly conducting and overseeing branch canal maintenance work for pitching, weeding and embankments and gates, as well as leveling and compacting of embankment pads.
  6. Assuming major responsibility for the establishment and strengthening of *mesqa*-level Water Users Associations.
  7. Managing BCWUA internal finances, including determining fee assessment, and internal administration.
  8. Interfacing with public sector authorities, e.g. Irrigation Department, MALR, EPADP, District Council, etc., regarding problems that arise on the branch canal.
  9. Assisting farmers on the branch canal with seasonal crop plans; collecting cropping plans for each *mesqa*; and reviewing with Irrigation Department and MALR.
  10. Following up on the cropping plan implementation and reporting back to the irrigation or drainage authority directorate.

IMT Policy Clause 19. To formally attest to the legitimacy of the new Branch Canal Water User Association, the governorate MWRI Under-Secretary will issue a registration certificate on behalf of the Minister by ministerial decree for the BCWUA upon submission of its membership charter, list, by-laws, and plan of action. Copies of the MWRI under-secretarial decrees for the pilot IMT canals will be annexed to the IMT agreement.

IMT Policy Clause 20. The MWRI will provide adequate resources to the Water Communication Unit and the IAS to spearhead stakeholder training in principles and aspects of implementation of IMT. This training may include short courses, development of awareness materials for literate and semi-literate audiences, and wider mass media applications.

## **Appendix B: Phased Implementation Plan for Irrigation Management Transfer to Year 2022**

- 1. English Language Translation of IMT Plan**
- 2. Official Arabic Language IMT Implementation Plan**

## **IMT Phased Implementation Plan (English Language Translation)**

A major feature of the IMT policy preparation process is a phased implementation plan that addresses the major issues likely to be encountered. The IMT Working Group implementation plan includes the following elements:

- Legal changes required to support the IMT process, including contracting and assessment capabilities;
- Clear definition of roles and relationships between public and private sector entities as they relate to IMT;
- Clear definition of administrative and financial management systems for O&M;
- Training of staff, and development of plans for organizational restructuring;
- Arrangement for provision of support services;
- Development of Branch Canal Water User Associations;
- Upgrading of the physical irrigation/drainage infrastructure as part of the transfer process.

### **IMT Implementation Plan Activities - Year 2001**

During the first year following promulgation of the MWRI IMT policy, a number of major issues are to be addressed, including:

- All legal reforms, which will support the IMT process should be finalized. The MWRI will review the laws and regulations to determine which might mitigate progress in the transfer process, and can be amended or changed. The IMT Steering Committee will approve recommendations to the Minister of MWRI.
- The mobilization of political support at all GOE legislative and executive branch levels.
- Support among all stakeholders is to be generated through multiple focus group meetings, workshops and conferences.
- IMT pilot program staging activities:
- Four pilot areas are to be the focus of the IMT policy testing process. These areas represent a variety of locations, operating and water management environments, socio-economic characteristics, land-holding patterns, and technical issues.
- Branch Canal Water User Associations to be organized by the IAS
- Stages and categories of transfer to be negotiated for each pilot system, with provision made at all levels, including *mesqas*, branch canals, secondary and primary drains, and main canals,
- Training of stakeholders to be incorporated into all planned activity areas, particularly those O&M functions which are to be transferred,

- Consensus agreement on methods of revenue generation, including direct assessment, and contracting for works and services,
- Consensus agreement on physical rehabilitation works required as part of transfer process, and method of cost-sharing for same,
- Issuance of ministerial decree sanctioning the method of revenue generation for the pilot areas,
- Transfer timetable to negotiated among BCWUAs and MWRI
- Major responsibilities to be transferred to the users at the branch canal level include:

Maintenance:	Weed removal	100% user liability
	Bridge & minor structure repair	100% user liability
	Routine canal cleaning	100% user liability
	Maintenance of tile drains	100% user liability
Operations:	Water distribution	100% user liability
	Operation of control structures, flow measuring devices, & network & equipment maintenance	100% user liability

It is expected that the BCWUAs will assume responsibility for carrying out major works and bearing their costs, after having received adequate training and on-site supervision. The Irrigation Department and Drainage Authority would continue to supervise and provide on-going technical assistance, in accordance with the revised law:

- Monitoring and Evaluation of IMT process using combined economic, engineering and PRA methods.
- Process Documentation by IAS on the 4 pilot areas.
- Training and capacity building.
- Incorporate accountability and transparency into BCWUAs activities.
- Review and refine MWRI IMT policy, based on results of the pilot phase first year.

### **IMT Implementation Beyond Initial Pilot Phase**

The revision to Law 12 will provide the legal basis for long-range planning to transfer sections of the irrigation system to users or their representatives. An evaluation of the pilot phase, to be carried out by the end of 2002, will provide direction for IMT process replication and expansion. By 2012, it is expected that several main canals and main drains will be identified for phased transfer. Each branch canal or secondary drain on the main system will be turned over to users in preparation for the transfer at the main level. The IMT Working Group recommends that MWRI prepare a master plan for the transfer of the irrigation and drainage network sections to the year 2025.

## **IMT Implementation Plan Phases**

### Phase I (end of 2000)

- Legal reforms Supporting the IMT process.
- Formulation of IMT policy.
- Mobilize political support as legislative and executive levels
- Consensus among stakeholders through multiple focus group meetings workshops and conferences.

### Phase II (ending 2001)

- Four pilot areas to be focus of IMT policy testing process, representing a variety of operating management environments.
- Contracting procedures between MWRI and private sector to be formulated .To include detailed description of stakeholders' role.
- Training of stakeholders, particularly regarding O&M and organizational management.
- Process documentation by IAS in pilot areas.
- Review and refine IMT policy, based on results of the pilot phase.

### Phase III (ending 2002)

- Consensus agreement on methods of revenue generation, including direct assessment and contracting for works and services
- Pilot area replication and extension
- Major responsibilities to be transferred to the users at the branch canal level focus on O&M.

### Phase IV (5 Years ending of 2007)

- Issuance of ministerial degree sanctioning the method of revenue generation for the pilot areas and negotiations of transfer time table
- Capacity building: BCWUAs take charge after having received adequate training and on-site supervision MWRI to supervise and provide on-going TA.
- Monitoring and Evaluation of IMT process using combined economic, engineering and PRA methods.
- Pilot developed for federation of BCWUAs.
- IIP and EPADP sub-surface drainage amalgamated into one program at water district or public canal level.

- Policy/program evaluation and refinement

Phase V (5 Years ending (2012))

- By 2012 IMT to have been implemented at the public canal level (moderate size). Each branch canal or secondary drain on the public canal system will be turned over to users in preparation for the public canal level.
- Continuous M&E. Impact assessment.

Phase VI (post-2022)

- Consolidation of federation into district command areas

Phase VII (Post-2022)

- Main canals and drains transferred to private management  
Implementation of IMT at regional level (e.g. East Delta, West Delta, etc.)

## **Appendix C: IMT Memoranda of Understanding (*Letters of Agreement Between MWRI and BCWUAs*)**

**This Appendix C contains an English language translation of the standard MOU and the technical annexures for each of the four pilot BCWUAs. This translation is followed by signed copies of the MOUs between MWRI and the 4 pilot IMT BCWUAs.**

- A. Memorandum of Understanding (English translation)**
- B. Copies of MOU Technical Annexures (English translation)**
- C. Copies of signed MOUs:**
  - 1. MOU MWRI & Beheira Pilot IMT BCWUA**
  - 2. MOU MWRI & Dakhalaiya Pilot IMT BCWUA**
  - 3. MOU MWRI & Sharkaiya Pilot IMT BCWUA**
  - 4. MOU MWRI & El Minya Pilot IMT BCWUA**

# **STANDARD SAMPLE PRO FORMA**

***AGREEMENT AND MEMORANDUM OF UNDERSTANDING***  
**BETWEEN**  
**THE MINISTRY OF WATER RESOURCES AND IRRIGATION (MWRI)**  
**AND**  
**THE IRRIGATION AND DRAINAGE SYSTEM BENEFICIARY ASSOCIATION**  
**(BCWUA) ON \_\_\_\_\_ CANAL,**  
**\_\_\_\_\_ DISTRICT, \_\_\_\_\_ GOVERNORATE**

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## **1. FIRST – INTRODUCTION**

In the context of fulfilling the objectives of improving water management systems in agricultural land, optimizing uses and returns of both land and water, promoting capacities and activities of regional and local organizations, boosting decentralized systems and promoting the participatory role of stakeholders and farmers in achieving social and economic development, it was agreed by both Parties of this Agreement, in the light of irrigation, drainage and water protection laws and statutes, to set up necessary transactions for satisfying these objectives on the grounds of both Parties' will and understanding to enhance the above mentioned courses of action.

## **2. SECOND – AGREEMENT PARTIES**

- 1- Pertinent organizations of the Ministry of Water Resources and Irrigation (MWRI), represented in this Agreement by Mr. \_\_\_\_\_, Head of the Central Directorate for Water Resources and Irrigation in \_\_\_\_\_ Governorate (First Party).
- 2- The Irrigation and Drainage System Beneficiary Association (BCWUA) in \_\_\_\_\_ Region, on \_\_\_\_\_ Canal, serving an approximate area of \_\_\_\_\_ Feddans, represented in this Agreement by Mr. \_\_\_\_\_, Head of the IDBSA established according to the decree of the Head of the Central Directorate for Water Resources and Irrigation (HCDWI) No. ( \_\_\_\_\_ ), dated \_\_\_\_ / \_\_\_\_ / 2001 (Second party).

## **3. THIRD – DEFINITIONS**

- 1- Organizations of the Ministry of Water Resources and Irrigation (MWRI)

This means central and regional authorities concerned with development and management of irrigation and drainage systems according to the responsibilities and activities determined by organizational Decrees, Laws of irrigation, drainage and water protection No. 12/1984, No. 213/1994 and No. 48/1982, the Presidential Decree No. 653/1980 issued for organizing the Ministry of Irrigation (now Ministry of Water Resources and Irrigation) and the Ministerial Decree No. 285/2000 for transferring some parts of the irrigation and drainage systems and networks to stakeholders and private organizations.

2- The Irrigation and Drainage System Beneficiary Association (BCWUA)

This means the association responsible for managing, operating and maintaining irrigation and drainage systems, for which the HCDWI decree is issued regarding the formation of the board and definition of responsibilities with respect to management and maintenance of irrigation and drainage systems.

3- Irrigation and Drainage Systems (IDS)

This means the channels, networks, stations and devices of irrigation and drainage as set in this Agreement and according to the above mentioned HCDWI decree.

4- Management of Irrigation and Drainage Systems

This means carrying out works that imply managing and maintaining means of water conveyance, distribution and drainage, as well as operating water channels and devices (open or buried water courses, stations, lifting pumps, etc.), in the context of ensuring efficient management and equitable distribution through necessary works, missions and resources.

5- Water Resources

This means irrigation and drainage water as well as other types of water resources (surface, underground, mixed, etc.).

#### **4. FOURTH – JOINT MANAGEMENT**

- Parties of this Agreement will closely cooperate during a determined and agreed upon period, which lasts for \_\_\_\_\_ months (ending in \_\_\_\_ / \_\_\_\_ / 2001), to prepare, manage and maintain IDS and train BCWUA members through promoting their skills and knowledge to efficiently manage IDS and soundly use and conserve water.
- For this purpose, the MWRI is in charge of studying, preparing and implementing necessary works, under its administration or through a third party (contractor, cooperative or private sector), so that the BCWUA can

subsequently take over the responsibility of efficiently managing, operating and maintaining IDS.

## **5. FIFTH – TRANSFERRING THE MANAGEMENT OF IDS TO THE BCWUA**

- Upon completion of the period and activities specified in FOURTH, the MWRI will transfer the responsibilities of managing and maintaining IDS – without transferring the property of public infrastructure – to the BCWUA, to which the authority of managing, operating and maintaining the integrated irrigation and drainage network, downstream of the intake of the branch channel that feeds the field systems until the end of field networks, will be totally delegated. These tasks will be carried out through the BCWUA’s organizations and resources and according to the BCWUA’s bylaws and resources to be prepared and made available for this purpose by the BCWUA under the general supervision of the relevant MWRI organization.

## **6. SIXTH – RIGHTS AND DUTIES**

### 1- Of the MWRI Organizations

#### 1-1 During the Phase of Joint Management

- Study and evaluate conditions and status of the irrigation and drainage networks and devices.
- Carry out, under the MWRI administration or through a third party (contractor), necessary maintenance and promotion of irrigation and drainage networks and devices, in addition to necessary training for BCWUA organizations on management, operation and maintenance methods.
- Undertake system administration according to laws and statutes through a close cooperation with the BCWUA.
- Assist the BCWUA with the formulation of the association’s bylaws and basic structure.

#### 1-2 During the Phase of Post-Network Management and Maintenance Transfer to the BCWUA

- Provide the BCWUA with technical support, advice and consultation.
- Enforce laws and statutes in the case of necessity.
- Monitor the fulfillment of tasks assigned to the BCWUA.

- Secure adequate water discharges and levels downstream of the intake of the branch channel that feeds field systems according to discharge programs and schedules.
- Assist the BCWUA, whenever possible, with the local and international enhancement of the association's efforts and resources.

## 2- Of the BCWUA

### 2-1 During the Phase of Joint Management

- Prepare the association's bylaws for ratification by the relevant authority.
- Declare the establishment of the association and carry out registration requirements according to rules.
- Form the necessary technical and administrative organizations, set management and maintenance plans and arrange the acquisition of necessary resources in this regard.
- Cooperate with organizations belonging to the MWRI and those recruited by the Ministry for promoting the network.
- Acquire necessary training and skills for sound management, distribution and conservation of water.

### 2-2 During the Phase of Post-Network Management and Maintenance Transfer to the BCWUA

- Locate and furnish the association headquarters and determine the responsibilities of the board.
- Apply all the rules and criteria included in the association's bylaws.
- Achieve the requirements for a sound management of IDS and secure necessary means and resources in this regard.
- Quantitatively and qualitatively safeguard water, cooperate with the MWRI with respect to the enforcement of water management laws and statutes and seek advice and consultation if necessary.

## **7. SEVENTH – MISCELLANEOUS AND FINAL DECLARATIONS**

- 1- All basic and national public infrastructure will remain the property of the MWRI.

- 2- The BCWUA will abide by the rules of the laws and statutes of irrigation, drainage and water protection as well as those implying the application of administrative, technical and financial systems.
- 3- The MWRI will enforce the irrigation and drainage laws and statutes with respect to illegalities from the part of individuals, stakeholders or the BCWUA itself.
- 4- If the BCWUA fails in carrying out its duties and responsibilities, it is up to the MWRI to withdraw the BCWUA license, abolish all authority delegation to the BCWUA and undertake necessary actions, under the MWRI administration or through a third party, to protect the irrigation and drainage infrastructure and farmer rights and to establish another organization, as conceived by the MWRI. In all cases, the BCWUA will be liable for any illegality, responsibility or commitment towards others according to the laws and statutes that control its work.
- 5- The MWRI will incur the maintenance and improvement costs of the branch water channel during the phase of joint management.
- 6- The BCWUA will incur the maintenance, improvement and replacement costs of any of the private irrigation and drainage networks and devices under its responsibility. Payment will be made in one or more installments according to the laws No. 12/1984 and No. 213/1994 and their executive statutes and according to what is agreed upon between both Parties in this regard.
  - Also the BCWUA will be in charge of managing, maintaining and operating the other private and branch irrigation and drainage infrastructure after the system management has been transferred, i.e. during the post-joint management period.
- 7- The BCWUA will prepare the necessary records and reports according to systems and statutes. The BCWUA will have to provide the MWRI with periodical reports regarding the IDS conditions under its management.
- 8- The MWRI commitment will be to provide the BCWUA with technical and institutional support and consultation through a close cooperation to ensure efficient task accomplishment.
- 9- Annex (1) of this Agreement determines the general framework, work plan, tasks and responsibilities that are necessary for implementing this Agreement.
- 10- The introduction in FIRST, the items in SECOND down to SEVENTH and Appendix (1) are basic and integral parts of this Agreement. The Agreement will be in force unless it is terminated by the MWRI for any of the above mentioned reasons. The Agreement may be improved or modified on the grounds of the understanding and approval of both Parties or in the case of legal or administrative necessities.

Two originals of this Agreement were signed by both Parties on \_\_\_\_\_, the \_\_\_\_\_  
of \_\_\_\_\_, 2001.

**FIRST PARTY**

**SECOND PARTY**

**ANNEX 1**  
***(English Translation)***  
**GENERAL FRAMEWORK OF THE WORK PLAN FOR MAINTAINING AND IMPROVING EL AZEEMA BRANCH CANAL IRRIGATION SYSTEM**

**FIRST – Improvement Works for Beneficiaries’ Field Infrastructure during the Phase of Joint Management**

- 1 - Supply and install new pumping units for the two left-side pipelines (north direction) on the basis of dividing each pipeline into two sections, in addition to the necessary shelters, devices and division pipeline (PVC or asbestos if possible).
- 2 - Supply and install a new pumping unit (replacement) for each of the half-pipeline on the right bank, make use of existing shelters and keep the actual conditions of pumping stations and improvement pipelines (on the last part of the pipeline).
- 3 - The beneficiaries will incur replacement, refurbishment and improvement costs for intakes, pipelines, shelters, etc., as a percentage of properties and according to relevant irrigation and drainage laws and statutes (Article 16 of Ministerial Decree No. 14900/1995 regarding the executive statutes of the Irrigation and Drainage Law No. 213/1994 and Article 32 of the Law No. 12).

**SECOND – Maintenance and Improvement of the Branch Channel (Azeema Branch) that Feeds the System Mentioned in FIRST during the Phase of Joint Management**

- 1 - Study the conditions and efficiency of El Azeema Branch and determine necessary requirements for maintenance and improvement.
- 2 - Implement works and requirements of crucial and urgent maintenance for El Azeema Branch during the phase of joint management.
- 3 - The MWRI will incur costs of the above defined works in 1- and 2-

**THIRD – Time Schedule**

- Without contradicting what was previously mentioned in FIRST and in other locations in this Agreement, it is intended to carry out maintenance and improvement works during the phase of joint management, which is estimated to last for one and a half years starting from the date of signing this Agreement.
- The BCWUA will be fully in charge of the management and maintenance of El Azeema Canal system as well as of other systems including pumping stations, pipelines and other devices, according to what was previously mentioned in 2-2 of this Agreement and Memorandum of Understanding regarding the transfer of the network management and maintenance to the BCWUA.

**FIRST PARTY**

**SECOND PARTY**

**ANNEX 1**  
*(English Translation)*

**PROGRAM AND WORK PLAN FOR MAINTAINING AND IMPROVING  
IRRIGATION SYSTEMS ON BRANCH/5 EL MOLLAK - EL SHABAB  
REGION**

**FIRST – Maintenance and Improvement of Branch/5 El Mollak that Feeds the  
Boosters during the Phase of Joint Management**

- 1 - Dredge and modify the surface slope of the right part between the intake and Station No. 23.
- 2 - Dredge and maintain the left part from the intake down to Station No. 28.
- 3 - Weed control for the whole length of Branch/5 (between Station 23 and 28), especially in summer.
- 4 - Remove occupancies and obstacles under bridges, aqueducts and station intakes.
- 5 - Disallow piling on canal banks and maintain critical locations.
- 6 - Study and take necessary actions to achieve the above mentioned works (item 1- to 5-) through funds and efforts provided by the relevant irrigation administration during a maximum period of nine months starting from the date of signing this Agreement.

**SECOND – Other Activities and Responsibilities**

- 1 - Establish cooperation channels between the BCWUA and irrigation organizations to secure, according to actual water requirements, a suitable discharge throughout the day from El Shabab Canal intakes, for the purpose of achieving workable water levels upstream of the stations and avoiding the concentrated sediment loads contained in largely discharged water during morning periods.
- 2 - The BCWUA will secure its headquarters and recruit its technical and administrative staff to be, starting from the date of the system management transfer, in charge of the system operation and maintenance downstream of El Shabab Canal intake until the end of the network.
- 3 - Ensure the sustainability of coordination and exchange of information between the BCWUA and the MWRI for the sake of promoting performance efficiency, law application and water conservation (quantitatively and qualitatively).

**FIRST PARTY**

**SECOND PARTY**

**ANNEX 1**  
*(English Translation)*

**PROGRAM AND WORK PLAN FOR MAINTAINING IRRIGATION AND  
DRAINAGE SYSTEMS ON BENI EBEID CANAL FED FROM SERRI CANAL  
(KM 12,000)  
ABOU KORKAS DISTRICT / EL MINIA GOVERNORATE**

**FIRST – Maintenance of Field Systems during the Phase of Joint Management**

- 1 - Review conditions and status of open and pressurized *mesqas* and carry out necessary and critical maintenance.
- 2 - Review conditions and status of field drainage networks (laterals and collectors) and carry out critical and periodical maintenance.

**SECOND – Review and Maintenance Works for Branch (Public) Canals and Drains during the Phase of Joint Management**

- 1 - Weed control in Beni Ebeid Canal and its branches as well as in Garrees Drain. Review conditions and critical requirements of relevant water structures (intakes, tail escapes, barrages, etc.).
- 2 - Carry out necessary maintenance for banks and slopes.

**THIRD – Other Programs and Activities**

- 1 - Study the possibility of safeguarding pumps by placing fences around their locations.
- 2 - Study the possibility of assisting the BCWUA by locating a temporary base (e.g. wooden kiosk) for technicians working for the BCWUA and for the local irrigation and drainage administration, which will also serve for storing instruments and spare parts.
- 3 - Ensure a continuous flow of water according to preset discharges and levels downstream of Beni Ebeid Canal intake.
- 4 - Apply irrigation and drainage laws and statutes and determine the responsibilities of different parties regarding maintenance and improvement works and costs during the phase of joint management.
- 5 - Ensure the provision of necessary training and knowledge to the BCWUA, and assist the association with the preparation of its bylaws.
- 6 - It is intended to achieve the above mentioned maintenance works and hand the IDS over to the BCWUA to be in charge of the management, operation and maintenance after the phase of joint management, specifically during a period of nine months from the date of signing this Agreement.

**FIRST PARTY**

**SECOND PARTY**

**ANNEX (1)**  
*(English Translation)*

**PROGRAM AND WORK PLAN FOR MAINTAINING AND IMPROVING  
IRRIGATION AND DRAINAGE SYSTEM: EL NAZL BRANCH CANAL(KM 28,000)  
LEFT OF EL BAHR EL SAGHEER MINYET EL NASR DISTRICT / DAKAHLIA**

**FIRST – Maintenance or Improvement during the Phase of Joint Management**

- 1 - Study and prepare rehabilitation requirements for the five pipeline *mesqas* that are actually out of service (No. 1, 2, 7, 8/b and 12/c) in order to bring them under efficient operation. The rehabilitation process targets the following elements:
  - Intakes and lifting pumps.
  - Balancing reservoirs.
  - Pipelines and relevant instruments.
- 2 - Review the field drainage network (laterals, collectors, escapes) and carry out necessary maintenance.
- 3 - Review conditions of the other eighteen open *mesqas*.

**SECOND – Review the Maintenance of El Nazl Canal and its Branches that Feed Field Mesqas and Public Drains during the Phase of Joint Management:**

- 1 - Weed control works and maintenance of canal and drain banks.
- 2 - Review conditions of water structures (intakes, escapes, barrages, bridges, aqueducts, siphons, etc.) and carry out necessary maintenance.
- 3 - Study the conditions and systems that would allow suitable water discharges and levels downstream of El Nazl Canal intake for the sake of sound water conveyance and distribution among *mesqas*.
- 4 - Study branch conditions: the reaches that will not be needed and the way of handling their cases according to laws and rules.

**THIRD – Other Programs and Responsibilities:**

- 1 - It is intended to achieve the tasks previously mentioned in FIRST and SECOND within one year starting from the date of signing this Agreement by both Parties.
- 2 - Based on the objectives and responsibilities of the Land and Water Improvement Project (ISAWIP) and in the light of irrigation and drainage laws and statutes, the rehabilitation and maintenance of works belonging to the MWRI will be carried out by the Ministry and at its expense.
- 3 - The BCWUA will set a headquarters and prepare bylaws with the consultation and assistance of relevant MWRI organizations.
- 4 - The BCWUA will take responsibility of managing, operating and maintaining IDS downstream of El Nazl Canal intake to the end of irrigation and drainage field networks.

**FIRST PARTY**

**SECOND PARTY**

## **APPENDIX D:**

### **Draft Terms of Reference for IMT Monitoring and Evaluation System (MES)**

## **APPENDIX D: Draft Terms of Reference for IMT Monitoring and Evaluation System (MES)**

The purpose of this draft TORs is to develop a comprehensive monitoring and evaluation system (M&E), to support the IMT program. The purpose of the M&E system is to allow the MWRI to efficiently track program activities, to mitigate problem areas and bottlenecks, and to periodically assess program impact. As the IMT program is expanded in future years to additional command areas and to higher levels of the irrigation system, the ability of the MWRI to monitor the activities will become critical to achieving overall success. During 2000/01, EPIQ carried out a Socio-Economic Study in the four IMT pilot command areas. The generated data and findings of the Socio-Economic study will provide the baseline for assessing overall IMT program impacts.

An effective IMT Monitoring and Evaluation system is particularly crucial as the program is based on a new GOE policy, and all future activities beyond the pilot phase will be predicated on the achievements and perceived success by both farming communities and government agencies.

### **SCOPE OF WORK**

In order to effectively develop the MES, the services of a team technical specialists is required: 1) Institutional Development Specialist (Team Leader), 2) Agricultural Economist, 3) Mechanical Engineer, 4) Irrigation/Drainage Engineer, and 5) Computer Programmer. The specialists will:

1. In consultation with the IMT Working Group, prepare a detailed plan of action for designing an M&E system, that will encompass standard procedures of assessing system impact, and participatory rural appraisal (PRA) techniques involving the impacted communities in generating required socio-economic and production data. Other key areas for the M&E system include cost/quality of system operations, and cost/quality of system maintenance.
2. Refer to 2000/01 IMT Socio-Economic Study for identification of indicators to be monitored and assessed. Develop a schedule of institutional, economic, social, environmental and agricultural, and system performance indicators that will be the basis of the M&E system. Formulate the methodological tools to be used for gathering information and analyzing each of the indicators, including identification of an appropriate computer package. The entire M&E system will be developed in Arabic, in order to facilitate high levels of active participation by BCWUAs and MWRI field staff.
3. Pre-test the monitoring instruments in the IMT pilot areas prior to completion of assignment.

4. Prepare an operational manual and guideline for application of the M&E system, which will be carried out by staff of MWRI. The manual and guidelines are to be prepared in Arabic, with a summary in English.
5. Attend regularly scheduled coordination meetings of the IMT Working Group and participate in necessary field trips during the period of assignment.

Specific tasks for the MES are indicated below:

- Review all MWRI/EPIQ documents and reports related to farmer participation and irrigation management transfer in Egypt.
- Design and develop a Monitoring and Evaluation detailed plan of action, to include the following major issues regarding changes in the following main areas:
  - 1) household income patterns,
  - 2) agricultural production,
  - 3) social indicators (e.g. education, gender issues, etc.),
  - 4) costs and changes in quality of irrigation/drainage system maintenance, and
  - 5) costs and changes in quality of irrigation/drainage system operations.
- Develop an M&E program and apply methods for data collection, posting and analysis that are specific to the needs of IMT. This methodology will incorporate participation of beneficiaries in the collection of data using standard PRA techniques, and focus on following main issues:
  - A. IMT implementation *process*:
    1. Monitor roles of MWRI and BCWUAs performing IMT implementation
    2. Levels of BCWUA institutional performance
    3. Levels of new water management fees and how they are being collected, accounted for, and utilized?
    4. Process for rehabilitation/improvement in water management infrastructure; involvement of BCWUAs in process.
    5. Changes in social environment of BCWUAs
    6. Roles of MWRI central and field units
  - B. IMT *Outcomes* and *Impacts*:
    1. Potential *Outcomes*: a) support for BCWUA leaders; b) popular awareness and support for BCWUA policies and decisions; c) water management service fees and collection rates; d) financial viability of BCWUAs; e) quality of water delivery service (including efficiency,

reliability and equity); f) frequency of water disputes; g) level of investment in maintenance; h) functional condition of irrigation/drainage infrastructure; i) cost recovery.

2. Probable Eventual *Impacts*: a) land under cultivation/irrigated command; b) sustainability of area irrigated/drained; c) farm income; d) crop yields; f) cropping intensity; g) on-farm and off-farm employment; h) farm income and agricultural labor wages; i) reduction of poverty; j) waterlogging and salinity in irrigable areas.

- Develop and select M&E indicators based on identified institutional outcome and production impact issues.
- Develop method for presenting and utilizing M&E results.
- Field test and subsequently re-tool the M&E instruments developed.
- Prepare an Operational Manual and Guideline for the M&E system.

## **DELIVERABLES**

1. An initial report detailing the IMT Monitoring and Evaluation detailed plan of action, showing breakdown of task assignments among M&E task members.
2. A Final Report, which will include:
  1. The IMT M&E Program (using a standard computer programming package, incorporating beneficiary participation in process). To include detailed list of M&E indicators based on identified institutional outcome, infrastructure performance, and production impact issues.
  2. Results of Pre-Testing of M&E data collection instruments
  3. IMT M&E Operational Manual and Guideline
  4. Recommendations

## **LEVEL OF EFFORT**

Services in five technical areas are required in order to comprehensively address the TORs: 1) institutional development, 2) agricultural economics, 3) irrigation & drainage engineering, and 4) mechanical engineering, and 5) computer programming, will be required. Native command of Arabic, and professional level of English are necessary for this scope of work. This activity will require a total of 80 person days divided among five technical areas:

1) Institutional Development	-	30 days of LOE
2) Agricultural Economics	-	20 days of LOE
2) Mechanical Engineering	-	10 days of LOE
3) Irrigation/Drainage Engineering	-	10 days of LOE
4) Computer Programming Specialist	-	10 days of LOE