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APRP WATER POLICY

TRANCHE IV BENCHMARK WORK PLAN

Report No. 24

November 1999

Water Policy Program

International Resources Group **Winrock International**

Nile Consultants

APRP Water Policy
Tranche IV Benchmark Work Plan

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9. Purpose

This report presents the Tranche IV benchmark work plan for the APRP-Water Policy Program being implemented under the USAID/Egypt Agricultural Policy Division in support of the Ministry of Water Resources and Public Works (MPWWR). The work plan covers the period from September 1999 to December 2000.

9. Background

The Agricultural Policy Reform Program (APRP) is a USAID grant program with a budget of US$ 245 million for annual cash transfers to participating GOE ministries that include Ministry of Agriculture and Land Reclamation (MALR), Ministry of Public Works and Water Resources (MPWWR), Ministry of Trade and Supply (MOTS), Ministry of Economy (MOE), Ministry of Planning and International Cooperation (MPIC), and Ministry of Public Enterprise (MPI). APRP was originally a four-year program (1996-2000) and has recently been extended an additional 27 months through September 2002. The program is designed to achieve policy reform in five areas:

- Prices, markets and trade
- Private investment and privatization
- Agricultural land and water resource investments, utilization and sustainability
- Agricultural sector support services
- Food security and poverty alleviation

Annual cash disbursements are made to the GOE based on the completion of policy reform benchmarks, as established and agreed upon through annual memoranda of understanding (MOU) signed by GOE and USAID/Egypt. The MOU for Tranche IV was signed on 20 September 1999. The Tranche IV memorandum includes 20 policy benchmarks to be completed in two phases. Phase 1 is to be completed by 31 December 2000 and Phase 2 is to be completed by 31 December 2001.

To assist participating GOE ministries with policy reform measures, APRP originally consisted of nine technical assistance units having offices within MPWWR and MALR. This will be reduced to six by December 1999 and to five by June 2000. There are two TA units working directly with MPWWR in support of water policy related activities. These are the Environmental Policy and Institutional Strengthening IQC Water Policy Program (EPIQ) and Water Policy Advisory Unit (WPAU). However all of the APRP units participated in the preparation of the Tranche IV benchmarks.

9. Land and Water Resource Benchmarks

There are five benchmarks involving policy reform in the area of agricultural land and water resource investments, utilization and sustainability. These are:

C.1 Reducing Mismatch of Irrigation Deliveries
C.2 Urban Wastewater and Drainage Reuse
C.3 Water Management at the Directorate Level
C.4 Irrigation Management Transfer
C.5 Revision of Law 12

The MPWWR has sole responsibility for four of these water policy benchmarks (C.2, C.3, C.4, C.5). The remaining benchmark (C.1 Mismatching) is a joint benchmark between MPWWR and MALR. Four of the benchmarks are multi-year benchmarks, which means they will require partial completion in Phase 1 (December 2000) and final completion in Phase II (December 2001). Two of the benchmarks are being coordinated by WPAU (C.3, C.5), two of the benchmarks are being coordinated by EPIQ (C.2, C.4); and EPIQ/RDI/PMU are jointly coordinating one benchmark (C.1).

9. Work Plans

The work plans for the Tranche IV water policy benchmarks were prepared with direct assistance from the following APRP TA units: Water Policy Advisory Unit (WPAU), EPIQ Water Policy Team (EPIQ), Main System Management (MSM), Program Management Unit (PMU), Monitoring, Verification and Evaluation Unit (MVE), and the Reform Design and Implementation Unit (RDI). The work plans for each of the Tranche IV water policy benchmarks were arranged using a standard format. The title, benchmark statement, verification indicator(s), background, and objectives were taken directly from the signed MOU. The sections on task and timeline, deliverables, cooperators, and resource needs were prepared by the responsible task group in consultation with relevant cooperators. The draft Tranche IV water policy benchmark work plans were presented to HE Minister Public Works and Water Resources, USAID Agriculture Policy Team and the MPWWR Steering Committee at a workshop held in Alexandria on 29-30 October 1999. The comments and suggestions provided at this workshop have been incorporated into the final work plans

9. Benchmark Implementation Methodology

Based on experience gained during the last three APRP tranche periods, a specific methodology has been established to assist the MPWWR in meeting their benchmarks. The methodology includes the following principles that have been incorporated into the development of the work plans:

- MPWWR ownership
- interdisciplinary and interministerial work groups
- pilot activities
- stakeholder focus groups and workshops
- surveys
- study tours (subject to availability of DT2 funding)
- training seminars
- documentation
- technical analysis

- monitoring and evaluation
- TA support
- field trips
- Steering Committee/USAID meetings, reviews & approval

9. Report Organization

This report contains three annexes.

Annex A: Tranche IV Water Policy Benchmark Work Plan Summary Matrix identifies the TA task leader for each benchmark activity and other associated resource requirements.

Annex B: Tranche IV Water Policy Benchmark Work Plan presents the individual work plans for each of the five benchmarks to be accomplished by MPWWR. The work plans for each benchmark include a background statement; benchmark objectives; a description of tasks; a timeline for carrying out the benchmark activity; deliverables required to satisfy the benchmark indicators; and the resources, level of effort and non-TA activities required to accomplish the benchmark.

Annex C: Tranche IV MOU with Appendix A is an extract of the Tranche IV Memorandum of Understanding between USAID and GOE signed on 20 September 1999. This Annex includes all of the relevant information from the MOU on the five agricultural land and water resource investment benchmarks being carried out by MPWWR.

Annex A

TRANCHE IV WATER POLICY BENCHMARK WORK PLAN SUMMARY MATRIX

Annex A: Tranche IV Water Benchmark Work Plan Summary Matrix

Benchmarks	Task Leader(s)	Supporting Team Members	Partners			Short Term TA Needs (Phase I)		Non-TA Activities (Phase I)
			MPWWR	APRP	Others	Local	Expatriate	
C.1 Reducing Mismatch of Irrigation Deliveries	John Keith (EPIQ) Jane Gleason (RDI)	• El Sayed Mahdy and Abdel Azim Ragab (EPIQ) • Sayed Hussein • (RDI) • Mahmoud Nour (PMU) • Senior Irrig. Eng. (EPIQ)	• CDWD • Directorates and Central Directorates • MSM • WCU • IAS • NWRC	• RDI • PMU • MVE • WPA U • EPIQ	• Agriculture Extension • Governorate-level Agri Admin. • ARC • Cooperatives • Farmers	**15 pm** total: • Irrigation management specialist (6 pm) • Water management team (3 pm) • Irrigation data analysis specialist (6 pm)		(MPWWR/EPIQ only) • Study tour (subject to availability of DT2 funding) • 12 working group field trips • 12 EPIQ Trips to pilot areas • 12 trips for water measurements personnel • 1 technical seminars • 4 seminars for local MALR and MPWWR personnel • 1 implementation Seminar
C.2 Urban Wastewater and Drainage Reuse	Zhongping Zhu (EPIQ)	• Fahry Khattab, Ibrahim Elassiouti, and John Keith (EPIQ)	• EPADP • Dakahlia Directorate, and • NWRC	• MVE • WPA U • EPIQ	• NOPWASD • MHP • MALR • MEA	**10 pm** total: • Water policy spec. (2 pm) • Wastewater treatment specialist (2 pm) • Afforestation specialist (1 pm) • Pub. health scientist (1 pm) • Environ. Law specialist (1 pm) • Water quality specialist (3 pm)	**4 pm** total: • Wastewater irrigation specialist (2 pm) • Environmental law specialist (2 pm)	• 12 field trips • 2 discussion workshops • 2 training workshops • 3 effluent sampling and lab test • 30 digital maps • Study tour (subject to availability of DT2 funding)
C.3 Water Management at the Directorate Level	Sarwat Fahmy (WPAU)	• Soliman Abu-zeid, Amr Hafez and Alaa	• Irrigation Dept. • MSM • Sharkia and Qena Director	• WPAU • EPIQ • MV		**8 pm** total • Telemetry specialist (2 pm) • Software specialist	**1.5 pm** total • Irrig Op Spec (1.5 pm)	• 1,000 flow measurements (LE 150,000) • 4 training classes • 3 workshops • 24 eng team trips • 4 mgnt team trips

		Hassan (MSM)	ates	E		(1 pm) • Water management specialist (5 pm)		• 2 software team trips • 3 verification team trips • Replacement parts (LE 20000)
Benchmarks	**Task Leader(s)**	**Supporting Team Members**	**Partners**			**Short Term TA Needs** (Phase I)		**Non-TA Activities** (Phase I)
C.4 Irrigation Management Transfer	Robert Cardinalli (EPIQ)	• John Keith and Ibrahim Elassiouiti (EPIQ) • Nasser Ezzat (WPAU), and • Senior Irrig. Eng. (EPIQ)	• Steering Committee • IMT Task Force • Irrigation Dept. IAS IIS Groundwater HEPS • MED • NWRC • WCU • EPADP	• RDI • MVE • WPAU • EPIQ	• ACU (DDC) • UNDP • IFAD • World Bank • IDRC • JICA • G of Neth. • KfW • G of Italy	**17 pm** total: • PIM specialist (4 pm) • Inst. Development specialist (4 pm) • Consultants for studies (9 pm)	**5.5 pm** total: • O&M specialist (2 pm) • Finance & budget specialist (1.5 pm) • IMT specialist (2 pm)	• 2 int'l study tours (subject to availability of DT2 funding) • 1 visioning workshop • 4 seminars • 8 focus group meetings • 6 coordination meetings • 12 field trips
C.5 Revision of Law 12	Sarwat Fahmy and Nser Ezzat (WPAU)	Ibrahim Elassiouti (EPIQ) Senior Irrig. Eng (EPIQ)	• Irrigation dept. • EPADP • Central directorate of water distribution • Central directorate of groundwater • IIS • IAS • Survey Authority	• MVE • WPAU • EPIQ	• MALR • MHUUC • MHP • MIMW • MEA • MI • Local authorities in governorates • Agr. and Irrig. Committee of People's Assembly	**5.5 pm** total: • Senior irrig eng. (3 pm) • Senior drainage eng. (1 pm) • Legal advisor (1.5 pm)	**2 pm** total: • Inst. specialist (2 pm)	• 2 workshops • 5 focus group meetings

Annex B

TRANCHE IV WATER POLICY BENCHMARK WORK PLAN

Benchmark 1: Reducing Mismatch of Irrigation Deliveries

Benchmark Statement:

The GOE (MPWWR and MALR) will jointly establish a system that improves the flow of real-time information between the Ministries with respect to irrigation demands and supplies.

8. Verification Indicators:

1. A pilot program by the MPWWR and MALR in one water district in each of two governorates for mutual information transfer for cropping patterns and calendars and water supplies by December 31, 2000.
2. A joint MALR/MPWWR national policy for the application of the pilot program approved by the two Ministers by December 31, 2001.

9. Background:

Prior to the liberalization of agriculture, the MPWWR delivered water to farmers on the basis of a cropping pattern and calendar that was determined by the MALR. However, liberalization and farmer free choice result in much more uncertainty about actual irrigation water demands. Cases of significant "mismatch" have occurred. Large amounts of water (sometimes millions of cubic meters) were delivered but not used. Water was sometimes not available to farmers when needed and agricultural production was reduced. The MPWWR has identified several specific problems that give rise to mismatching, which can be grouped into three general categories:

1. *Estimating crop water demands under liberalized cropping choices*, including cropping patterns and calendars;
2. *System constraints*, such as canal and storage capacity; and
3. *External factors*, such as climatic change and unanticipated drainage water reuse.

The majority of water losses have occurred because the actual irrigation water demand was not known to the MPWWR. Water shortfalls have resulted from both lack of information and from crop selections by farmers that were not consistent with the ability of the Nile system to deliver adequate supplies when needed. Actual crop selection and the dates of planting and harvesting are essential information for good water management. However, there is no routine, accurate, and systematic transfer of this information from farmers or the MALR to the MPWWR, nor is there an understanding of the system constraints on the part of the MALR and the farmers.

There has been limited cooperation between MPWWR and MALR on Nile operation issues. District Engineers and local Agriculture Cooperatives do exchange information, but this flow is primarily in the form of complaints from farmers about water shortages.

Water releases are based on the "indicative" cropping patterns and calendars provided by the MALR, often months in advance of planting dates and frequently not accurate representations of the actual crops grown.

The recent benchmarks involving rice and sugar cane have established better cooperation between the MALR and the MPWWR with regard to cropping requirements and water deliveries on a real-time basis through the Rice and Sugar Cane Working Groups.

10. Objectives:

The objective of this benchmark is for the MALR and MPWWR to develop a systematic, coordinated system of routine, real-time information transfer on actual irrigation water demands and supplies. Information on cropping intentions, particularly planting and harvesting dates, must be collected, organized and provided to MPWWR personnel in sufficient time to permit the release of appropriate amounts of water from the HAD, taking into account the lag between release and delivery (which may be up to two weeks). Further, farmers and MALR personnel should be made aware of any expected shortfalls or problems in water supply in sufficient time to allow farmers to adjust. The most critical periods for this information exchange are those which involve land preparation and planting.

The specific objectives of this benchmark are to:

- develop policy strategies to balance irrigation water demand with water supply;
- establish better collaboration between farmers, the MPWWR and the MALR for determining actual real-time irrigation demands at the directorate and district levels;
- establish a national policy for managing the transfer of real-time information about water supply and demand;
- improve Nile operations, which are critical to the Egyptian agricultural economy; and
- move toward a real-time, demand driven water distribution system.

Tasks and Timeline:

1. Overall timeline: July 1, 1999 – December 31, 2001
    a. Phase I: July 1, 1999 – December 31, 2000
    b. Phase II: January 1, 2001 – December 31, 2001

1. Specific Tasks

Phase I

1. Identify members of Mismatch Working Group (MWG): July 1 – August 15, 1999
2. Develop work plan with MWG: August 15 – September 30, 1999

3. Review existing studies and literature: September 15 – November 30, 1999
4. Select areas for implementing the information flow system and for training: October 1 – November 30, 1999
    a. Select appropriate pilot district(s): October 1 – October 15, 1999
    b. Assess current conditions and practices in pilot district(s): October 1 – November 15, 1999
    c. Identify information needed by each Ministry: October 1 – November 15, 1999
    d. Identify training needs in pilot district(s): October 15 – November 30, 1999
    e. Develop detailed work plan for pilot district(s) including training activities: November 1 – December 31, 1999
5. Implement necessary training for MPWWR irrigation sector personnel, MALR extension personnel and farmers and cooperatives: December 1, 1999 – February 15, 2000
    a. Identify personnel for study tour (subject to availability of DT2 funding) and local training: April 15 – May 15, 1999
    b. Study tour (subject to availability of DT2 funding) to demand-driven irrigation systems – Governorate and District level water and agriculture/extension personnel: June 15 – July 15, 2000
    c. Technical seminars for MPWWR, MALR personnel on integrated water management and information transfer systems: February 15 – March 15, 2000
    d. Local training for pilot area district engineers, extension personnel: February 1 – March 15, 2000
    e. Develop awareness packages and/or training seminars for local farmers and cooperatives February 1 – April 31, 2000
6. Implement initial plan in at least one pilot district: February 15 – September 30, 2000
7. Monitor and review process and revise plan if necessary: September 1 – October 30, 2000
8. Implement revised plan on all pilot areas: November 1 – December 31, 2000

Phase II

1. Monitor pilots and identify problems, including possible requirements for physical system changes: January 1 – October 31, 2001
2. Review and revise plan: August 15 – September 15, 2001
3. Develop national policy: September 15 – November 15, 2001
4. Approval of policy by Ministers: November 15 - December 31, 2001

Deliverables:

1. Interim report on study tour (subject to availability of DT2 funding) and local training (April 30, 2000)
2. Interim report describing the pilot district(s) chosen and initial accomplishments (June 30, 2000)
3. Final report for Phase I, describing the initial results and evaluation of the pilots (December 31, 2000)
4. Final report describing plan and evaluation (December 31, 2001)
5. National policy approved by Ministers (December 31, 2001)

Cooperators:

A. Needs from MPWWR

- Current flow of information on water demands
- Identification of constraints in the information flow within the MPWWR
- Proposed solutions for the constraints
- Identification of constraints in information flow between MPWWR, MALR, and farmers
- Proposed solutions for the constraints
- Identification of personnel for study tour (subject to availability of DT2 funding) and local training
- Estimated costs of implementing pilot program
- Plan for revising water requirements by crop (Phase II)

B. Partners in MPWWR

- Central Directorate for Water Distribution (CDWD)
- Governorate level Central Directorate
- National Water Research Center (NWRC)
- Water Communications Unit (WCU)
- Main System Management (MSM)
- Irrigation Advisory Service (IAS)
- Egyptian Public Authority for Drainage (Phase II)
- Groundwater Sector (Phase II)

C. Partners in MALR

- Agricultural Extension
- Governorate level Agricultural Administration
- Agricultural Research Center (ARC)

D. Partners in APRP

- RDI
- PMU
- MVE
- WPAU

E. Partners in NGO/Private sector

- Cooperatives
- Water users' associations
- Farmers

Resource Needs (Phase I):

A. Level of Effort (LTTA)

- EPIQ Task Leader (Senior Economist) 9 pm
- EPIQ supporting team

Senior Irrigation Engineer	9 pm
Economist	18 pm
Irrigation Engineer	18 pm

B. Level of Effort (STTA)

- Local

Irrigation Management Specialist	6 pm
Water Measurement Teams	3 pm
Irrigation Data Analysis Specialist	6 pm

C. Non-TA Activities (MPWWR and MALR)

Activity	**Level of Effort**
Study Tour (subject to availability of DT2 funding)	• Tour demand driven irrigation systems: 20 persons, 2 weeks
Working group trips	• Trips to pilot areas: 1 per month, 12 persons (including 3 MPWWR/EPIQ personnel), • Additional trips for MPWWR/EPIQ personnel to pilot areas: 1 per month, 4 persons
Water measurement / Monitoring trips	• Data reporting trips: 1 per month, 16 persons
Seminars/ Workshops	• Technical seminars: 4 for 30 persons • Seminars for local MALR and MPWWR personnel: 4 for 12 persons (3 MPWWR) • Implementation seminar: 1 for 40 persons
Farmer training	• TBD

Benchmark 2: Urban Wastewater and Drainage Reuse

Benchmark Statement:

The GOE (MPWWR) will adopt policies for improved management of discharge and reuse of urban wastewater in agricultural drains.

Verification Indicators:

1. The MPWWR will approve a policy and procedures for managing and reusing urban wastewater discharges in agricultural drains and submit them to the Cabinet by 31 December 2000.
2. The MPWWR in coordination with other ministries and authorities will apply the policy and procedures in one selected pilot area in the Delta by 31 December 2001.

Background:

With rapid population growth and industrialization over the past decades, the Nile River and its canals and drains, particularly the drains in the Delta, are contaminated, as indicated by the consistently high fecal coliform level and the closed operation of several main drain reuse pump stations. Serious policy actions to combat the water pollution caused by wastewater discharge and prevent further degradation of the Delta's water environment are urgently needed.

The Delta region (including Greater Cairo) has an estimated population of 45 million and generates 2.2 billion cubic meters of wastewater per year. Of this large volume, more than two third are from cities and towns. Among the identified main pollutants (pathogens, heavy metals, pesticides, and salinity) in the Delta's water environment, pathogens are the most harmful. Pathogens mainly originate in urban sewage and pose significant human health and agricultural production problems. Drains in the Delta receive all types of wastewater and experience more severe water contamination than the Nile River and canals. However, drain water is reused as part of the irrigation source in Egypt, a practice that will continue in the future. The management of sewage discharge, particularly the large volume and concentrated urban sewage discharge, in agricultural drains in the Delta should receive priority consideration in Egypt's water pollution control effort.

The treatment of urban wastewater is practiced in Egypt. Nevertheless, there are gaps between the available treatment capacity and the demands for treatment, and full treatment of urban wastewater will not be possible soon. There are problems of prioritizing the locations and treatment levels of treatment plants so that they can better support drainage reuse in agricultural production. Even for treated effluents, there are

questions of how best to use them for improving environmental quality and supplying agricultural irrigation.

Four major issues related to urban wastewater discharges into drains are identified:

- Pollution in the Nile system, particularly in agricultural drains in the Delta, poses increasing risks to human health and agricultural sustainability. Without action, the region's prosperity will deteriorate.
- Large volume and concentrated discharges of urban wastewater in agricultural drains increasingly threaten the sustainability of drainage reuse in the Delta.
- Pollution consumes 2-3 billion cubic meters of usable drainage per year in the Delta.
- The benchmark will elevate environmental concerns on the MPWWR agenda, an important goal of the policy reform program.

11. Water quality is an essential component of Egypt's water management; however, it has not been adequately addressed. The Tranche III Benchmark C8 (Law 48 amendment) represented an initial effort to address water quality issues within a policy and legislation framework. The benchmark recommended a compliance action plan for pollution abatement. One important component of that plan is the management of wastewater discharge in agricultural drains.

12. Objectives:

As a continuing effort of Tranche III Benchmark C8, this benchmark will identify and evaluate the policy options and administrative procedures to facilitate the establishment of sustainable system of wastewater irrigation with health and economic benefits. Specifically, the policy benchmark will:

- establish an integrated strategy for handling urban sewage disposal and reuse in drains;
- enhance compliance with the objectives and targets of Law 48; and
- Promote coordination and implementation between MPWWR and other ministries in water pollution control and environmental quality management.

Possible pilot areas for the benchmark implementation include Lower Serw, Upper Serw, and Bahr Hadous drains, where drainage water is polluted by urban sewage from nearby cities and industries and is then provided to the Salaam Canal for reuse.

Tasks and Timeline:

Based upon the present practice of wastewater effluent discharge and reuse in the Delta region, two-stage implementation is planned in this benchmark. Phase I (during the period Nov 1999 – Dec 2000) will be devoted to the development of policies and administrative procedures. Phase II (during the period Dec 2000 – Dec 2001) will be used to test and modify these policies and procedures.

This document reports the work plan of Phase I. Designed tasks and timelines are presented in the following table:

Period	Tasks
Aug – Oct 1999 **Preparation**	• Investigate field practice of wastewater discharge and reuse • Identify main issues in the benchmark • Outreach cooperation parties • Draft and revise work plan
Nov – Dec 1999 **Start-up**	• Establish official collaborative relationships with all inter-ministry parties • Develop the scope of work and terms of reference for all inter-ministry parties and individual local consultants • Explore proper format of the policy document to be submitted from this benchmark • Organize a startup workshop in Dakahlia Governorate
Jan – May 2000 **Conduct Activities**	• Organize a training workshop in Mansoura on wastewater effluent quality control • Organize a training workshop in Mansoura on health impact and personal hygiene in wastewater irrigation • Organize a discussion meeting in Mansoura to coordinate each party's report development • Inspect effluent quality at selected treatment plant(s) • Each party delivers its report by April 30 • EPIQ task group prepares the summary report
Jun 2000 **Review Progress**	• EPIQ task group delivers the summary report by June 15 • Organize a workshop for USAID, MPWWR Steering Committee, and involved parties to review the draft summary report
Jul – Dec 2000 **Submit Report**	• Revise the summary report by incorporating the recommendations of the June workshop • Submit the summary report as a policy document to the Minister by September 30 • Revise and finalize the policy document by Dec 15

	• Prepare Phase II work plan

The implementation of this benchmark will require the involvement of many parties, both inside and outside the Ministry. Participation, cooperation, and consistent policy development of all parties will be the core of the implementation. One or two representatives of each party will join the benchmark implementation as part-time consultants to lead the designated activities as described below. Cooperation will be established through mutually agreed terms of reference. Findings of each party's report will be used as the base for the development of a national strategy on urban wastewater discharge and reuse. An overall objective in the cooperation is to withdrawal each party's wisdom and experience so that a widely agreeable policy and its implementation procedures can be established.

1. *Proposing remedial measures for better receive and reuse of wastewater effluents*

   Egyptian Public Authority for Drainage Projects (EPADP), in cooperation with the MPWWR coordinator, Drainage Research Institute, and other MPWWR departments and institutes, will develop policy and administration recommendations for better receive and reuse of urban wastewater effluent in the Delta by addressing:

   - Construction priorities of wastewater treatment plant preferred by MPWWR,
   - Administration procedures of urban wastewater effluent discharge,
   - Improved inspection and enforcement of sewage discharge permits,
   - Needed water quality monitoring program along the Salaam Canal,
   - Potential for disinfecting drainage water feeding the Salaam Canal, and
   - Needed cooperation from other parties.

   EPADP is also expected to lead local activities in coordination with General Economic Organization for Potable Water and Sanitary Drainage (GEOPWASD) and other parties in selected Governorates.

2. *Reporting NOPWASD plan of urban wastewater treatment in the Delta*

   In cooperation with the Inter-ministry Committee on Wastewater Treatment, representatives of the National Organization of Potable Water and Sanitary Drainage (NOPWASD) will provide a report on the NOPWASD plan of urban sewage treatment plant construction in the Delta by focusing on:

   - Serving areas, capacities and technologies, and effluent discharge permits,
   - Construction schedules and priorities (and the reasons for such priorities),
   - Plant operation experiences and finance mechanisms,
   - BOT, BOO, and other privatization mechanisms, and
   - Needed cooperation from other parties.

3. *Planning crop restriction in wastewater irrigation*

   Representatives of the Afforestation Department (AFD) of Ministry of Agriculture and Land Reclamation (MALR) will provide a report on crop restriction for wastewater irrigation in the Delta by addressing:

   - Preferred ways to discharge and reuse wastewater effluents,
   - Crop restrictions in wastewater irrigation,

- Experience of wastewater irrigation in man-made forests,
- Potential of Effective Microorganism (EM) in sewage treatment, and
- Needed cooperation from other parties.

4. Proposing wastewater effluent standards for irrigation

Representatives of the Environmental Health Department (EHP) of Ministry of Health and Population (MHP) will provide a report on wastewater effluent quality standards for irrigation and assessment of public health impact of wastewater irrigation in Egypt by focusing on:

- Preferred wastewater effluent standards for irrigation,
- Pubic health impacts (and their seriousness) of sewage discharge in agricultural drains,
- Mitigating policy actions, and
- Needed cooperation from other parties.

MHP is also expected to lead the inspection of effluent quality and promote public awareness of sanitation hygiene in selected Governorates.

5. *Reporting MEA actions in controlling industrial wastewater discharges*

Representatives of the Ministry of Environmental Affairs (MEA) will provide assessment of industrial wastewater discharge in agricultural drains in the Delta and recommendations of mitigating policies by focusing on:

- Quantities, characteristics, and seriousness of industrial wastewater discharges in selected drains,
- MEA actions (including timetables and priorities) for controlling these discharges, and
- Needed cooperation from other parties.

13. Deliverables:

By the end of September 2000, a summary report on recommended policies and procedures for managing and reusing urban wastewater discharges in agricultural drains will be produced and submitted to the Minister of MPWWR for approval. The report will identify the policy actions agreeable to most involving ministries for better water quality management in Egypt.

14. Cooperators:

A. Partners in MPWWR:
- Egyptian Public Authority for Drainage Projects (EPADP),
- Dakahlia Irrigation Directorate, and
- Drainage Research Institute (DRI) and Central Lab of the National Water Research Center (NWRC).

B. Partners in Other Agencies:
- National Organization of Potable Water and Sanitary Drainage (NOPWASD) of Ministry of Housing and Reconstruction and Urban Development (MHRUD),

- Afforestation Department (AFD) of Ministry of Agricultural and Land Reclamation (MALR),
- Environmental Health Department (EHD) of Ministry of Health and Population (MHP),
- Compliance Office (CO) of Ministry of Environmental Affairs (MEA), and
- General Economic Organization for Potable Water and Sanitary Drainage (GEOPWASD) in selected Governorates.

Cooperation will also be extended to Cairo General Organization of Sanitary Drainage (CGOSD) for its treatment plant operation experiences. EPIQ task group will keep close contacts with the Advisory Panel for Water Management (APP), Canadian project on "National Water Quality and Availability Management (NWQAM)" and other donor's water quality projects. The support of USAID/Cairo Wastewater Treatment Department and the Secondary City Project will be valuable in this benchmark.

A. Partners in APRP
- WPAU
- MVE
- EPIQ

15. Resource Needs (Phase I):
16.
17. A. Level of Effort (LTTA)

EPIQ Team
- Senior water resource/environmental specialist (Task Manager) 10 pm
- Senior water resources specialist 6 pm
- Senior irrigation engineer 4 pm
- Senior economist 2 pm

A. Level of Effort (STTA)

- **Expatriate**
  Wastewater irrigation engineer 2.0 pm
  Environmental law specialist 2.0 pm

- **Local**
  Water policy specialist (MPWWR) 2.0 pm

  Wastewater treatment specialist (NOPWASD) ***2.0 pm***
  Afforestation specialist (MALR) 1.0 pm

Public health specialist (MHP)	1.0 pm
Environ. Law specialist (MEA)	1.0 pm
Water quality specialists (consultants)	3.0 pm

C. Non-TA Activities

Activities	Level of Effort
Study tour (subject to availability of DT2 funding)	• 1 study tour to USA, 10-person and 10-day
Workshops	• 2 discussion workshops, 1.5-day and 30-person each • 2 training workshops, 1-day and 30-person each
Local field trips	• 10 car-based trips, 3-person and 1.5-day each • 2 plane-based domestic trips, 3-person and 2-day each
Effluent sampling and pathogenic bacteria testing	• 3 times of random sampling at 3 wastewater treatment plant sites
Digital map-production	• 30 digital maps production (MPWWR Information Center, 9th floor)

Benchmark 3: Water Management at the Directorate Level

Policy Benchmark:

The GOE (MPWWR) will establish a policy for allocating, distributing and controlling water on a volumetric basis at the directorate and inspectorate levels.

Verification Indicators:

2. A pilot program will be conducted by MPWWR in two directorates by 31 December 2000, to provide the basis for implementing volume-based water management policy at the directorate and inspectorate levels.

3. A policy document that includes a plan and instructions for volume-based water management in the Nile Irrigation System will be approved by MPWWR and distributed to all directorates by 31 December 2000.

Background:

It has been recognized by MPWWR that traditional methods of distributing water on the basis of water levels will not be sufficiently accurate for managing water under future conditions. MPWWR implemented a policy in June 1999 that water distribution between directorates shall be based on volumetric flow at key points on the River Nile and main canals. This is a good first step in achieving improved water distribution; however, water distribution based on volumetric flow must become the norm at the directorate, inspectorate, and district levels of the system to improve overall water use efficiency in Egypt.

The following are the constraints to the implementation of new policies:

- Lack of a formal policy to ensure acceptance of new methods in order to achieve increased efficiency of water distribution.
- Lack of timely data regarding cropping patterns and time of planting crops.
- Tradition is a strong influence on personal behavior, and resistance to change is difficult to overcome unless individuals are convinced of the benefits of change. Past public awareness and education efforts have helped in this regard, and attitudes toward change are improving. However, continued efforts in this regard are needed.
- Lack of accurate water level versus flow discharge relationships at many lower-level water distribution points.
- Lack of procedures for water distribution by volume among inspectorates and districts.

The following efforts were paid during Tranche IV for removing those constraints and implementing new policies:

- Adopt a policy that management of Nile water at all system levels will be based exclusively on delivering the volume of water. The policy will include a timeframe for full implementation.
- Select two directorates for implementing pilot programs of distributing water on the basis of volumetric flow.
- Calibrate regulators at key distribution points to support the requirements of the pilot programs.
- Commence operating the canals in two selected regions on the basis of delivering the specified volume of water.
- Prepare procedures and instructions for implementing volume-based water management. Experience gained in the first two directorates (pilot program) will provide the basis for this document.
- Prepare a plan for implementing volume-based water management at all levels throughout the Nile water distribution system. This plan will include resources required, source of the resource, and timeframe for full implementation.

Implementation of this benchmark is considered important because water is the essential, basic input required to achieve and sustain the national goal of economic development and job creation and to support the projected future population growth. Implementation of this benchmark will reduce the amount of water presently applied to irrigated lands while maintaining the same production levels. Ultimate system-wide implementation of volumetric-based water distribution has the potential to save water (estimates range as high as 5 billion cubic meters) to meet projected future demands and to distribute water in a more efficient and equitable manner.

In improving water management, a phased approach is required, with each step building on the success of the previous step. Tranche III took the first step, establishing the framework for control and distribution of water between directorates on a volumetric basis at key points on the River Nile and main canals. The next step is to implement the policy within directorates, between inspectorates to the districts, in order to set the stage for future expansion to lower order canals and drains throughout the country.

Objectives:

The Ministry's policy in the past was to distribute water according to a predetermined plan, monitoring canal water levels to achieve the plan, and making adjustments when conditions appeared to warrant it. This practice was inefficient and exacerbated other negative conditions such as water logging and salt buildup in the soil. The Ministry recognizes the deficiencies inherent in the old system and is determined to implement new policies that will result in proactive water management to achieve improved distribution and management of water. Such policies will allow increased agricultural production while reducing potential soil salinity problems and water losses. This benchmark will advance this policy reform significantly beyond the first step that was implemented in June 1999.

The objectives of this policy reform are:

- To implement distribution of water within directorates, between inspectorates to districts, based on volumetric flow; and

- To use the completed telemetry system in conjunction with manually obtained data in an efficient manner to achieve volume-based water management.

Tasks and Timeline:

The overall timeline for this benchmark will encompass 1 September 1999 - 31 December 2000.

1. Identify Qena Directorate from Upper Egypt, and Sharkiya Directorates from Lower Egypt to be involved in this program (1-7 Sep 1999)
2. Arrange field trips to Sharkiya Directorate and Qena Directorate with flow measurement staff. Identify number, names, and locations of the divide sites that separate inspectorates and districts inside these directorates (13 Oct 1999 for Sharkiya and 19-20 Oct 1999 for Qena).
3. Put detailed workplan for Sharkiya Directorate to measure flow rates at the selected 19 sites (17 Oct 1999).
4. Put detailed workplan for Qena Directorate for flow measurement at the 24 selected sites (24 Oct 1999).
5. Site preparation civil work for the selected flow measurement locations at some sites (1 Oct - 30 Nov 1999)
6. Perform a minimum of twenty flow measurements per site with minimum frequency of twice per month (1 Nov - 30 Sep 2000).
7. Train Sharkiya Directorate staff on flow measurement techniques (1-7 Feb 2000).
8. Train Qena Directorate staff on flow measurement techniques (8-15 Feb 2000).
9. Review results of flow measurements (1 Feb - 31 Oct 2000).
10. Identify the mathematical formula type suitable for each individual flow measurement site in order to convert water levels to flow rates and volumes; calibrate these sites and estimate the hydraulic parameters. (1 Sep - 31 Oct 2000).

1. Modify the Telemetry software to accept these mathematical formulae with hydraulic parameters and daily cumulative water volume (1 - 31 Oct 2000).
2. Install the modified software at the two Directorates' sub-master computers (1-15 Nov 2000).
3. Train Sharkiya staff on using the Telemetry software in water management (1-7 Nov 2000).
4. Train Qena staff on using the Telemetry software in water management (8-15 Nov 2000).
5. Verify cumulative daily volumes resulting from flow rate equations comparing with volumes estimated traditionally from 6-a.m. readings (16-30 Nov 2000).
6. Evaluate results (1-31 Dec 2000)
7. Prepare a draft workplan to expand same activities in other irrigation directorates (1-31 Dec 2000).
8. Prepare a policy document that includes a plan and instructions for volume-based water management in the Nile Irrigation System approved by MPWWR and distributed to all directorates (31 December 2000).

Deliverables:

1. Water level versus flow relationships for each of the divide locations, which separate inspectorates inside two selected Directorates, entered into the Telemetry software for display of instantaneous and cumulative flow quantities.
   Telemetry is responsible for this deliverable however fulfillment of this task is dependent of receipt of field measurement data from Directorate staff.

2. Policy statement, formally adopted, issued and distributed mandating that water management inside these two directorates will be based on volumetric flow, and that water distribution activities will be based on telemetry data at locations where telemetry equipment has been installed.

4. Report presenting results of the two pilot programs, evaluation of benefits to improved water distribution and on overall assessment of the pilot programs including recommendations on how present water distribution policies and procedures can be revised to utilize real time telemetry data to achieve improved efficiency.

5. Written program for continued calibration of divide locations, which separate Inspectorates in other Directorates during 2001-2002 time frame. Program will identify sites to be calibrated with timeline for calibration and integration of the new sites into the Telemetry software.

6. A policy document that includes a plan and instructions for volume-based water management in the Nile Irrigation System.

Cooperators:

A. Needs from MPWWR:

- Flow measurement data for the selected sites inside Sharkiya and Qena Directorates, minimum of twenty measurements per site done by Directorate staff.
- Detailed description of present water distribution practices from Sharkiya and Qena Directorates.
- Support of top management in drafting, reviewing, and finalizing policy statement.

B. Partners in MPWWR

- Irrigation Department
- Telemetry
- Sharkiya and Qena Direcotrates.

C. Partners in APRP

- WPAU
- MVE
- EPIQ

Resource Needs :

A. Level of Effort (LTTA)

- WPAU (Task manager) 4 pm
- EPIQ (Senior Water Resource/Irrigation Eng) 2 pm

A. Level of Effort (STTA)

18. Local

- Telemetry Specialist 2 pm
- Computer Software Specialist 1 pm
- Water Management Specialist 5 pm

19. Expatriate

- Irrigation Operation Specialist 1.5 pm

C. Non-TA Activities

Activity	Level of Effort
Flow Measurement Program	• 1000 measurements in 2 Directorates (MPWWR – 44 sites, 2 visits/month, 10 months @ LE 150,000)
Training	• Flow Measurement: 2- 5 day program in 2 directorates;10 participants/program. • Software Utilization: 2- 5 day program in 2 directorates;10 participants/program.
Workshops	• 2 discussion workshops, 1.5-day and 30-person each • 2 training workshops, 1-day and 30-person each
Coordination Meetings	• Sharkiya (eng. visit):12 car-based trips, 3-person incl driver; 1day each • Sharkiya (task manager visit): 2 car-based trips, 2 persons incl driver; 1 day each • Qena (eng. visit):12 plane-based trips, 3-person incl driver; 2 da ea; driver Qena based • Qena (task manager visit): 2 plane-based trips, 2 persons incl driver; 1 day each driver; Qena based
Software Installation and Testing	• Sharkiya (eng. visit):1 car-based trip, 3-person incl driver; 6 da ea. • Qena (eng. visit):1 plane-based trip, 3-person incl driver; 6 da ea; driver Qena based
Verification of Volumetric Readings	• Sharkiya (eng. visit):1 car-based trip, 3-person incl driver; 2 da ea. • Qena (eng. visit):1 plane-based trip, 3-person incl driver; 3 da ea; driver Qena based
Replacement parts, Miscellaneous Maintenance	LE 20000 (MPWWR)

Benchmark 4: Irrigation Management Transfer

Benchmark Statement:

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

20. Verification Indicators:

1. The MPWWR 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.

21. Background:

The transfer from the GOE to stakeholders and/or the private sector of major management responsibilities for sections of the irrigation system above the mesqa-level is a bold advance toward the goal of participatory management and privatization of the irrigation system. Although irrigation management transfer (IMT) is now a major feature of irrigation delivery in many other countries, IMT has yet to be introduced at any level in Egypt. Successful implementation of this benchmark will be a major turning point for this process to take hold at the grass-roots level of the GOE.

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 impact 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
- increase in cropping intensity and yields.

The incentives for the GOE and farmers to undertake this initiative, therefore, are clear and compelling. 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.

Under IMT models, 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, private irrigation companies, 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, planning for a type of partial transfer through branch canal O&M cost sharing was negotiated with two branch canal WUAs and the GOE.)

This benchmark will set in motion a long-term evolutionary process allowing the GOE to significantly reduce its costs while continuing to expand its coverage and services in other areas. It is apparent that the GOE cannot continue to provide the present quality and range of infrastructure services, including system O&M to new areas, and still provide high-quality services in the old lands in the Nile Delta and Valley.

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.

Objectives:

The objectives of this benchmark are that:

- GOE formally determines the prerequisites in Egypt for introducing handing 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; and
- MPWWR issues a policy document on transfer of irrigation management responsibilities to the private sector.

22. Tasks and Timeline:

Phase 1 - 1 September 1999 to 31 December 2000
Phase 2 - 1 January 2001 to 31 December 2001

The work of this benchmark will be carried out by the members of the working group under the supervision of the Steering Committee and IMT Task Force. The working group will be assisted by various local and expatriate consultants. Technical input will also be provided by consultants from MPWWR experienced in 1) water user participation, 2) ministerial institutional management, and 3) physical/mechanical operations.

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

- analyzing IMT experiences in other countries;
- giving priority focus to water users' role in IMT;
- assessing the impact of the program in Egypt to develop branch canal water user associations and water boards;
- preparing a clear understanding and consensus view regarding what 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 policies for Egypt;
- identifying an IMT strategy or multiple strategies suitable to the Egyptian context;

- developing the level of skills and technical awareness among water users and in the private sector, and among all levels of Irrigation Department, Drainage Authority and Irrigation Advisory Service staff, to effectively implement and monitor IMT programs;
- while considering all approaches and strategies for IMT, involving 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 irrigation management transfer, with a plan for phased implementation in the selected areas, focusing on following priority issues:
- administrative aspects of IMT,
- harmonizing all relevant GOE laws with IMT process,
- social and cultural norms of Egyptian society,
- historical and ethical issues related to irrigation management in Egypt, and
- IMT lessons learned at national and international levels, including INPIM, and other major international implementers, e.g. World Bank, etc.

Phase 1 Tasks (1 Sept 1999 to 31 Dec 2000)

1. Establish benchmark Working Group and MPWWR IMT Task Force (Sept/Oct 1999)
2. Review current organizational models in Egypt for farmer participation, including WUAs, BCWUAs, Water Boards, federations, traditional canal committees, drainage collector user associations, etc. (Oct/Nov 1999)
3. Conduct initial visioning workshop for stakeholders, including MPWWR Task Force and working group, other ministerial officials, private sector agencies and representatives, representatives from the water user organizations, and donor agencies including USAID, Dutch Govt., UNDP, World Bank, AUC and IFAD. Consensus definition of IMT components, as well as incentives for both GOE and private sector involvement in irrigation management transfer will be identified and formally acknowledged as part of the evolutionary process. This will result in an overall IMT mission statement, phasing plan, management elements, and set of suggested directions for implementation. (December 1999).
4. Conduct a series of water user and other stakeholder focus group meetings to understand private sector perceptions regarding potential for IMT, identifying constraints to launching IMT in Egypt, and recommended strategies to overcome them. (Dec 1999 - March 2000)
5. Closely observe, track and assist in the implementation of the MPWWR pilot efforts in contracting private sector companies for pump station O&M in selected areas. (Oct 1999 to June 2001)
6. Develop criteria, and assess classifications of agricultural land and land tenure patterns, in terms of IMT potential. Conduct brief studies in all categories of land. Objective is to analyze diversity in organizational and management requirements based on physical characteristics and water delivery patterns. Studies will also include a clear analysis of physical rehabilitation requirements for each sub-system in order to facilitate the IMT process. They will also attempt to identify the following:

- Assessment of water user interest in, and expectations with, the IMT process
- Determination of Egyptian social and cultural norms and practices, as well as historical and ethical issues, that must be considered when formulating IMT policy
- 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

Studies to utilize STTA working with LTTA and MPWWR counterparts. (Nov 99 to June 2000)

7. Conduct study tour(s) (subject to availability of DT2 funding) to selected countries major international experiences in Irrigation Management Transfer providing useful lessons for Egypt to review conceptual framework, approaches to IMT, and initial results and impact, with a view toward determining keys to effective implementation and long-term sustainability. Includes MPWWR participation in annual INPIM meetings focussing on IMT process (sponsored by World Bank & INPIM). Lessons at the national and international levels will be carefully analyzed to determine their appropriateness to the Egyptian context. Prepare a consolidated and complete review of the international experiences studied, including identification of recommended adaptive strategies for Egypt. (Dec 1999 - May 2000)
8. Conduct an assessment of the legal requirements for management transfer to be formally implemented. Review all relevant GOE laws in terms of the IMT process and objective, and make recommendations for changes accordingly. Propose inputs to the revision of Law 12 on Irrigation and Drainage [through the Law 12 benchmark working group]. (April-June 2000)
9. Prepare benchmark mid-term Status Report, and present findings in workshop (June 2000).
10. Conduct selective training for Irrigation Department staff, IAS staff, and private sector entities engaged in IMT projects. (July/Aug 2000, Jan/Feb 2001)
11. Develop and test a ministerial internal monitoring system to track IMT activities. (July-Oct 2000)
12. MPWWR to develop and issue a formal policy on irrigation management transfer. (December 2000)

A high-level ministerial Task Force on Irrigation Management Transfer under the aegis of the EPIQ project Steering Committee should be established as early as possible. Given the implications on MPWWR future program and policy decisions, this Task Force would be expected to have decision-making authorities and direct liaison with the Minister's office. Task Force members will participate in a series of activities designed to provide exposure to various international experiences in irrigation management transfer to the private sector, as well as grounding in techniques and methods of institutionalization.

Private sector agencies, including water users, large investors, and private companies, will participate in workshops to elicit interest in IMT in principle and to gain first-hand knowledge of private sector financial and technical capabilities and limitations.

Phase 2 Tasks (1 Jan to 31 Dec 2001)

The activities of the second phase will focus on the following major activities:

- application of IMT strategy in selected areas;
- documentation on the implementation process;
- qualitative preliminary assessment of management transfer implementation; and
- submission of final Benchmark Completion Report.

1. Prepare an implementation plan for inauguration of a management transfer project in Egypt. The plan to include identification of selected sites, an action schedule

covering the period July 2000 to December 2001, delineation of financial and other resources required, training needs, and a timeline for implementation. (January 2001)
2. Initiate execution of IMT implementation in selected areas. (January 2001)
3. Reporting: Conduct Process Documentation in selected areas of management transfer implementation, and present findings in consolidated reports. Regularly monitor and track implementation process, and report findings to Benchmark Working Group and MPWWR Task Force. (Jan to Nov 2001)
4. Conduct qualitative evaluation of management transfer implementation. Recommend strategies for modification and/or wider replication of management transfer process to other areas in Egypt. (Oct/Nov 2001).
5. Prepare and submit Benchmark Completion Report. (December 2001).

23. Deliverables

Phase 1:

1. Proceedings from Visioning Workshop and stakeholder focus group meetings on IMT.
2. Technical Reports:
- studies carried out in diverse categories of agricultural land in Egypt
- studies of private sector entities, regarding IMT potential and viability
- report on MPWWR results in pump station O&M contracting with private firm
- on study/observation tours on IMT to selected countries
- IMT internal M&E system
4. EPIQ Mid-Term Benchmark Status Report
5. MPWWR issuance of formal policy on IMT, including implementation plan

Phase 2

1. IMT implementation plan
2. Initial IMT assessment (preliminary evaluation) review report
3. Benchmark Completion Report, including implementation Process Documentation in selected pilot areas

Cooperators:

A. Partners in MPWWR
- 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
- EPADP

B. Partners in APRP
- RDI
- MVE

- WPAU
- EPIQ

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

Resource Needs (Phase 1)

A. LTTA
- EPIQ Task Leader – Senior Sociologist (full time) 12 pm
- EPIQ Team support:
  - Sr. Economist (intermittent) 2 pm
  - Sr. Irrigation Specialist (intermittent) 2 pm
- WPAU Team Support
  - Sr. Expert 4 pm
  - Jr. Engineer 4 pm

B. STTA

Local
- PIM Specialist 4 pm
- Institutional Development Specialist 4 pm
- Consultants for benchmark studies 9 pm

Expatriate
- O & M Specialist 2 pm
- Finance & Budget Specialist 1.5 pm
- IMT Specialist 2 pm

C. Non-TA Activities:

ACTIVITY	LEVEL OF EFFORT
International Study Tours (subject to availability of DT2 funding)	• 2 tours for 2 weeks, for 10 participants each)
Visioning Workshop	• 1 workshop for 40 participants
Focus Group Workshops	• 8 focus groups for 40 participants each
Seminars	• 2 seminars on study results • 2 training Seminars on IMT techniques
Coordination Meetings	• 6 IMT Task Force Coordination Meetings • Monthly Working Group meetings
Field trips	• 12 field trips for IMT monitoring • consultants' field trips (TBA)

24. Benchmark 5: Revision of Law 12 / 1984 on Irrigation and Drainage
25.
26.
27. Policy Benchmark:

The GOE (MPWWR) will prepare revisions to Law 12 of 1984 on irrigation and drainage, and its supplementary laws, to improve effective water resource management.
28. Verification Indicators:

1. MPWWR will complete an analysis and review, with stakeholder's participation, of the modification needed for law 12 of 1984 on irrigation and drainage and its supplementary laws by 31 Dec 2000.
2. A draft revision of law 12 of 1984 on irrigation and drainage and its supplementary laws will be approved by MPWWR by 31 Dec 2001.

29. Background:

Water management is a critical variable in Egypt's economic viability. In order to be effective and support GOE water policy reforms, water management requires a basic legal structure that provides all relevant agencies and stakeholders with guidelines and instruments for planning for new developmental interventions, water allocation and deliveries, the operational management and maintenance of the irrigation system, and the management of water quality. Law 12 of 1984: *"Concerning the Issue of Law on Irrigation and Drainage"* was enacted to address these issues. This law was supplemented by Law 213 / 1994, which formalized roles of farmer participation in water management in most categories of land.

Law 12 and Law 213 define the use and management of public and private sector irrigation and drainage system structures, including main canals, feeders and drains. They also provide legal direction for the use and maintenance of public and private canals, and specified arrangements for cost-recovery in irrigation and drainage works. In addition, rules are provided for water allocation, rotations, and seasonal activities such as rice plantation, are provided, as well as rules for the construction of water intakes. The law also regulates the use of groundwater and drainage water (construction of wells or use of drainage water), and regulates other factors such as protection against flooding, navigation and coastal protection, and general irrigation system protection measures, and expansion in new irrigated lands. Penalties for violation of the laws and bylaws are specified. Law 12 focuses almost entirely on issues pertaining to the mandate of MPWWR. It does not provide for the involvement of all stakeholders in the planning and allocation of increasingly scarce water resources.

The supplementary Law 213 / 1994 provides MPWWR with the legal foundation for involvement of landowners at the mesqa and farm level for improving irrigation systems. It also establishes a fund to finance projects related to development and maintenance of improved mesqas in IIP areas and to promote awareness with respect to the use of water. Law 213 only provides for water user organizations above the mesqa level on new lands. Establishment of organizations on old lands above the mesqa level will require modification of the law.

The laws are in serious need of reconsideration in light of prevailing and projected water supply and demographic and ecological conditions in Egypt. Law 12 should be revised to take into account the current GOE policies on liberalized crop choice and horizontal expansion to new lands and new policy reforms. Implementation of this policy benchmark

will be a significant advance in the ability of MPWWR to better maximize diminishing resources and to guide Egypt's water suppliers and water consumers into the next millennium.

MPWWR Ministerial Decree dated 23 December 1998 authorized the formation of a task committee to revise articles of Law 12 and recommend modifications and development of the Law. The Committee includes the head of the Irrigation Sector and has representatives from the Drainage Authority, Mechanical Department, Central Directorate of Irrigation Water Distribution, and Central Directorate of Groundwater.

30. Objectives:

Law 12/1984, supplemented by law 213/1994, was issued to provide a legal basis for irrigation and drainage issues based on the visions of the 1960's and 1970's. Given the major changes in the visions, policies and water situation in Egypt, most notably the increasing scarcity of water, the anticipated diversion of Nile water to new lands, and the importance of stakeholder participation; the laws need to be carefully reviewed and revised. The objectives of this benchmark focus on strengthening the capability to manage water resources in an era of increasing water scarcity, including involvement of all levels of stakeholders in planning, management, and allocation.

Anticipated Effects:

- More efficient integrated water management at all levels of the Egyptian irrigation and drainage system;
- An updated legal code for irrigation and drainage issues to reflect current and projected practices and situations, including the role of the private sector in water management;
- Establishment of a legal basis for all levels of user organizations in all categories of land in Egypt;
- Better coordination between MPWWR and other ministries as well as authorities at the local level;
- Increased and more efficient communication and coordination between different sectors of MPWWR for planning, implementation and monitoring;
- Tighter controls over water quality and quantity usage;
- Increased stakeholder involvement in water allocation planning and implementation;
- Improved water delivery and usage efficiency, and more efficient drainage performance; and
- Capability to better enforce laws related to water allocation, irrigation and drainage.

31.

32. Tasks and Timelines:

Phase I - 1 September 1999 to 31 December 2000
Phase II - 1 January 2001 to 31 December 2001

Envisioned tasks in Phase I are listed below with an estimate of the working period required for completing each task.

1. Develop a draft work plan (1 September-30 September 1999)

2. Prepare a detailed work plan based on task 1 (1 October-31 October 1999)
3. Review all articles of law 12, law 213 and their executive regulations. Also, review water laws in other countries having conditions similar to Egypt (1 November 1999-31 January 2000)
4. Identify new areas and concepts related to improved water management and use taking into account output and results of the irrigation management transfer and the water quality and water use benchmarks (Tranche IV) as well as other new relevant issues and policies (1 February-31 March 2000)
5. Determine areas of changes and amendments to the law with respect to irrigation and drainage after consultation with all concerned parties within MPWWR (1 April-30 June 2000)
6. Provide explanatory notes and policy support documents to proposed changes and amendments to the laws identified in task 4 & 5 (1 July-31 August 2000)
7. Provide a forum for all stakeholders and officials to review recommended areas of changes and amendments (workshops and focus groups) (1 September-31 October 2000) and
8. An analysis and review, with stakeholders participation, of the modifications needed for law 12 of 1984 and the supplementary law 213 of 1994 (1 November-31 December 2000)

Tasks of Phase II will be developed based on conclusions from Phase I.

Deliverables:

The deliverables listed below directly support the verification indicators for the accomplishments of this benchmark.

1. A progress report outlining new areas and concepts related to improved water management and use and discuss changes and amendments to law 12 of 1984 and its supplementary law 213 of 1994 in light of current and projected water supply, demographic and ecological conditions in Egypt (30 June 2000)
2. A document providing an analysis and review, with stakeholders participation, of the modification needed for updating law 12 of 1984 on irrigation and drainage and its supplementary laws (31 December 2000)
3. Final report reviewing law 12 of 1984 on irrigation and drainage and supplementary laws (both in Arabic and in English) to be delivered to MPWWR for approval (31 December 2001)

Cooperators:

A. Partners in MPWWR
   - Irrigation Department.
   - Drainage Authority.
   - Central Directorate of Water Distribution.
   - Central Directorate of Groundwater.
   - Irrigation Improvement Sector.
   - Irrigation Advisory Service.
   - Survey Authority.

A. Partners in APRP

- MVE
- WPAU
- EPIQ

C. Partners in Other Agencies

- Ministry of Agriculture and Land Reclamation (MALR).
- Ministry of Housing, Utilities and Urban Communities (MHUUC).
- Ministry of Health and Population (NHP).
- Ministry of Industry and Mineral Wealth (MIMW).
- Ministry of Environmental Affairs (MEA).
- Ministry of Interior (MI).
- Local Authorities in the different Governorates.
- The Agricultural and Irrigation Committee of the People's Assembly.

Resource Needs (Phase I)

A. Level of Effort - LTTA

- Senior irrigation engineer (Task Manager, WPAU) 6 pm
- Senior water resources specialist (Task Liaison, EPIQ) 4 pm
- Senior irrigation engineer (EPIQ) 2 pm

B. Level of Effort - STTA

Local

- Senior irrigation engineer 3.0 pm
- Senior drainage engineer 1.0 pm
- Legal advisor 1.5 pm

Expatriate

- Institution specialist 2.0 pm

C. Non-TA Activities

Activities	Level of Effort
Discussion workshops	• 2 workshops, 1.5-day and 40-person each
Focus group meetings	• 5 meetings, 2-day and 10-person each

ANNEX C

TRANCHE IV MOU WITH APPENDICES
(EXTRACT FROM APRP TRANCHE IV MOU)