CAPACITY BUILDING, A PRECONDITION FOR SUSTAINABLE PARTICIPATORY IRRIGATION MANAGEMENT IN EGYPT

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ABSTRACT

In Egypt, the National Irrigation Improvement Program which is at present time emerging from the pilot scale to the national level has taken participatory Irrigation Management into account through the formation of Water User's Associations and the Irrigation Advisory Services. Of particular importance at the secondary and tertiary level are the measure taken for a bottom-up approach to water user group formation and an extensive training program for farmers and Irrigation Advisory Services staff. These two packages are seen as complementing the process of farmers participation currently in progress under the National Irrigation Improvement Program. This paper highlights Egyptian experience in Participatory Irrigation Management and goes on to discuss the state of the art and contraints for the improvement of capacity building with special emphasis on the role of training.

RÉSUMÉ

En Egypte, le Programme National d'Amélioration de l'Irrigation, qui est en train de passer de la phase de projet pilote à celle de projet au niveau national, a pris en compte la Gestion de l'Irrigation participative à travers la formation d'Associations d'Utilisateurs de l'Eau et des Services Consultatifs de l'Irrigation. Une importance particulière, au niveau secondaire et tertiaire, est revêtue par les mesures prises pour une approche allant du bas vers le haut pour la formation de groupes d'utilisateurs de l'eau et pour un programme extensif de formation adressé aux agriculteurs et au personnel des Services Consultatifs. Ces deux paquets sont complémentaires au processus de la participation des agriculteurs qui est actuellement en cours dans le cadre du Programme d'Amélioration d'Irrigation National.

Ce travail rapporte l'expérience égyptienne dans la Gestion Participative en Irrigation et présente l'état de l'art et les contraintes à l'amélioration du développement des compétences. Il souligne, en particulier, le rôle de la formation.

In most developing countries, irrigation development projects and their operation and management are heavily dominated by the public sector. Conventional wisdom has assumed that only the state is capable of handling large modern projects requiring heavy capital investment, complicated technical inputs, the legal mandate to distribute water and collect fees.

Recent experience challenges these assumptions. Government operated irrigation systems are often poorly maintained with steadily deteriorating infrastructure.

Yet some of these same systems show dramatic improvement when their management is transferred to Water User Associations (WUAs), which have taken the responsibilities for operating and maintaining the system of on the mesqa level. In Egypt, the concept of Participatory Irrigation Management (PIM) is not new.

The Ministry of Public Works and Water Resources (MPWWR) has been involved in WUAs for a long time. WUAs at the tertiary or mesqa level have been functioning in many areas for many years. An Irrigation Advisory Services (IAS) worked with WUAs providing water management technical assistance in the scheduling of water deliveries. The IAS established a water management program to monitor and evaluate the water management activities of the WUAs. Cost sharing was provided for demonstration land leveling to introduce the farmers to the water management benefits of land leveling. These benefits include: better uniformity of water distribution, less time and water required and increased crop yields. Training programs were designed to meet PIM objectives. Package training techniques had been carried out for training of farmers and WUAs members. Technical manuals and other reports and publications were prepared for the use of IAS staff in carrying out their job responsibilities.

ROLE OF THE IAS AND WUAS IN IMPROVING WATER MANAGEMENT

The MPWWR established the IAS and WUAs to implement the activities necessary for irrigation improvement. IAS has been authorized and established in each irrigation improvement project directorate. The capability of IAS was developed to organize and activate WUAs and to provide water management information and technical assistance to water users. The IAS organized the WUAs, assisting them in planning mesqa improvements and provided them with training and water management intervention assistance. Water users on about 1100 mesqas were organized into fully operational WUAs. The WUAs are responsible for planning improvements and for operating and maintaining the improved mesqa The IAS held a series of WUAs training events and trained about 9000 WUAs leaders in pump-mesqa management, financial management, pump-mesqa maintenance, water management, registration of WUAs and cost recovery. The legislation for legalizing the organization and registration of WUAs was passed in June 1994. The bylaws were approved and the Minister of MPWWR issued the decree to implement the legalization in January 1995. All WUAs have been legally au-

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thorized and registration has begun. **Figure 1** gives the number of improved mesqas for each of the irrigation improvement project command areas. The legislation for the mesqa cost recovery program was passed in June 1994. The bylaws were approved and the decree to implement the cost recovered so these funds can be used to finance system improvements. **Figure 2** summarizes the renovation accomplishments for irrigation improvement project command areas.

Capacity Building for PIM

Capacity building consists of two elements, capacity and building. Capacity concerns the ability of a society to respond adequately to changing conditions. Capacity building is the process of gaining technical, managerial and institutional knowledge and insight in relation to the socio-economic structure, cultural standards and values of the society concerned. It aims to increase the flexibility of institutions and the society to adapt to the changing circumstances. This contribution describes the adaptation of the Egyptian rural society in the course of time to the new approach of participatory irrigation management. In Egypt, the historical context of informal water users groups provide some potential for building strong formal WUAs. Traditional "sakia rings" or water lift systems from mesqas below field level have been useful methods for organizing water deliveries. These "sakia rings" are owned, controlled and operated by water users. They also use definite share principles in allocating water, responsibilities and costs. Another important historical precedent for private WUAs is found especially in places where water is delivered at the mesqa-level by gravity flow. The mesqa organizational unit is known as the "Ràis el Munawabaa system" and has a "Mowaz el Fatha" who is chief or leader of the local organization. He draws up the list of water users, their responsibilities related to the schedules of turns based on a time share basis for irrigations, operations and maintenance responsibilities and collects fees and fines. He also arbitrates conflicts which may arise and works with the heads of smaller units known as "tarafs" for mesqa cleaning and maintenance. The point is that the Haq el Arab and islamic concepts, though weekend through the years, have provided a good foundation for capacity building and maintaining strong farmer participation in irrigation management.

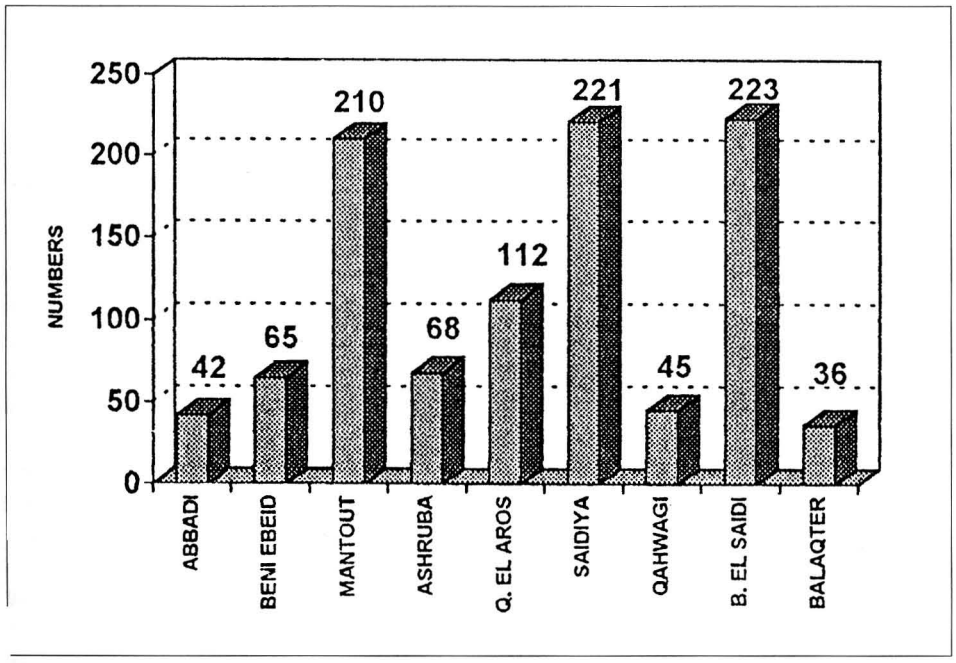

Figure 1 - Mesqa improvement (1989-1995).

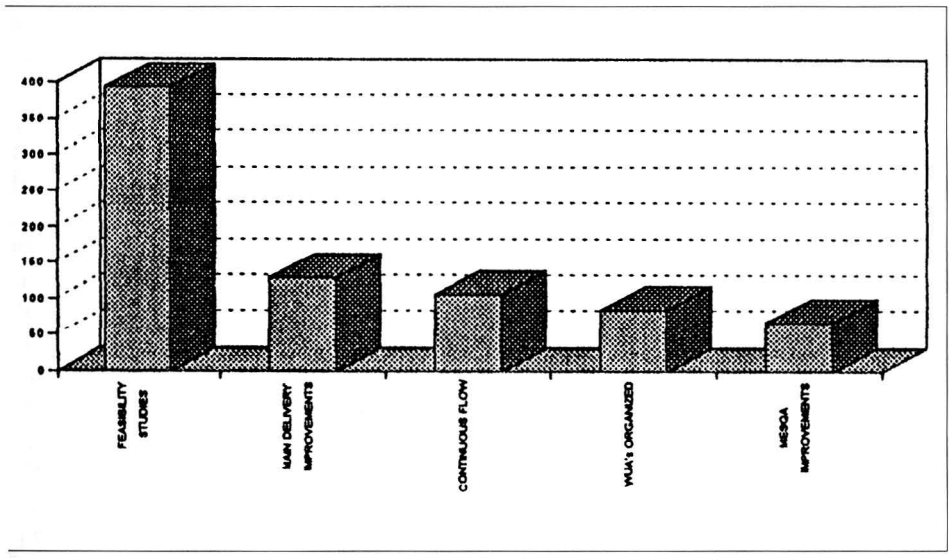

Figure 2 - Renovation accomplishments (1989-1995).

Participants Training Needs

In the context of PIM some of the key training needs for implementing PIM program for IAS, association leaders, and farmers are:

- WUA formation
- WUA management
- Farmer's rights and responsibilities
- Role and responsibilities of IAS

• Water management

To cover these needs the training content in general needs to cover: committee functions and responsibilities; finance, accounting and auditing; setting and collecting irrigation service fees; managing farmers meetings; conflict resolution; organizing system maintenance; facilitating community participation and cooperation; establishing rights and responsibilities; negotiating with water supply authority, negotiating with other farmer's groups; establishing required levels of service provision, legal and institutional aspect; measuring and paying for provision of irrigation services. Annexes A and B list the action memoranda for training and other details for the numerous courses that were held for WUAs, farmers and IAS staff. The total number of training participants was about 12000. This was distributed as shown in **figure 3**.

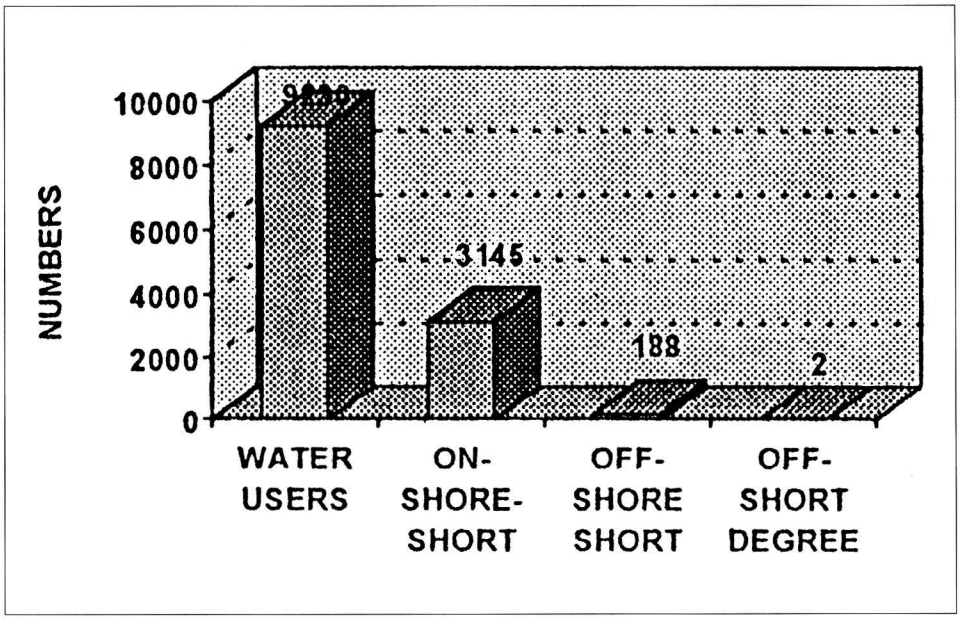

Figure 3 - Training participants (1989-1995).

Training Techniques

A variety of training techniques have been carried out for training of the WUAs leaders and farmers. These include:

- Soft system methodology.
- Rapid rural appraisal.
- Community participation techniques.
- Practical exercises.
- Negotiation.
- Visits to other WUAs and villages.

Technical manuals were prepared for the use of participants; these include:

- Technical manuals on mesqa planning, mesqa operation and mesqa maintenance.
- Irrigation Management trainer guide.
- Several technical guides for field agendas.
- Technical manual for on-farm water use improvements.
- Handbook for WUA leaders.

Learning process for building strong WUAs

A learning process is an approach in organizational development which uses lessons learned to continually improve the program of building strong local organizations where members have complete ownership. Basically, as now knowledge is gained from field experiences, these are used as feedback to inform and improve program effectiveness. This approach is significantly different from any used by the MPWWR previously.

The learning process approach is vastly different from a conventional planning approach which often assumes that all information and activities needed to solve known problems exist. It is much more than simply implementing a standard plan or format in every place. To clarify, there is no known "model" or "blue print" for organizing WUAs. In contrast to building irrigation structures, many of the problems confronted in organizing water users and their solutions are not known in advance. Also, what may work with one group of water users on a canal command and water users on different canal commands may not prove to be effective elsewhere. Why? Because there are so many human or social organizational variables as well as physical variables involved. In every place lessons must be documented, learned and applied in a flexible process of organizational development.

As lessons accumulate, certain principles and approaches emerge which can be more widely tested and applied where found useful. This means that no single work plan can be developed for all mesqas on a canal command or for all directorates. Each field agent must work with WUAs to develop their own plans of work and be ready to revise and improve these depending on changed conditions and the needs of the WUAs. Likewise, IAS technical professionals and other irrigation engineers, as well as top Ministry officials must be flexible in policy and program decisions. While there are valuable lessons to be learned from other countries which will prove useful for Egypt, these must be carefully evaluated and tested before applying them on a wide scale. There are many principles which have

ANNEX A

Table 1 ***Farmers' training courses.***

Training courses	Time of training	Trainee	Trainers
1. General Training Rehabilitation-Irrigation Advisory services-water User Associations-operation and Maintenance.	At the beginning of irrigation improvement project and at the start of WAU formation.	Groups representing farmers that are benefiting from mesqa improvement (15 farmers for each mesqa).	IAS engineers and technicians.
2. Specialized Training (Operation and Maintenance) Finance Filing-Irrigation scheduling - Mesqa maintenance - Pump maintenance - Monthly meetings - Annual meetings - Roles and responsibilities.	Directly after Execution of mesqa and installing WAU pump.	Association leaders-deputies - secretaries and treasures.	IAS engineers and technicians.
3. Visits to Demonstration Sites Visit demonstration mesqas and arrange meetings between farmers that have mesqa improvement with ones that are planing for mesqa improvement.	Anytime starting from WUA formation till mesqa operation.	Farmers planning to improve their mesqas.	Farmers who have improved their mesqas.
4. Specific Training On special technical issues as land leviling using laser - finance-accounting-importance of irrigation in the right time with the right water quantity.	After operating the improved mesqas and find needs to solve these problems.	WUA council, mesqa operator and some WUA members.	IAS engineers and technicians.

emerged from the work of the International Irrigation Management Institutès work and from successful national programs, but these also need to be evaluated in terms of the Egyptian context. Not only is physical irrigation system in Egypt unique in some respects, the culture, history and the administrative environments are also different. And as the IAS is learning, there are also differences historically and culturally between upper, middle and lower Egypt.

Documenting and learning lessons gained from working with WUAs must take place at every level of decision making and to the last water user on a canal command if effective and sustainable WUAs are to be created over time. As stated by (Korten et al., 1989), all key actors along with WUAs must learn to be effective and efficient as well as how and when to expand the program.

ANNEX A

Table 2 ***Completed training program for WUAs.***

General training	520 WUAs with the average of 13 farmers = 6270 farmers
Special training (Operation and maintenance)	340 WUAs with the average of 7 farmers = 2380 famers
Visits to demonstrative sites	92 WUAs with the average of 6 farmers = 552 farmers
Training in specific technical subjects	16 WUAs with the average of 7 farmers = 532 farmers

Conclusions

The development of a training program in Egypt for irrigation water users and irrigation advisory services staff over a period of some 7 years has been briefly reviewed. During that time training has changed from a relatively low priority activity to one which is seen as part of the process of management.

The adaptive capacity of the institutional structure on national level has proved to be a prerequisite for participatory irrigation management. The capacity building strategy which the Ministry of Public Work and Water Resources following is a process of vertical and horizontal intermeshing within the water "institution". Vertically, attention is paid to the levels of the farmer, water user association, water supplier and the nation.

Horizontally the irrigation advisory services promote coordination and cooperation. Irrigation water users need to be trained in different aspects of system management. However, the process is not by any means an easy one. It aims to change the way people, both farmers and government officials, think and behave. In addition new knowledge and skills are required. Major

ANNEX A

Table 3 ***Training IAS staff.***

Training course	Time of training
– Roles of IAS and WUAs	After IAS was authorized and a number of engineers and technicians were appointed. Every time after appointing new engineers and technicians.
– Water Measurements and Irrigation management instruments-measurement procedure-on farm water management	At the beginning of mesqa improvement and after improved mesqa operation to collect data
– Operation and Maintenance roles and responsibilities-irrigation scheduling-mesqa maintenance-pump maintenance	After WUAs formation and possibly after the construction of improved mesqa
– Mesqa Design and Role of IAS in the Design Stage	At the beginning of irrigation improvement and formation of WUAs and before mesqa design
– Use of Laser in Land Leveling	After operating improved mesqa
– Preparation for working as Trainer	Continuous
– Determining Training facilities and Preparation of Publications	Continuous
– Updating Irrigation and Drainage bylaws WUAs Registration, Cost recovery	After WUAs have been legally organized
– Monitoring and WUAs	Continuous
– Formation of WUAs for Secondary (branch) Canals	After successful operation of improved mesqa

ANNEX B

Technical and organizational skills required by IAS staffor successful WUAs.

How much and what training is needed?

- Water delivery skill areas
- On-farm water use skills
- Crop-water-soil relationships
- Improved irrigation methods
- Moisture measurements
- Farm/Field layouts and surveying
- How to design and implement demonstrations
- Monitoring and evaluation (cropping patterns)
- Crop yield measurements and estimates
- Murwa improvements
- Monitoring of groundwater and return flows
- Water management monitoring
- Making or maintenance equipment
- Irrigation application system evaluations
- Mixing of saline and fresh water
- Physical and chemical properties of soils
- Social organizational and management skills
- Survey techniques
- Skills for training farmers
- Organizational skills
- Communication and conflict resolution
- Types of wua council member training
- Operations
- Maintenance
- On-farm water use
- Other

constraints include the levels of literacy amongst farmers, especially the poorer ones, as this limits communication to verbal and visual mediums; the attitudes of the government staff in some communities to farmers; the lack of stipulated levels of service and defined rights and responsibilities. A key issue is to identify who carry out the training, using government staff may not always be appropriate.

In addition there is the cost associated with this training, it is not insignificant, and needs to be budgeted for over a period of several years as on going training will be required for newly appointed water users association committee members. The on-go ing training can also serve as a process for monitoring and evaluating the privatization/turnover policy as a measure to ensure its sustainability ●

REFERENCES

Korten F., and Siy, R. (1989) - Transforming a Bureaucracy, Ateneo De Manila University Press.

Ministry of Public Works and Water Resources (1992) - Revised IAS Strategy for Sustainable Private Water User Associations, IIP Progress Report, Egypt

Ministry of Public Works and Water Resources (1996) - Irrigation Improvement Project, IIP Final Report.

The Economic Development Institute of the World Bank (1996) - Handbook on Participatory Irrigation Management.