


ANNEX 3: (Egypt-NC Presentation at Validation Workshop)

Efficient Water Use for Agricultural Production Project
NBI-EWUAP, NC-EGYPT


May 22, 2008
Validation BP Workshop- Cairo-Egypt

Findings on Best Practices Study (Country Report)



Base Line Environmental Profile Report

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Main Goal

The presented study aims to identify some selected Best Practice Sites for the activities of (CMI, PPMI and WH) to assess for reaching the following global objectives:

1. To improve operational, institutional, financial and environmental sustainability of water/land services through intensive user and private sector participation in the investment and O&M at different levels and improve water and land management practices; and
2. To increase farm incomes through improved agricultural production based on efficient, more equitable and sustainable use and management of water and land resources.

Background

- Water is the key resource in the NBI set-up and the responsibilities of the NBI in the implementation of its various programs and projects is based on this important resource;
- Agriculture plays a predominant role in the lives ;
- The water and agricultural policies and strategies are affected by different natural conditions and human activities .
- Agriculture in general, and crop production in particular, have been practiced in the basin for thousands of years, and yet productivity per unit land and/or volume of water used remains quite low since agricultural practices in most parts of the basin are traditional .
- Productivity in Sub-Saharan Africa is reported to be less than 0.2 kg per cubic meter of water.
- Effective management and productive use of the water resources of the River Nile has no alternative.

General Basic issues - NB

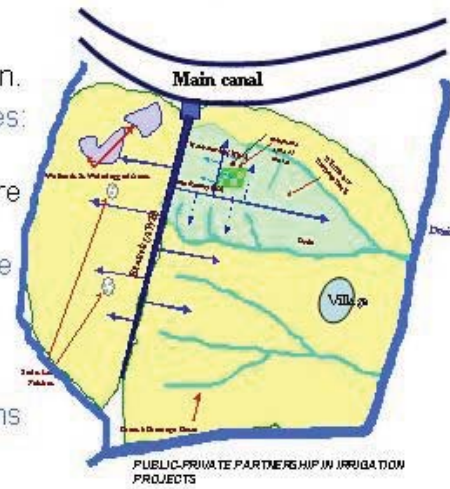
- ❖ Water in the basin is extensively used for agricultural production activities (over 80%), but there are growing demands for water from other sectors;
- ❖ Water use and management is in a fragmented approach rather than on an integrated manner;
- ❖ Availability of sufficient and good quality water is under continuous pressure and declining too;
- ❖ An improper use of land resources coupled with lack of investment, environmental degradation are contributing to a decreasing trend in availability of water;
- ❖ Lack of strategic planning and management of resources at both national and basin levels is worsening problems of efficient water use.

Proposed Integrated Approach

- ✓ Integrated water resources management, comprising basically land and water as key components in the context of catchment's management should lead to sustainable development and use of water resources compared to the current fragmented approaches
- ✓ In the project components of water harvesting and irrigation practices, a adaptable intervention should be designed to improve productivity of the agriculture & water sectors in general and land/water in particular, should be considered.

WATER/LAND - BENEFITS: Integrated Planning

- Define area of intervention.
- Describe natural resources: land & water.
- Identify stakeholders: more than farmers.
- Ask stakeholders what the real issues are.
- Find solutions in a participatory manner.
- Take transparent decisions and provide information.



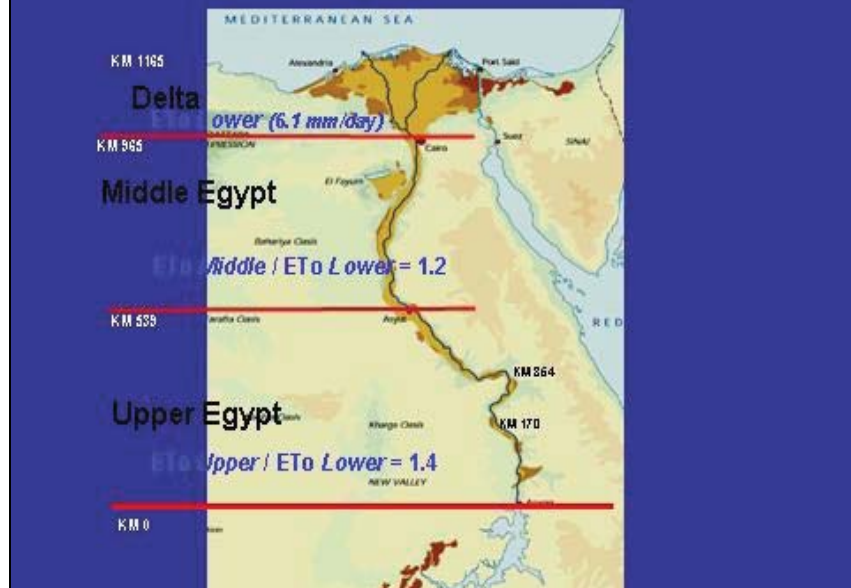
Scope of Work - EGYPT

- The limited land and water resources of Egypt is faced with the challenge of feeding the current and future generation;
- There is much need to increase water/land productivities to meet the increasing needs for agriculture and domestic uses of water.
- In this respect, the current study represents great opportunity to identify Best Practices of some sites (as example) for CMI, PPMI and WH; its activities, expected outputs and possibility of spreading these techniques.
- The main activities is based on community participatory approach for improved crop and water productivity.
- The selection of BP sites based on the scale of the site and the level of cooperation between different stakeholders;

Challenges of the Water and Agriculture Sectors

- Securing water and food supplies
- Meeting basic needs
- Valuing the water & Land
- Shared available resources
- Governing resources wisely
- Protecting the ecosystems
- Managing operational risks

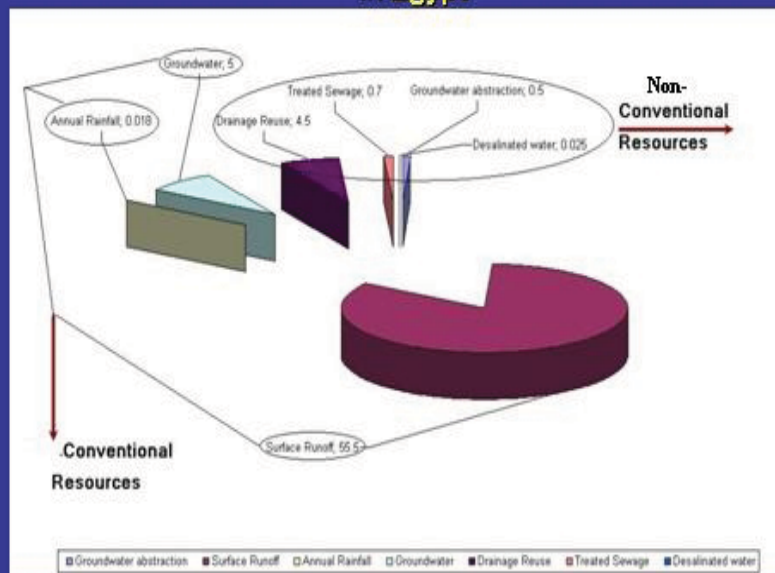
Climatic and Hydrologic regions



Resources - EGYPT	Type of Water Source	Value
Conventional Resources	Annual Rainfall (million m ³)	18.100*
	Surface Runoff (billion m ³)	55.50
	Groundwater abstraction (billion m ³)	0.50
Non-conventional Resources	Shallow Groundwater abstraction (billion m ³)	5.00
	Drainage Reuse (billion m ³)	4.50
	Treated Sewage (million m ³)	700.00
	Desalinated water (million m ³)	25.00*
Per capita share		926*

*Data from FAO Water Report 9, Irrigation in North East Region in Figures, 1997.

Conventional and non-conventional water resources in Egypt



Study Outline – *Checklist format*

- Inventory analysis using the design format
- Full characterization of sites and associate problems.
- Review of available information on water/land use efficiencies.
- Review of current policies and institutional setups.
- Field assessment at selected locations to generate data required for Water and Land productivity and observe the gaps in the available information for improvement .
- Evaluation monitoring and assessment of the adoption and impact of potential options, intervention.

Expected Outputs

- Documents that identify and prioritize the activities and optimum utilization and sustainable production;
- effectiveness on existing policies on allocation and efficient use of scarce resources in the selected sites;
- Find out the gaps in information that need to be bridged by the project activities;
- Impact of potential options/interventions of introduced techniques;
- Providing information that will be used for developing package recommendation to increase water productivity;
- Assessing the impacts and consequences of alternative policies on water use efficiency, institutional impact, food security and social impacts.

Principal steps for Indenting BP Sites

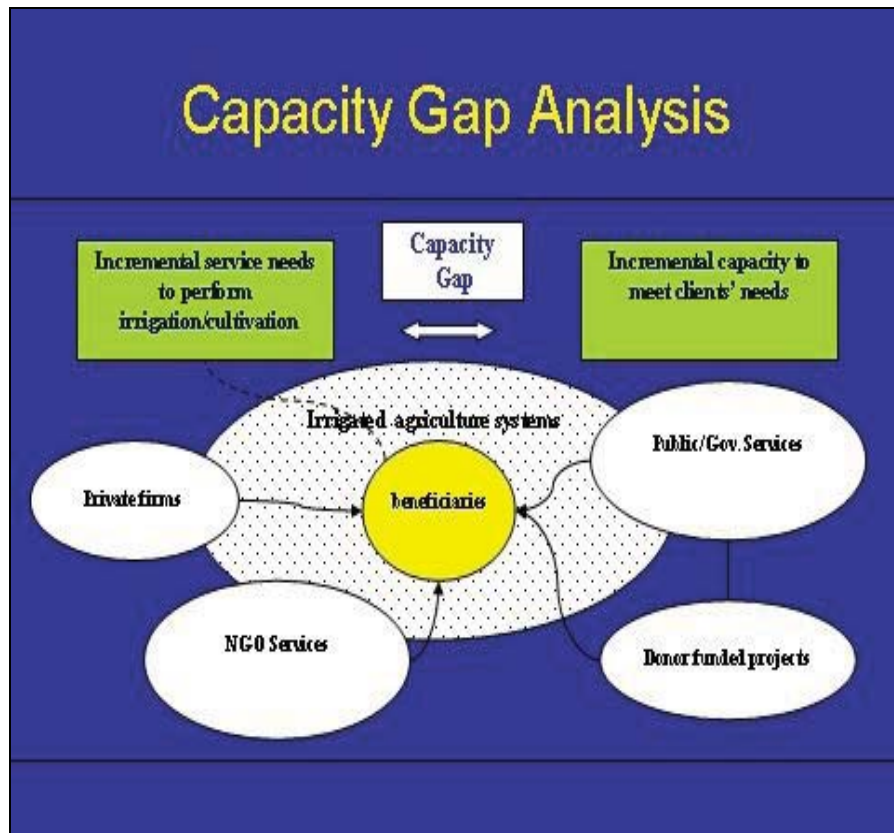
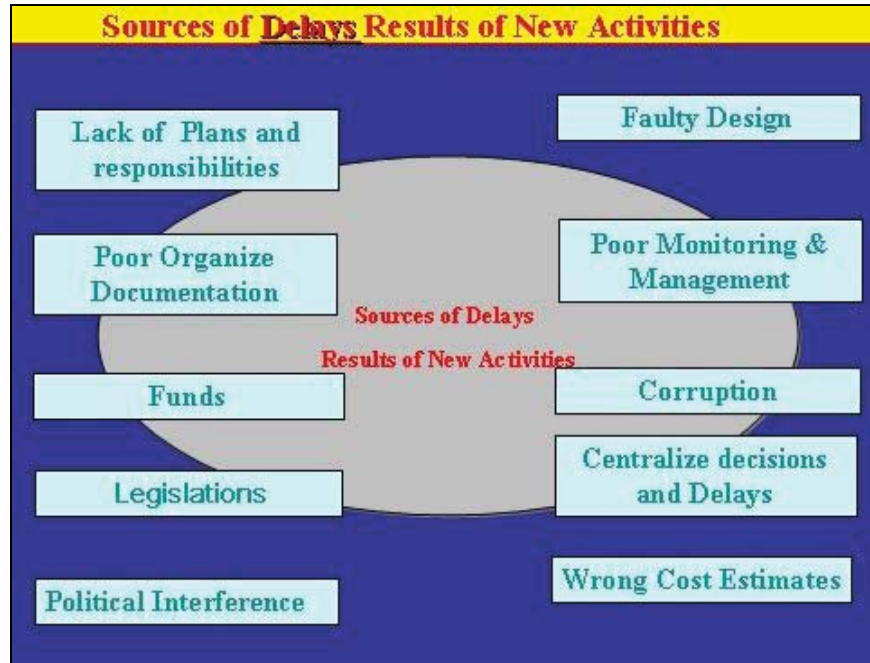
1. Initial analysis of the current operational situation;
2. Identification of current land and water control systems and possibility of improvement;
3. Value-oriented stakeholders and institutional assessment/needs;
4. Participatory assessment of problems and opportunities;
5. Expected participatory impacts for project's sustainability;
6. Evaluation.

Indenting of BP (CMI, PPMI and WH) Sites

Step	Description	Purpose
Step 1	Initial appraisal of the current operational situation.	<ul style="list-style-type: none"> • To identify problem areas within and outside the site area, to describe the issue and provide first evidence of their severity and magnitude; • To approach the problem areas taking a multi-disciplinary perspective.¹⁴
Step 2	Identification of current land and water control systems and possibility of improvement.	<ul style="list-style-type: none"> • To identify landscapes and control systems that affect or is affected by projects activities.
Step 3	Value-oriented stakeholders and institutional assessment/needs.	<ul style="list-style-type: none"> • To identify the current stakeholders and institutions and its resolution. • To identify stakeholder values associated and measure the level of their involvement in the process according to their level of interest.
Step 4	Participatory assessment of problems and opportunities.	<ul style="list-style-type: none"> • To identify/analyze a core problem, its causes and effect on landscape and control systems performance either for smaller large scale project • To identify/describe opportunities and possible water management and land interventions taking into account the technical, managerial and institutional aspect.
Step 5	Expected participatory impact for project's sustainability	<ul style="list-style-type: none"> • To anticipate current and future change concerning landscape (natural resource and functions) and control systems categorized as primary, secondary and higher order to improve wetland use in the site • To investigate possible extension and the proposed link with local government.
Step 6	Evaluation	<ul style="list-style-type: none"> • To assess the impact of proposed wetland management interventions and identified changes on <u>economic, marketing, social, health and environmental values</u> of the stakeholders and the expected return to beneficiaries. • To appraise the appropriateness and social acceptance of proposed interventions against goals of the society.

Disciplines involved include natural resource management, staff, institutional aspects, agronomy, socio-economics, environmental aspects.

14



Global Cultivated Area/ Cropping pattern in EGYPT

• Average Cultivated area 8.30 Million feddans

• Winter Crops:

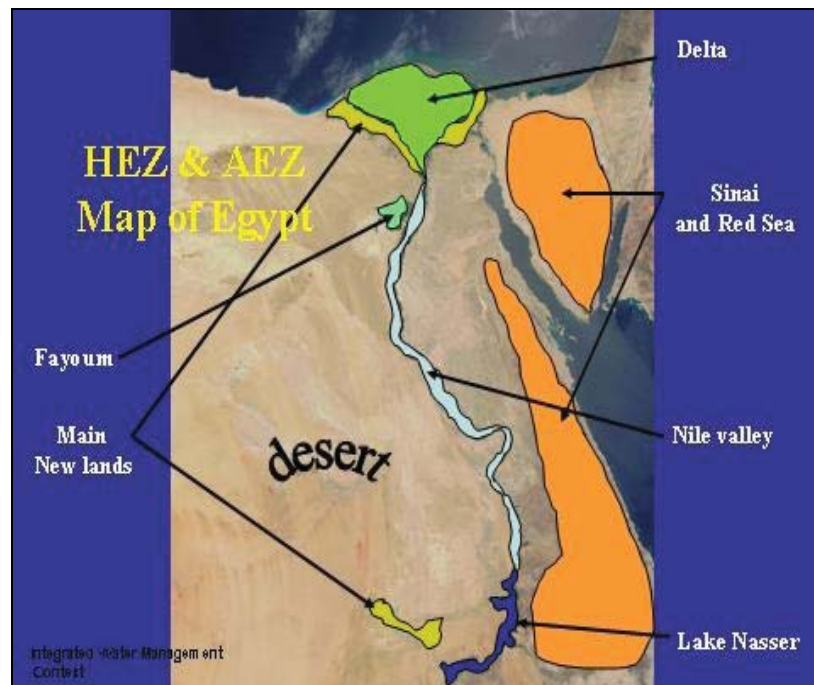
- Wheat 30%
- Clover: 25%
- Vegetables and others: 30%

• Summer Crops

- Rice: 15%
- Maize: 25%
- Cotton: 20%
- Vegetable and Others: 25%

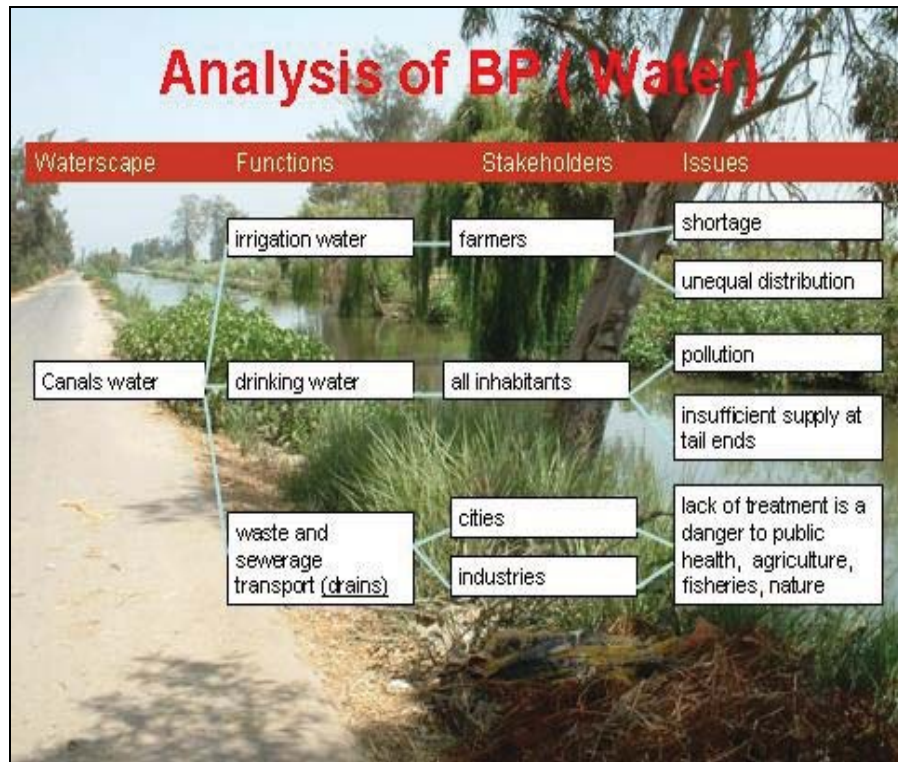
• Permanent crops

- Garden: 10%
- Sugar cane: 3%





EGYPT HEZ & AEZ			
Name	Typifying land parameters	Typifying water parameters	Main management concerns
Lake Nasser	n.a.	volume; water level;	<ul style="list-style-type: none"> ▪ storage and release of water; ▪ spilling peak flow
Nile Valley	rather flat clay soils impervious subsoil	artificial water supply; medium groundwater depth; fresh groundwater;	<ul style="list-style-type: none"> ▪ pump irrigation ▪ Preventing drainage to river ▪ new crop Varieties
Fayoum	Steep slope ; clay soils	shallow and stagnant groundwater; inflow of surface irrigation water;	<ul style="list-style-type: none"> ▪ irrigation by gravity ▪ drainage to lake Garun ▪ water quality ▪ Environmental activities
Delta	flat; clay soils;	fresh to saline groundwater most surface water from Nile	<ul style="list-style-type: none"> ▪ pump irrigation ▪ Improvement of old land ▪ On-farm management ▪ sub-surface drainage ▪ water quality management ▪ salinity control ▪ water depth for navigation

EGYPT HEZ & AEZ			
Name	Typifying land parameters	Typifying water parameters	Main management concerns
New Lands	flat to heaving sandy soils	<ul style="list-style-type: none"> ▪ saline groundwater ▪ all surface water from Nile 	<ul style="list-style-type: none"> ▪ irrigation by groundwater ▪ Modern Irrigation ▪ Modern agriculture machines ▪ drainage for water-logging and salinity control
Sinai and Red Sea	hilly to mountainous steep slopes sandy/rocky soils	<ul style="list-style-type: none"> ▪ some rain ▪ flash floods 	<ul style="list-style-type: none"> ▪ rain water harvesting ▪ new communities ▪ Environmental Impacts
Desert	sand dunes	<ul style="list-style-type: none"> ▪ deep ground water ▪ fresh or saline 	<ul style="list-style-type: none"> ▪ deep wells for irrigation; bottled water ▪ Industrial activities

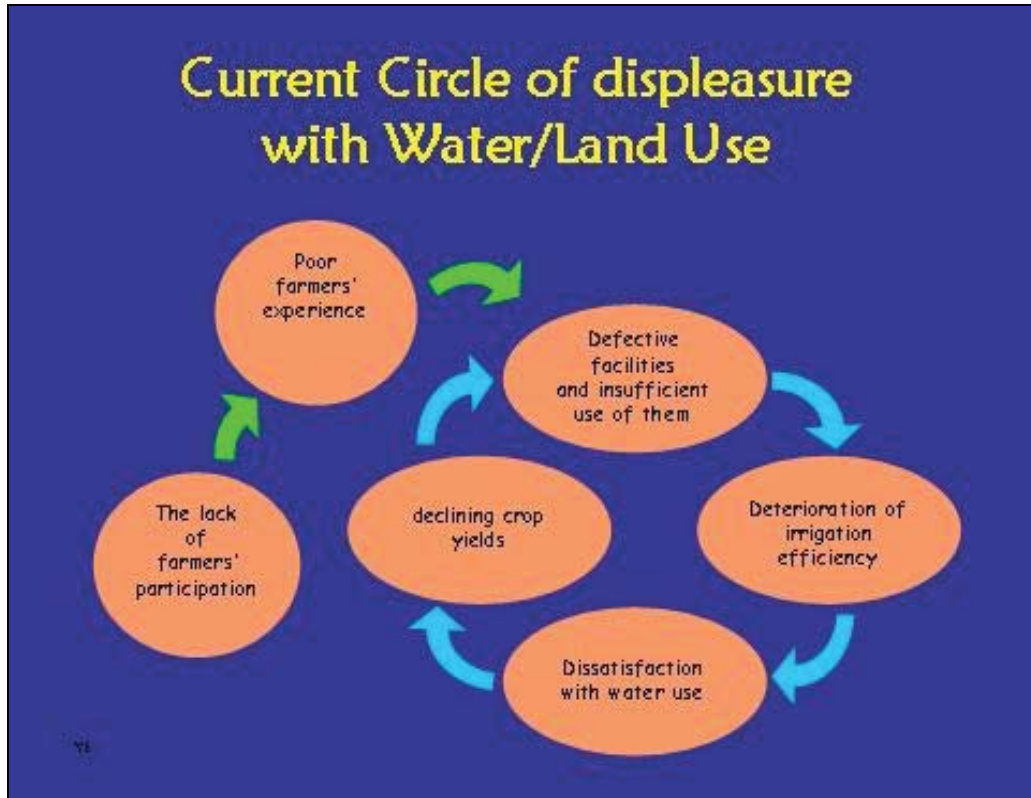


BP Conditions

Quantity and Quality of The produce




- Best value for money
- Best combination of financial and technical aspects of the Water and land development process






Proposed Best Practice Sites of CMI/PPMI



Identification of BP of CMI/PPMI Sites

<p>Bahr EINour</p> 	<ul style="list-style-type: none"> - Example of BP for <u>controlling irrigation water</u> at main canal (automation), sub-branch canal (one lifting point) - Strong formation and operation of WUAs in all levels
<p>W/10 area</p> 	<ul style="list-style-type: none"> - <u>New design/operation</u> criteria at sub-branch and tertiary canals (electric pumps and improving ditches) - Using of available water for irrigation (at the end/D.S of the irrigation system)
<p>Sakha</p> 	<ul style="list-style-type: none"> - Good example for the <u>link between users and research</u> activities to help overcoming region's problems - Place where irrigation and agricultural engineers can test proposed new design/operation criteria.


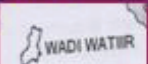


Identification of BP of CMI/PPMI Sites (2)

<p>Sela (Fayoum)</p> 	<ul style="list-style-type: none"> -Activities of large scale operation WUA at district level with proposed cooperation with other agencies and local Gov. - Example for self managed organization (district) in all level of operation.
<p>Dena Farm</p> 	<ul style="list-style-type: none"> - Sample of private sector investment for agricultural project (new irrigation, agriculture and livestock technologies) - Integrated project comprising a model community for integrated agriculture built on progressive scientific and technological foundations
<p>Bani Abad (Menya)</p> 	<ul style="list-style-type: none"> - Good example of small scale and sustainable WUA in tertiary level (for 15 years) - Self-finance organisation - The sire represent the lower part of the Nile valley where different cropping pattern is found.

Proposed Best Practice Sites of WH



Identification of BP of WH Sites

<p>Matrouh</p> 	<p>- Good example for WH of <u>rain water</u> to assist the new community</p> <p>- Well equipped site with good communication with local beneficiaries</p>
<p>Wadi Watier (Sinai)</p> 	<p>- Practice of small scale WH of mountain area to harvest <u>flood water</u> for agriculture activities</p>
<p>Siwa oasis</p> 	<p>- Example of large scale WH as a practice of harvesting/capturing the available low level <u>groundwater</u> in the area to sustain the existing community</p>
<p>Wadi Rayan</p> 	<p>Another example for WH activities by harvesting/capturing the suitable water and reuse of agriculture <u>drainage water</u> for new cultivation and fish-farming to protect Qaroun Lake (Protection region)</p>

System Management Innovations

- **Sustainability of water sources (Durability, Quantity and Quality)**
- **Physical improvement of the delivery system**
- **Implementation of Integrated Water/Land Management**
- **Improve agronomic practices**
- **New operational techniques**
- **Farmers participation (WUAs), and Institutional reform**
- **Decentralization of decision making**
- **Marketing**
- **Improve health condition and general awareness**

INTERVENTIONS:

Water/Land Expected Benefits

- Identify interventions based on sound analysis of problems and opportunities
 - Physical measures
 - Crop Yields
 - Water saving
 - Use of modern irrigation systems
 - Controlled drainage
 - Use of Groundwater .
 - Non-physical measures
 - Awareness , successful cost recovery system, and legislation .
 - Environmental management plan .



Intake of the delivery canal



Individual farmer's pump

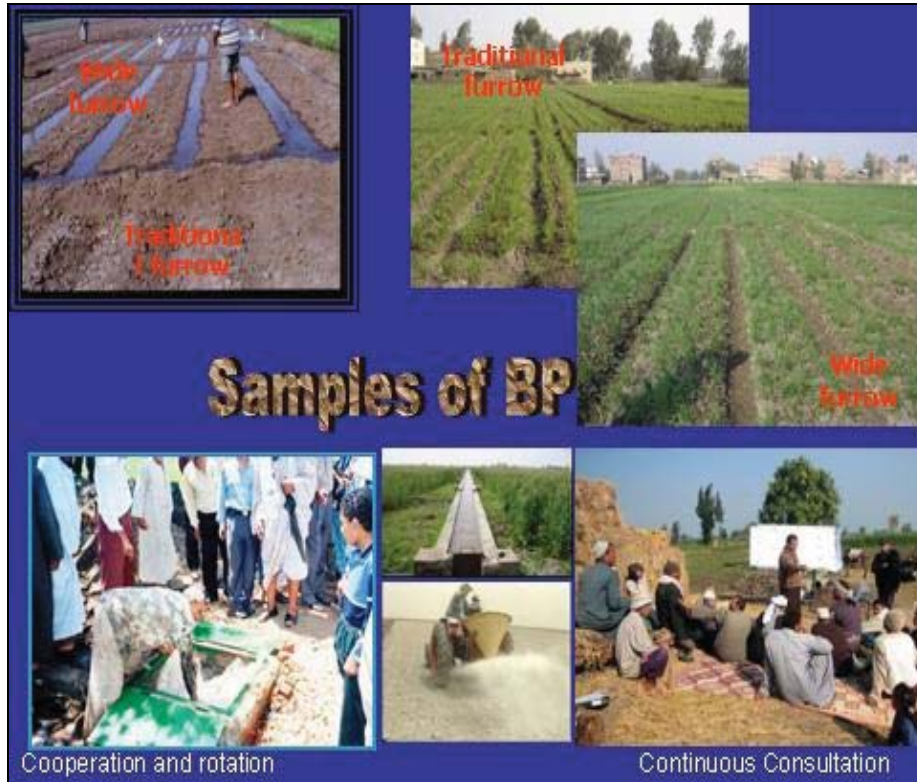


Automatic downstream water level control gate at intake



Single-point pumping station

Samples of BP



Large Scale BP CMI

Project Area : Bahr El Nour Canal



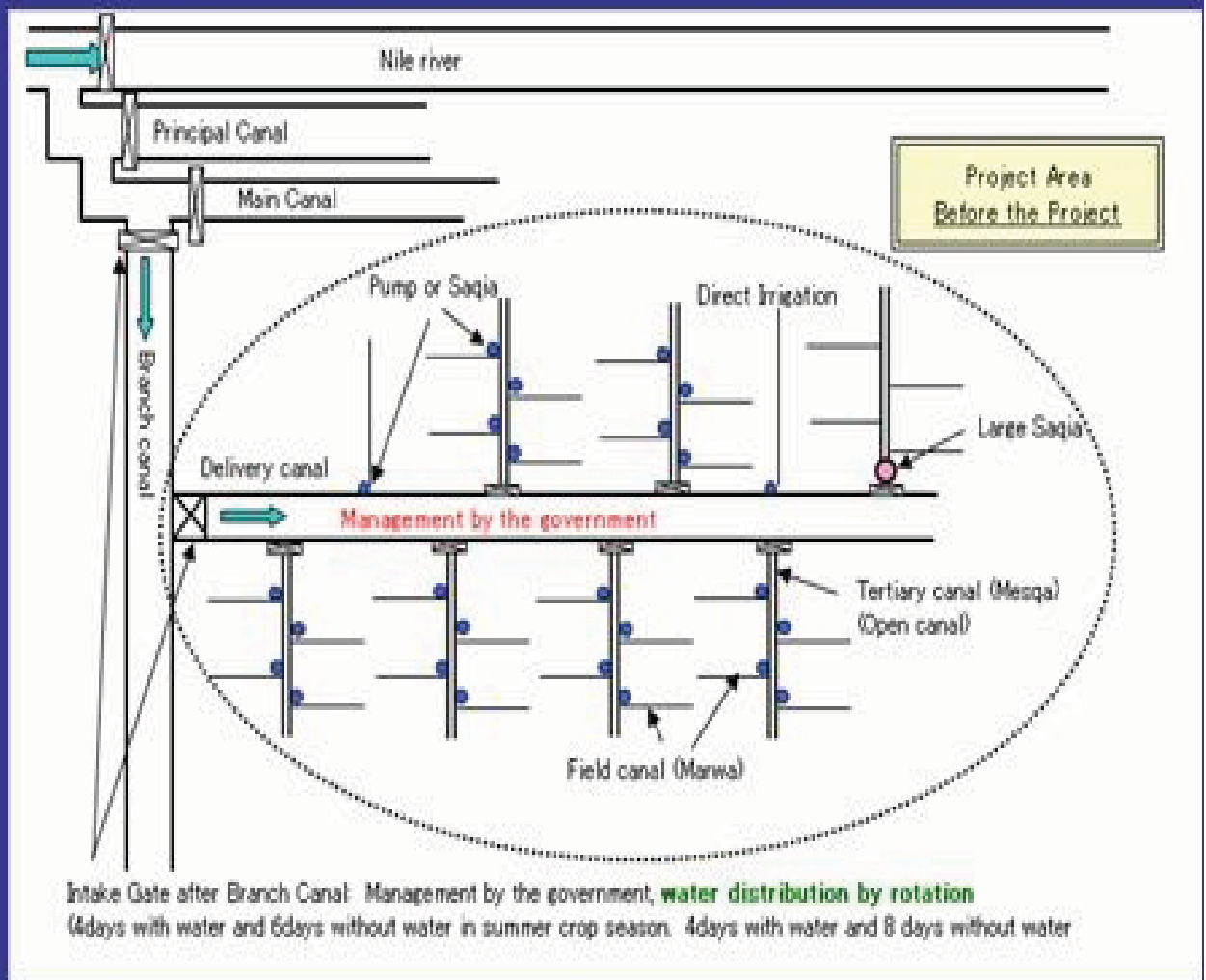
Area: 1500 hectares

Length of delivery canal: 7 km

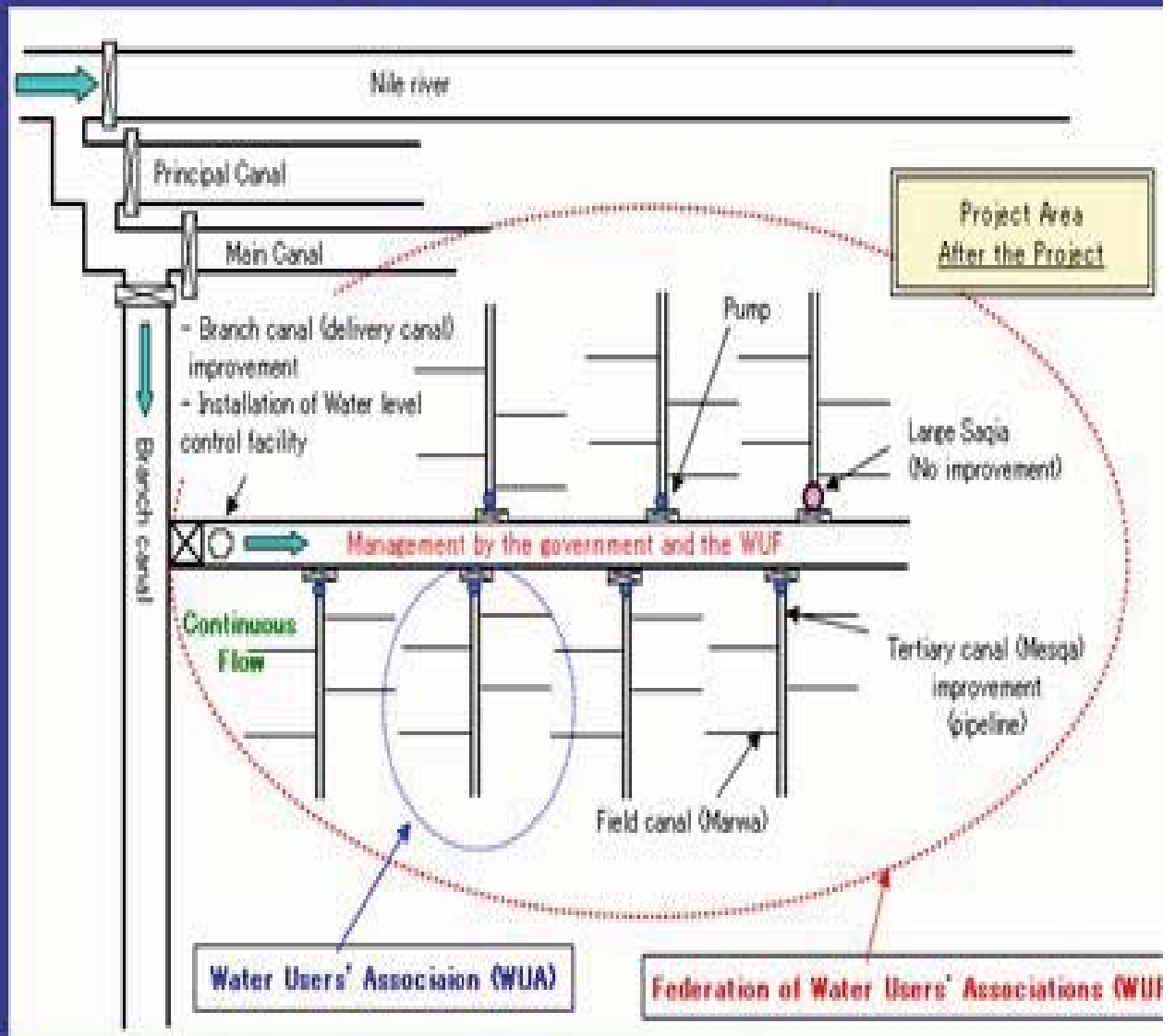
Number of Meskas : 67

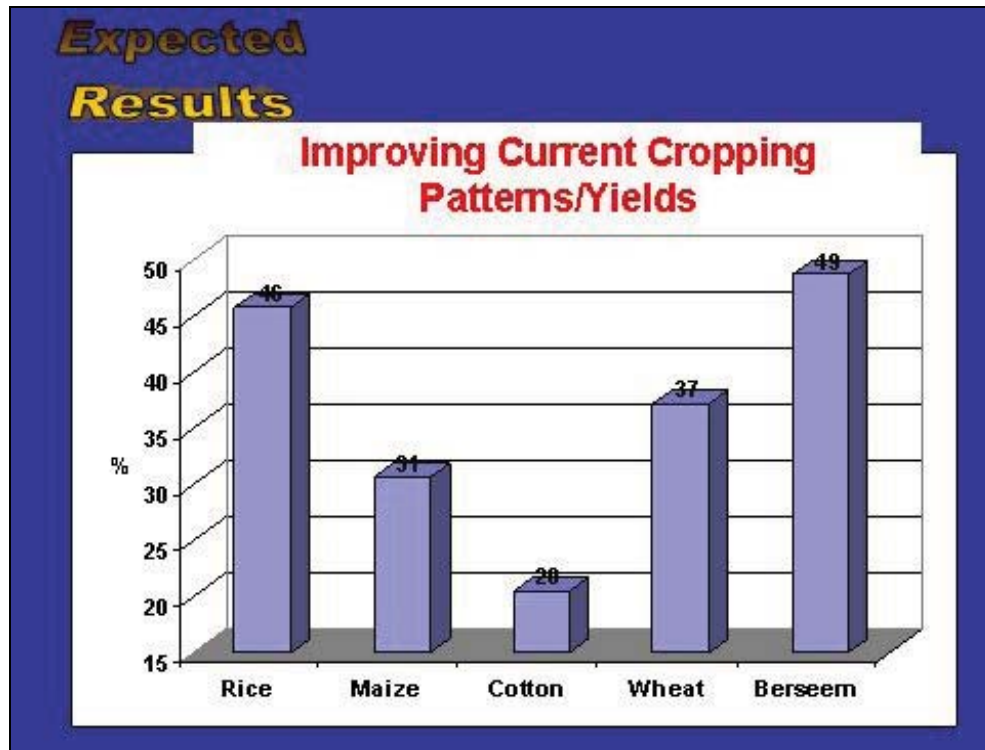
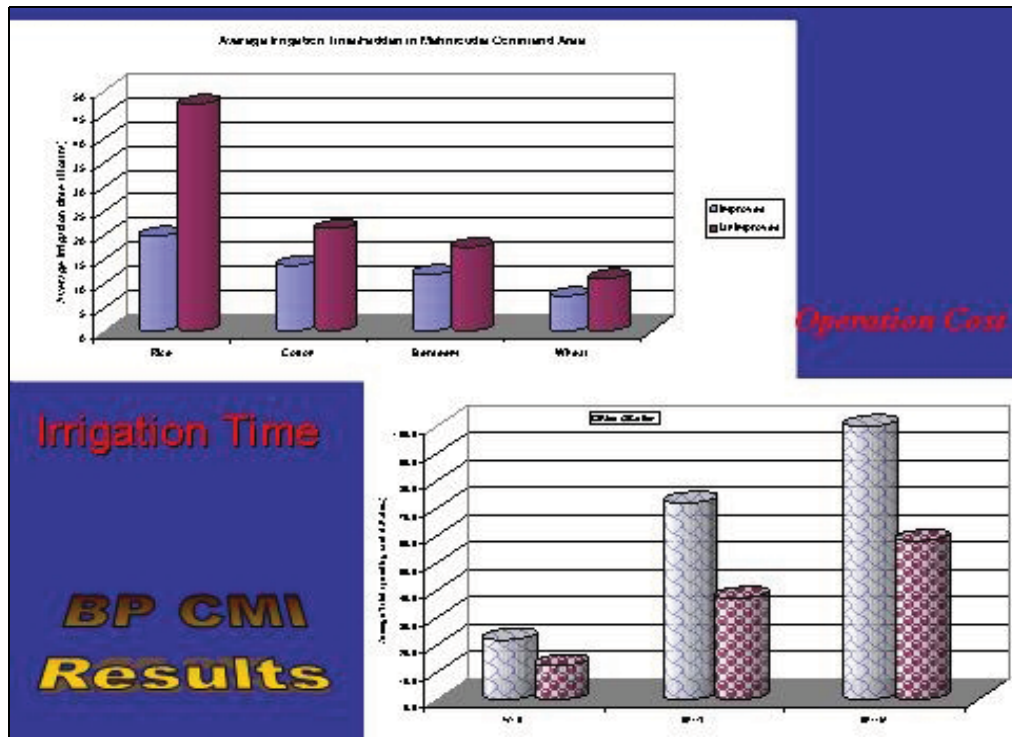
Number of households : 2,600

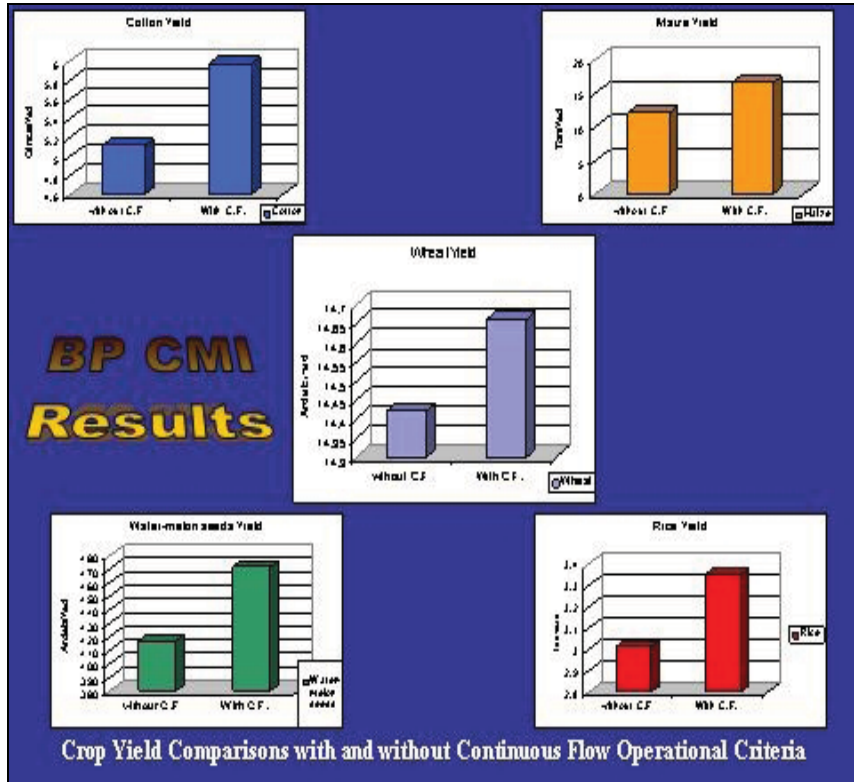
Irrigation System (traditional)



Irrigation System (As BP)







Activities of BP of WH



Up stream of The Valley

Activities of BP of WH



Land preparation for establishing
the micro catchment systems

Activities of BP of WH



Cultivating of Olive trees in improved soil

Activities of BP of WH



Micro - catchment after three months

Activities of BP of WH



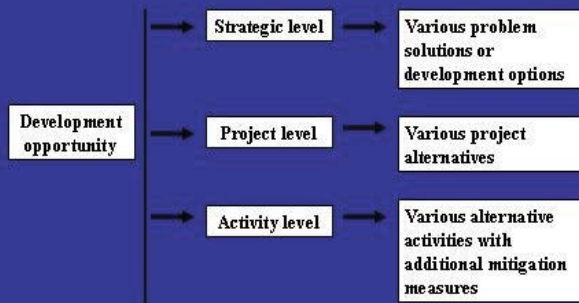
Run off measurement after rain-storm

Activities of BP of WH

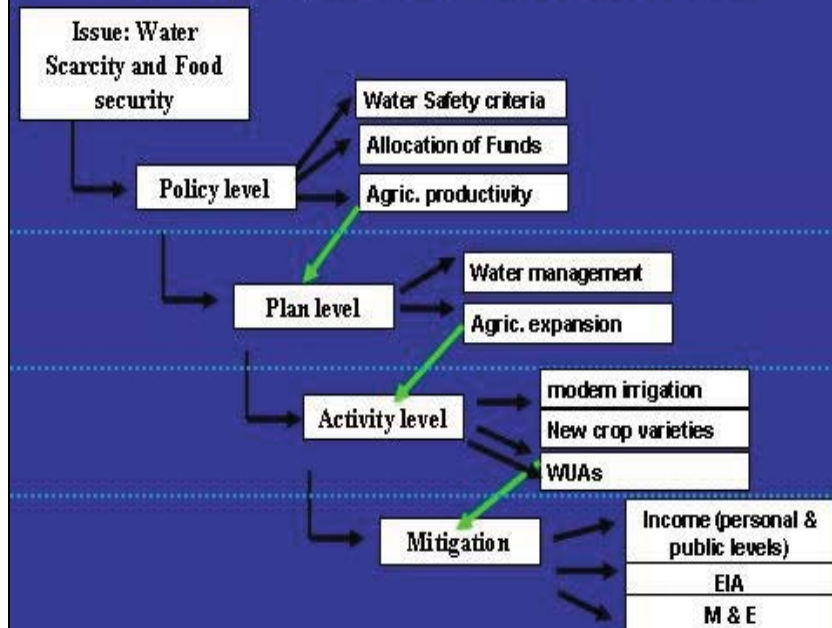


Water spreading systems in the barley area-
Matrouh

Levels of Improving Alternatives



Example, BP of Water/Land



Proposed Institutes for Twinning Activities with EWUAP

- As targeted it is recommended to identify and list national institutions to be considered for twinning activities to organize and conduct capacity building activities and implement field level demonstrations or pilot activities in water harvesting and irrigation;
- There are many centers of excellence which are helping in development of Egyptian Water and Land economy. These centers are belongs to different ministries, Research Centers and Private Sectors. The most important ones are those belongs to; Ministry of Water Resources and Irrigation MWRI, and Ministry of Agricultural and Land Reclamation MALR. Also some Private Consultants companies.

NWRC



Water Management Research Institute (WMRI)



It deals with researches relevant to distribution of irrigation water, modern irrigation systems, assessment of plant water requirements, improvement of the irrigation delivery network, increasing irrigation efficiency and minimizing water losses. Monitoring and Evaluation of irrigation/agriculture schemes and Socio-Economic analysis; (i.e. CMI, PPMI activities)

Water Resources Research Institute (WRI)



It works in the field of water resources development conducting studies on the possible projects to be implemented in the upper tributaries of the Nile River and in the Sinai Region, in addition to the establishment of a complete network of recording devices to be used in designing dams and other control structures, also water harvesting activities in the arid regions; (i.e. WH activities)

ARC



Soils, Water & Environment Research Institute



Conducting studies and researches on: - Soil-water-plant relations, Soil survey and classification, Improvement and conservation of cultivated soils, Soil fertility and plant nutrition, Organic farming, Crop water requirements, Water suitability for irrigation, Designing and evaluation of field drainage networks, Reuse of marginal water in irrigation and Environment; (i.e. CMI, activities).

Field-crops Research Institute



The main goal of the institute is to increase crop productivity and quality to ensure food security, optimize use of natural resources (land & water); and use up-to-date technology to reduce input cost and increase net returns to the farmers; (i.e. CMI, activities).

Faculty of Engineering
Cairo University



Ain Shams University
Faculty of Engineering

The Department of Irrigation and Hydraulics (Cairo-Uni.) is responsible of the following programs:

- Fluid Mechanics
- Hydraulics
- Irrigation and Drainage
- Hydrology and Water Resources
- Harbor and Coastal Engineering.

To provide well equipped facilities required for post graduate research with particular emphasis on topics related to the River Nile, irrigation systems, conjunctive use of Egyptian water resources, open channel and closed conduit flows, water quality monitoring and analysis, and also the environmental impacts of industrial processes .



NILE CONSULTANTS *(Private)*

Nile Consultants is an Egyptian consulting firm specialized in Water Policy and Management, Agricultural Development, Environmental Assessment, and Socio-economic and Institutional Strengthening.

Nile Consultants is working primarily with MWRI/MALR and its different sectors, research centers and authorities. The firm is successfully implementing different consultancy contracts (Land/Water development projects, Socio-Economic, WUA-participatory approaches).

CONCLUSION: **For Successful BP Sites**

- Political and public support is essential
- Realistic investment and service targets
- Appropriate allocation of risks and responsibilities between parties.
- Allocation of Legal land ownership and water rights
- Appropriate institutions, legislations and regulations
- Integrated regional development.

STAKEHOLDERS:

Water/Land Expected Benefits

- Provide accurate inventory of stakeholders based on natural resources functions
- Local
 - Farmers participation
 - Pollution control
 - Improving Income
- General
 - Improving values of unit of Water and Land
 - Good Example
 - Positive Environment



Summary

- ✓The whole concept of efficient use of water should be viewed broadly in relation to performance of the agricultural sector where the interaction of land, water, and inputs along with best management practices is important.
- ✓To achieve the sustainable socio-economic development and benefit from the available Nile water resources: Cooperation and development with proper planning and management of water resource, environment, building capacity and involvement in actual field level investments are recommended.

Summary

- ✓ The conceptual framework for this multi-disciplinary rapid assessment of best practice study is aimed to identify range of technologies and criteria to be included in BP sites.
- ✓ It is based on proposed active participation of stakeholders (people and relative institutions), and
- ✓ It appreciates the mixture of water resource use and management situations that exist in each site .

BP of Water/land projects



A new generation of stakeholders with better Environment



ANNEX 4: (National Consultation ToR)

NILE BASIN INITIATIVE

EFFICIENT WATER USE FOR AGRICULTURAL PRODUCTION (EWUAP) PROJECT

TERMS OF REFERENCE (TOR) TO

IDENTIFY, LIST, DOCUMENT AND DESCRIBE BEST PRACTICES, PROFILE SITES OF BEST PRACTICES, PREPARE INVENTORY OF INSTITUTIONS FOR TWINNING ACTIVITIES, AND IDENTIFY GAPS IN ANY EXISTING GUIDELINES IN THE AREAS OF WATER HARVESTING AND IRRIGATION

1.0 Background

Agriculture, in general, plays a significant role in the livelihoods of households in the Nile Basin contributing greatly to economic growth and Gross Domestic Product (GDP). On the other hand, compared to the other sectors, agriculture is the main consumer of water. The riparian countries rely on the waters of the Nile River for their basic needs and economic growth, or have desires and expectations of harnessing the Nile for development activities. The agricultural sector is the dominant user of water in the basin but the luxurious and unchallenged use cannot be continued because of growing and competing demands from other sectors. There is a growing pressure to reduce the amount of water allocated for agricultural production mainly because of increasing demands from expanding urban centers, industry, mining, recreation and tourism. Agriculture is, therefore, expected to produce more crop per given volume of water if the system is to be sustained as a viable activity. Such a growing threat can best be addressed in a comprehensive way by collectively dealing on the subject at a basin level.

The Efficient Water Use for Agricultural Production (EWUAP) is one of eight projects of the Nile Basin Initiative's (NBI) Shared Vision Program (SVP). The EWUAP project is desired, therefore, to be a first step in bringing together the regional and national stakeholders in the riparian countries to develop a shared vision on common issues related to the increase of the availability of water and its efficient use for agricultural production.

The main thrust of the EWUAP Project is to establish a forum to assist stakeholders at regional, national, and community levels to address issues related to efficient use of water for agricultural production in the Nile Basin. The forum is expected to foster exchange of experiences furthering Nile cooperation by enhancing mutual confidence and providing a critical building block to the sustainable utilization of Nile waters. The EWUAP project will provide an opportunity to develop a sound conceptual and practical basis for Nile riparian countries to increase the availability and efficient use of water for agricultural production. The EWUAP is expected to meet its project objectives by bringing together regional and national stakeholders to have a common view and understanding on ways and means of improving water use in the sector and develop a shared vision on common issues. The project will create a framework to promote basin-wide cooperation and awareness, and build limited capacity by focusing on some of the common issues related to water harvesting and irrigation. The project will help establish forums to discuss broad development paths for the Nile Basin with a broad range of stakeholders; improve the understanding of the relationship between water resources development and agricultural activities; enhance basin wide cooperation and raise agricultural management capacities of basin wide institutions.

Expected key outputs for the project are as follows:

- Establishment of regional dialogue on Water Harvesting (WH);

- Strengthening of regional consultation on Community-Managed Irrigation (CMI) and enhancement of overall awareness on efficient water-use;
- Strengthening of regional consultation on Public and Private-Managed Irrigation (PPMI) and the enhancement of awareness on efficient water-use;
- Exploring and disseminating best practices in water harvesting, community and private-public managed irrigation;
- Building national capacity for a sustainable management of water harvesting and irrigation practices; and
- Providing national level support for agriculture, water harvesting and irrigation policy development.

The improvement in water use efficiency has to be supported by knowledge and information sharing and this requires identification, documentation and dissemination of technologies and best practices from within and/or outside of the basin. Sharing of information could also be effected through study tours and field visits to sites of best practices with proven track record in terms of using technologies. In line with this, the EWUAP project would like to engage national consultants who will be involved in the identification, listing, description, and documentation of best practices and related best practice sites or centers. This is basically a desk review work supported by a targeted field visit, if deemed necessary. The consultancy will also include identification of key institutions/organizations in the agricultural water sectors, characterize the institutions, and describe their capacities to serve as national and/or regional partner for future joint activities.

2.0 Objectives of the Study

The main objective of the assignment is to identify and document best practices, sites of best practices, and list and provide a profile of potential institutions. The specific objectives of the study are to:

- Identify, list, and document best practices in the areas of Water Harvesting, Community-Managed Irrigation, and Public and Private-Managed Irrigation nationally;
- Select few preeminent practices from the list of best practices and technically provide a profile or detailed description of the preeminent practices;
- identify best practice sites for water harvesting, community managed irrigation, and public and private managed irrigation
- profile the selected best practice sites with indigenous and/or modern techniques since a selected number of these sites will be targeted for visits by national and/or regional practitioners for the exchange of experiences, and share of knowledge and information on the best practices on water harvesting, community managed irrigation and public private irrigation
- identify and list national institutions to be considered for twinning activities and then select and recommend few and provide a detailed profile description of these institutions with potential to organize and conduct capacity building activities and implement field level demonstrations or pilot activities in water harvesting and irrigation;

3.0 Study Location and Methodology

The required study and documentation activity will be carried out independently and concurrently in all nine riparian countries (Burundi, D. R. Congo, Egypt, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda). The national Consultant is expected to perform a desk review of documents, consult experts and resource persons, and if reckoned necessary

make selected field visits and provide an overview and overall picture of the existing best practices, best practice sites, institutions with capacity for partnering in future activities related to water harvesting, community managed irrigation and public private irrigation with greater emphasis on efficient water use and productivity of water. Most of the required information in terms of best practices and associated sites as well as the potential institutions is believed to be documented and available with appropriate ministries, international agencies, institutions of higher learning, national, regional and international research organizations, NGOs, and many others.

4.0 Scope of Work

The requirements of EWUAP project are ambitious and cover the whole of the Nile Basin and member countries. It is divided into three main Components:

- (i) Water Harvesting (WH)
- (ii) Community-Managed Irrigation (CMI)
- (iii) Public/Private-Managed Irrigation (PPMI)

Following on from the initial work on capacity building, training and awareness creation, in mid-2007 the project undertook Rapid Baseline Assessment (RBA) studies in almost all of the Member States using National Consultants. These reports provided an overview of the current status in each of the NBI countries and are now being finalised. EWUAP Project now wishes to expand and elaborate upon these RBA studies to establish for each Member State a list of sites suitable for illustrating best practices for all three main Components. This will be again undertaken through National Consultancies in each country to identify sites where interventions can be considered successful and that could possibly serve as examples of best practices associated with efficient water use in the sector for wider dissemination and training. For the greatest impact, it is important that the sites identified cover the full spectrum of technologies under different agro-ecological conditions available in each participating country.

To achieve this objective, and as part of the assignment, the Consultants will be required to complete fact sheets and details on each of the identified and recommended sites of best practice. These will be provided using standard formats, the outline of which will be provided to the Consultants on contract signature. In addition to this, further information will be needed and a minimum list of data requirements will also be provided on contract signature. These will include amongst other data, maps of Agro-Ecological Zones (AEZ) and definitions/properties used by each country, a list of all CMI and PPMI schemes and an inventory of organisations involved in RWH including type of intervention and location.

EWUAP Project has developed draft criteria for defining best practices. In general this includes those projects or sites that are sustainable and could be used to show wider replicability of the technical, management, economic and social issues involved.

When preparing the long and shortlist for possible projects that will meet these criteria, it is important that a matrix is prepared showing how the schemes have been selected and a ranking process developed to reach the priority list of best practice sites.

Based on the background information, project documents and details contained within the Rapid Baseline Assessment reports, the Consultant will undertake the following within the context of the above study objectives:

- ❑ Review the draft criteria of potential for best practices in the context of the country of study, using the three main project Components (water harvesting, community managed irrigation and public/private irrigation).
- ❑ In consultation with EWUAP/PMU agree and finalize criteria for best practice appropriate for the work to be undertaken in this study, and prepare a system for ranking and prioritizing of sites and schemes;
- ❑ Collect additional basic data from secondary sources to support the preliminary identification of the sites and to confirm the long list of best practice sites (EWUAP-PMU will provide formats and minimum requirements for this on signature of contract);
- ❑ Using the established and agree criteria, identify the range of technologies and criteria to be included in sites for best practices and establish a long list together with ranking values in order to determine a final shortlist for each country.
- ❑ Evaluate impact of the techniques on overall efficiency of water use in agriculture production, establishing how this is assessed and by providing support data and assessments;
- ❑ Prepare a final shortlist of potential sites by Component (WH, CMI, and PPMI) that can be considered for illustrating the implementation of best practices as well as for training purposes both nationally and within NBI;
- ❑ For each of the short listed sites, prepare a detailed description according to an agreed format/checklist to be provided by the EWUAP-PMU on contract signature. This will include basic technical and physical details of the site, before and post project intervention situations including such key indicators as water use and productivity, management, operation and maintenance of the systems and the reasons why this site has been successful, why it has been chosen to illustrate best practices and the lessons learnt that can be applied to other areas;
- ❑ Analyze and identify any gaps within existing guidelines on WH, CMI, and PPMI and prepare proposals for completing the guidelines considering the in-country experiences;
- ❑ Evaluate limitations and opportunities of the described techniques for replicability and scaling up;
- ❑ Participate in a 1-2 day discussion workshop to present the draft findings and details together with the Consultants from other member countries and representatives from NBI and the EWUAP;
- ❑ Following the workshop, finalize the details on best practice sites taking on board the results of the workshop discussions and the review of the initial reports and presentations made by EWUAP-PMU;
- ❑ From the initial short list of National Stakeholders provided in the RBA reports, and expanding on this list where necessary and appropriate, identify, list, and describe potential institutions to be used in organizing and conducting capacity building activities and field level demonstrations and dissemination of technologies/best practices in the fields of water harvesting and irrigation listing their experiences and previous involvement in such work and the roles that they could fulfill.
- ❑ Prepare a report that summarizes the results of the above that is supported by annexes that contain full details of all supporting data, calculations and justifications;
- ❑ Provide a complete list of references utilized in this study (and electronic copies where available) to include both published project documents, working papers and project reports that may be unpublished but available within the country.

The consultant must keep in close contact with the PMU and establish a work plan for approval at the start of the assignment. On signature for the assignment, EWUAP Project PMU will furnish the Consultant with draft formats and guidelines for the compilation of data as well as a report outline for presentation of the results of the study. It is envisaged that the BP sites will be first identified from available documentation and discussion with responsible organisation and donor/funder. This will then be followed up by a limited number of sites visits to selected areas. Where possible, the field trip should combine potential Best Practice sites for more than one Component (WH, CMI and PPMI).

Duration of Assessment Work and Deliverables

The duration of services for the proposed country level assessment on best practices, guidelines, and identification of institutions has been estimated as four weeks time (up to 28/29 working days). If the Consultants consider that additional time will be required, then this should be set out in their proposals and programme.

The national Consultant will be selected from existing short list and/or a list supplied by TAC members. Project Steering Committee (PSC), and National Project Coordinators (NPC) will conduct the assessment work based on the final agreed estimates of time frame and programme based on the proposals prepared and submitted by the consultant.

5.0 Expected Outputs

A comprehensive assessment report(s) identifying, listing and describing best practices / technologies, best practice sites (centers of excellence), and appropriate institutions of the country. Each of the tasks set out under the scope of work above will be regarded as deliverables.

6.0 Monitoring and Supervision

This will be carried out by the PMU and the respective National Project Coordinators (NPC) in each of the Nile basin countries. Supervision and guidance will come from the NPC but in consultation with the Project Steering Committee (PSC) member and the Working Group members from the country. The services of the WH, CMI, and PMI Working Groups might also be used to provide invaluable assistance in guidance and technical inputs.

7.0 Methodology and Standards

The Consultant will be expected to employ the most effective methodology to achieve results. This study will basically involve a mixture of desk review work, consultation with relevant professionals, experts and resource persons, and when appropriate field visits;

In addition the Consultant is expected to:

- Participate and contribute during the inception workshop,
- Collect most of the data from existing primary and secondary sources,
- Use credible support staff in data and information collection,
- Prepare clear and concise reports,
- Make sure that the reports are delivered on the specified date(s),
- Communicate any unforeseen deviation from the agreed consultancy plan immediately, with clear justifications and proposed remedial course of action

9.0 Reference Documents

The following documents would be availed as reference background material:

- i. Project Appraisal Document(PAD);
- ii. Project Implementation Plan(PIP);
- iii. Country based Rapid Baseline Assessment report;

- iv. Technical note on criteria for best practices on water harvesting, community managed irrigation and public private irrigation

10.0 Time Frame

The proposed assessment work will commence on or about 25th October 2007 and be completed by the last week of December 2007 (Up to 25 working days).

11.0 Renumeration

The Consultant will be remunerated in accordance with the standard/official UNDP rates for National Consultants in each of the respective Nile basin countries. Reimbursable expenses will be made according to an agreed and approved plan

12.0 Qualifications of the Consultant

- Advanced degree in water resources management, agriculture, irrigation , or related fields of study;
- Extensive experiences in water harvesting, irrigation (small and large scale), watershed management, crop and livestock production;
- At least ten years of experience in agricultural production, soil & water management, irrigation and natural resources management;
- Excellent knowledge of the agriculture practices, irrigation aspect, efficient use of water, and general environmental issues;
- Experience working in the country, particularly in the watersheds of the Nile River is an added advantage.
- Fluency in spoken and written English; knowledge of French an added advantage.
- Excellent presentation and communication skills.
- Excellent analytical skills.
- Good computer skills.
- Experience in having worked with/for an international or donor organization is an advantage.