Branch Canal Water User Associations in the Central Nile Delta

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APP	Egyptian-Dutch Advisory Panel on Water Management
APRP	Agricultural Policy Reform Program
BCWUA	Secondary-level Branch Canal Water User Association
CD-IAS	Central Directorate of Irrigation Advisory Services
CF	Continuous Flow
DWB	District Water Board
EGP	Egyptian Pound
EWUP	Egypt - Water Use and Management Project
f / fed	feddan (0.42 hectare)
IAS	Irrigation Advisory Service
IIP	Irrigation Improvement Project
IIS	Irrigation Improvement Sector
IIS-IAS	Irrigation Advisory Service resorting under the Irrigation Improvement Sector
IIIMP	Integrated Irrigation Improvement and Management Project
IRG	International Resources Group
IWMD	Integrated Water Management District
IWRM	Integrated Water Resources Management
MALR	Ministry of Agriculture and Land Reform
MWRI	Ministry of Water Resources and Irrigation
O&M	Operation and Maintenance
PIM	Participatory Irrigation Management
PS	(Collective) Pumping Station(s)
W10	Pilot area in Meet Yazid, which tested mesqa-level and on-farm improvements
WUA	Water Users' Association
WUO	Water Users' Organization

EGYPTIAN TERMS

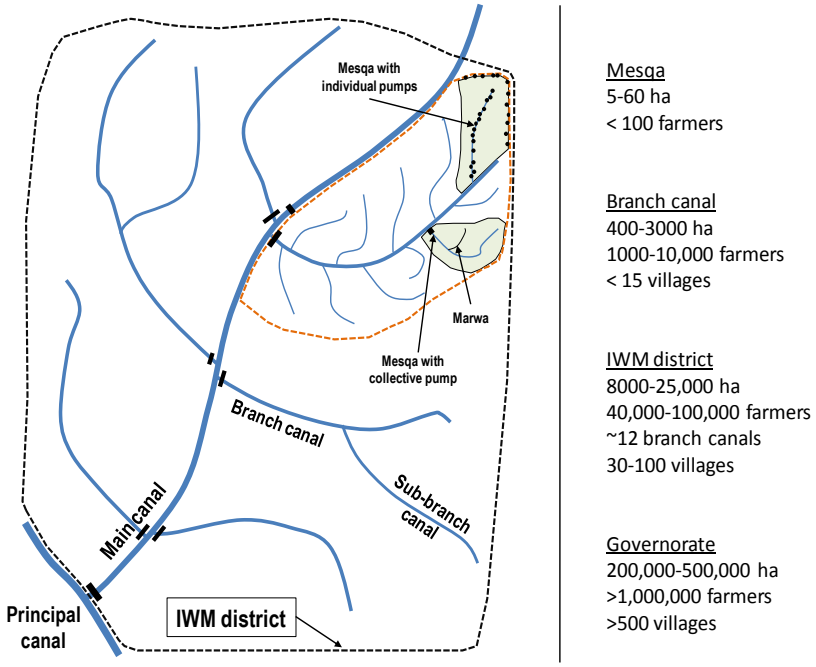
maglis orfi	Arab customary form of community conflict resolution
markaz	administrative districts
New lands	Reclaimed lands in the desert margins of the Egyptian delta
Old lands	Cultivated lands of the Nile Delta
sakia	A horizontal or vertical water wheel and lifting device, traditionally drawn by a draft animal (buffalo, cow), but now motorized. It can range between from 2-7 meters in diameter
tatweer	improvement

1 Introduction

Egypt has a rich experience with the development of Water User Associations (WUAs) in the field of agriculture. This includes a diversity of geographical situations (oases, valley, delta, or the new lands), different types of water source (canal or aquifer), and scales in the old lands of the Nile Delta: from the tertiary (mesqa or pumping station-WUA), the secondary (Branch Canal WUA or BCWUA), to the district level (around 10 branch canals)(see Figure 1). This report mainly focuses on the secondary level of BCWUAs, and its connections with the first and third level.

In the past 25 years, many projects have dealt with organizing farmers, improving the interface/coordination between farmers and irrigation managers, or developing district level 'water boards' to ensure the participation of all concerned stakeholders (see IWMI-WMRI report 3). It is therefore very instructive to take stock of this rich experience and draw some lessons for the future. A full-fledged analysis of the numerous initiatives and projects would however be a huge task and we limit ourselves here to providing a summary chronology (section 2) before addressing the challenges that have been faced by BCWUAs (section 3). In section 4 we review how the policy ideas of water user organization and irrigation improvement were combined and institutionalized in the Irrigation Improvement Project (IIP). Because of its importance, IIP is given some in depth consideration. Section 5 explains how the research team arrived at its findings on the functioning of BCWUAs in the Central Nile Delta, in particular through a focus group discussion and a survey among BCWUA board members, which built on a literature study and a number of surveys that were carried out earlier. Section 6 present the findings of the research and analyses them. In Section 7, the main conclusions are stated.

Figure 1. Management levels in Egyptian irrigation (delta)



2 Chronology

Early attention to the potential benefits of better organizing farmers can be traced back to the seven-year Egypt - Water Use and Management Project (EWUP, 1977-84), an interdisciplinary project implemented by the MWRI and researchers from Colorado State University. The project recommended that farmers' participation should be sought in the field of water distribution (irrigation scheduling, rotations, improved delivery, etc.) and maintenance, protection, and upgrading of physical works (current repairs, mesqa improvements, renovations of branch canals). This called for the establishment of a special well-trained cadre of professionals, the Irrigation Advisory Service (IAS)[1] in 1987, to define new responsibilities for farmers and train them to acquire corresponding skills.

EWUP also recommended introducing collective pumping stations at the tertiary level to reduce diffuse individual pumping from multiple points (canals and drains). This led to the Irrigation Improvement Project (IIP), launched in 1987, which has since then acquired Sector status within the MWRI, and been supported by several donors and international lenders[2]. A direct consequence of the technical options proposed and implemented was to make the establishment of mesqa-level pumping station Water Users Associations (WUAs) necessary. Collective action was needed for operating and maintaining the pumps, distributing water, and paying for energy costs.

Initially, WUAs set up at the tertiary (mesqa) level to manage collective pump stations (PS) had no legal status, which among other things constrained their ability to levy money and act as independent bodies with full private ownership of the mesqa level infrastructures. This changed in 1994 with the modification of the 1984 Law 12, wherein WUAs were defined as legal organisations at the mesqa level in the improved irrigation systems (IIP) in the old lands, while similarly Water Users Unions (WUUs) were made legal entities for the New Lands. The Bylaws of Law 213/1994 (Decree No 14900 of 1995) detailed the rights and duties of the WUAs and WUUs, legalizing private WUAs at the mesqa-level, and (partial) recovery of capital costs of improved irrigation facilities (INECO, 2009).

In 1995 the Dutch-funded Fayoum Water Management Project (FWMP) established the first Water Users Organisations at the Branch Canal, or Secondary Canal level, called a "Local Water Board" (Abdel-Aziz, 2003). These local Water Boards were responsible for the operation and maintenance of irrigation intake structures of all mesqas, possible sakias (water wheels), and secondary drainage infrastructures in their command areas, weed control, as well as domestic water use based on canal and drains. Small infrastructure works were funded by the project where needed. Below this level, infrastructures such as mesqas, individual sakias, marwas or field drains remained fully under the purview of individual farmers and were not the responsibility of the Water Board. Membership of the Water Board was made obligatory for all users of water drawn from irrigation and drainage, be they farmers, residents or industries.

Based on the experience of the FWMP, between 1994 and 2009, another project (The Fayoum Water User Organizations project, in two phases) was set up with Dutch support (Abdelgawad et al, 2010; RTB, 2010). It first focused on developing Water Boards in two administrative districts (*markaz*) in the Fayoum governorate, and then expanded to cover the remaining 7 districts in the governorate. Two models were tested, one with only water user representatives, another with both user and government membership. Water Boards were meant to be small "water parliaments" which would

[1] This service was established under the Irrigation Improvement Sector (IIS-IAS).

[2] See more details on IIP and its successors projects in the IWMI-WMRI Report No. 4 'Irrigation Improvement Projects in the Nile Delta: Promises, Challenges, Surprises'.

congregate stakeholders from the civil society. The project was expanded to other regions and 900 Water Boards have been eventually set up in the Delta, Fayoum, Middle and Upper Egypt.

Under the Agricultural Policy Reform Program (APRP) of USAID (1996-2003), a strong support to different kinds of decentralisation and Irrigation Management Transfer (IMT) translated in several policy initiatives and changes. The Ministry of Water Resources and Irrigation (MWRI) promulgated a policy allowing for the formation of secondary-level Branch Canal Water User Associations (BCWUAs) and also for the development of Integrated Districts.

In 1999 a decree established the Central Directorate of Irrigation Advisory Services (CD-IAS) as permanent unit to serve all sectors of MWRI, which became mainly responsible for the creation of secondary-level Branch Canal WUAs (BCWUAs), as part of a broader agenda of institutional reform towards IWRM. The expectation was that these organizations could play an important role in annual planning, maintenance prioritization, water distribution and cost recovery at the Branch Canal. The recommendation was made that continuous flow should be operationalized in the command area prior to IIP improved mesqas coming on line. The BCWUAs could be formed early on, assist in the works on the branch canals, and then later on help in setting up the WUAs at the pump station/mesqa level (IRG et al., 1998).

Nine initial Branch Canal Water User Associations were formed in the Nile Basin by Ministerial decree (IRG, 2002b). Four of these BCWUAs were formed in 1999 as a part of the APRP programme (Kemri, Diarbanigm and Balakter in the delta and one village in Upper Egypt), another four were part of the Irrigation Management Transfer activities of APRP/USAID in the pilot areas of Salhia, Dakahlia, Beheira and Qena. A last one was formed in free-flowing deep groundwater area, under the title of a Water Users Federation or Water User Union (WUU).

Setting up BCWUAs involved several steps, including obtaining legal authority (by ministerial decree), developing the association by building local management skills, including financial accounting, establishing an agreement between the MWRI and the BCWUAs regarding the activities that each would perform, rehabilitate the system to a mutually agreed level, and finally, transferring the local management and maintenance of canals and drains to the BCWUAs (IRG, 2002b). "The process to establish BCWUAs was to divide the canal into three reaches with a designated influential farmer for each reach who will nominate representatives for the executive council. The council may delegate the irrigation engineer as a member of the council. The council is responsible for all operational and managerial issues of the canal" (Abdelgawad et al, 2010: 755). The involvement of stakeholders in management decisions (public participation) was expected to help establish "mutual confidence between the MWRI District engineering staff and the farmers with respect to the ability to manage tasks on the branch canals to the benefit of both. Without this confidence, privatization will be a much slower process" (IRG, 2002b).

Branch canal level experiments were constrained by several factors. The absence of a legal status for user organisations at levels above the mesqa level boundaries made it difficult to develop the financial dimensions of decentralisation; the "Revision of Law 12/1984 on Irrigation and Drainage", that was to recognise BCWUAs or Water Boards as user organisations for water management at the secondary canal level and above made it to parliament but up to these days has failed to be passed (pilot BCWUAs were established under ad hoc ministerial decree). Likewise the policy of transferring the responsibility to maintain assets such as canals or headworks made it necessary to rehabilitate these infrastructures before turning them to users, and this required the capacity/willingness of the government to make the corresponding outlays available (which, later, proved to be problematic).

According to USAID "The incentives for the GOE and farmers to undertake this initiative, therefore, are clear and compelling. MWRI, through this IMT policy initiative, has set in motion a long-term evolutionary process, which will allow the GOE to significantly reduce its costs while continuing to expand its coverage and services in other areas" (IRG, 2001a). This statement evidences the strong motivation to cut government costs behind the IMT policy, as well as –perhaps– a degree of self-persuasion. Intensive training activities and study tours to countries such as Mexico, Turkey, Jordan or the US were organized to raise awareness of the purported merits of IMT.

In parallel, the GOE (MWRI) "adopted a policy to integrate all water management functions at the district level to support decentralized management" (IRG, 2002b) and designated two pilot districts. The definition of an Integrated Water Management District (IWMD) was given as "an entity that has sufficient manpower, material, and fiscal resources to operate and maintain all water resources under its jurisdiction. All of the divisions support the water distribution process to ensure that water is delivered equitably, resulting in the various district water entities currently being merged to constitute a single entity referred to as an IWMD". Concretely the goal was to merge the different existing districts (irrigation, drainage, mechanical), often all defined with different boundaries and neither of them corresponding to administrative districts, into one integrated district, thus 1) reducing the number of staff and putting all of them under the authority of one district engineer, 2) getting rid of the intermediate layer of the Inspectorate, 3) integrating the different functions of water management for coordinated planning and management. The two pilot IWMD of Zifta and Ibrahimia, in the delta, were recognized in 2001 by Ministerial Decree No. 506 and further development led to covering 27 districts in 2007.

A number of issues and constraints facing the implementation of the IWMD were identified, including (IRG, 2002a): 1) the way to define the new boundaries (often taken as those of the irrigation district), 2) identification and selection of the IWMD officers (with conflict between the three departments on who would head the IWMD), 3) IWMD budget allocation and operation mechanisms (with budget coming from different departments), 4) lack of water monitoring programs (needed for improved management but requiring funding for equipment), 5) lack of public awareness and communication programs, 6) the difficulty to come up with an integrated operational program at the local level, 7) the reluctance to delegate authority and decision-making from general directorate level to the IWMD level, 8) the limited cooperation of the Drainage and Mechanical equipment sectors (which maintained or shifted their best equipment and staff at the levels above the district).

The USAID-funded LIFE-IWRM Project (phase 1: 2004-2008) has, over four years, provided technical assistance to the MWRI to implement decentralized and participatory IWRM over an area of 485,000 ha (15% of Egypt's irrigated area) (El Atfy et al., 2007; IRG, 2008). Achievements include: Establishment of 27 IWMDs integrating all MWRI District-level functions into a single water management entity, formation of 600 BCWUAs covering all branch canals in the target Directorates and involving over 500,000 users; and capacity-building and introducing procedures for systematic data collection and analysis to support measurement-based decentralized water management. The participation of all BCWUAs in the management system of the IWMDs was found to positively influence the quality and the equity of water distribution among the IWMDs (El Atfy et al., 2007).

This work has been furthered by the second phase of the LIFE-IWRM Project (Phase II: 2009-2012), which has been instrumental in mainstreaming and expanding IWMDs to cover 27 districts in 5 Irrigation Directorates (New Zifta, West Sharkiya, West Qena, East Qena, and Aswan) and to form 600 BCWUAs. The second phase of the LIFE–IWRM component (IWRM II), carried out during the period of January 2009–30 September 2012, was expected to cover 45 districts in 8 Irrigation Directorates, with about 1000 BCWUAs to be formed (Barakat, 2009). Stated achievements are:

Formation of 622 BCWUAs (2 million feddan and 1,3 million users, trained BCWUAs to effectively participate in decision-making, support to BCWUA participatory water management activities to assist IWMD staff. In addition, eight Integrated Directorates and 45 Integrated Districts were established, trained and supplied with an Information Management System (IMS).

BCWUAs should participate in the annual planning, prioritization, and selection of maintenance and minor works, with one or more inspection of the branch canals and the drainage systems to be carried out jointly with the IWMD engineers and technicians. Likewise, MWRI should inform/consult/involve BCWUAs when design starts and tender documents are prepared, about the award of contracts, and involve them in the monitoring of progress and quality control during the execution of maintenance or minor works (Barakat, 2009). BCWUAs are also expected to monitor, measure, and record the water levels at the head of branch canals and key control points, as well as in secondary drains, to detect and report anomalies and shortages. They should review and discuss the recorded water levels on the branch canals with the IWMD staff. Common understanding of the area's main problems and priorities is to be built through Branch Canal Needs Assessment, a diagnostic device to be carried out whenever needed (every 3 years, for example).

The two parallel initiatives (LIFE II and Water Boards) consisting in establishing IWMD districts on new district boundaries designed to better integrate the irrigation, drainage and mechanical departments, and Water Boards at the (administrative) district level (*markaz*), need – at some point – to be harmonized. The IWMDs are predominantly state units although participation of BCWUAs is intended to be substantial, while District Water Boards are meant to directly represent users and stakeholders interests and collaborate with officials. Although IWMDs and *markaz* boundaries do not correspond, efforts have been made to make use of the District Water Boards to jointly manage the water resources with district staff by getting "involved in setting priorities, undertaking operational and maintenance works, in addition to water quality improvement activities" (APP, 2007).

Earlier assessments of participatory water management (APP, 2007) have revealed worrying trends. Barakat concluded that (i) Participation of WUOs in water management is extremely low, (ii) all actors have a poor understanding of the possibilities to take action, (iii) WUOs and MWRI field staff do not feel partners, (iv) and there is a felt need of clear instructions from higher levels. Likewise Bron (APP, 2007), based on the monitoring and evaluation of 150 WUOs during several years, concluded that: "1. The level of participation of water users in water management, also when organized in water users' organizations, is very low. Even the level of being informed after MWRI field staff has taken a decision often is not reached. 2. No water users' organization in Egypt has reached a level of institutional strength that can be considered sustainable. 3. Projects achieve an initial build-up of the institutional strength of WUOs. However, apparently the projects are not successful in reaching a sustainable level of WUOs strength. When the attention for the WUOs decreases after the completion of projects, the WUOs' sustainability level declines".

In 2006, the Integrated Irrigation Improvement and Management Project (IIIMP) project, funded by the World Bank, KfW and AFD, was launched as a successor project of IIP. This new project introduces some adjustments in the IIP package (electric pumps rather than diesel, reduced capacity of the pump, cheaper piped distribution lines, improved on-farm/marwa level distribution, etc.) and takes a much broader approach than the IIP by also considering the establishment of WUAs, BCWUAs and more widely integrating users participation, decentralization, IWRM, institutional reform and system modernization into a "From Mesqa to District" approach (APP, 2007; World Bank, 2005). Hence, besides changing the hardware, the project also works on the software of irrigation management in the Delta.

3 PIM policy, project achievements and challenges for BCWUAs and Integrated Districts

The rationale for BCWUAs in irrigated agriculture was based on principles of Participatory Irrigation Management (PIM), whose "generally acknowledged benefits include, but are not limited to, productivity increases, positive changes in cropping intensity, improvement in financial impact performance indicators, resolution of water-related conflicts, and a positive environmental impact" (IRG, 1999a).

But the policy to develop BCWUAs in the late 1990s was very much driven by a desire to reduce state expenditures and enforce "cost-sharing plans" (IRG et al., 1999a). These plans were to define in a negotiated manner (between the BCWUAs and the government) scheduled Operation and Maintenance (O&M) works organized in "O&M pathways" that would be sanctioned by a Memorandum of Understanding (MOU) between the BCWUA and GOE. The BCWUAs would be reimbursed after assessment of the works achieved. They would also be trained by the IAS and later be instrumental in helping establish WUAs when a mesqa improvement package would be applied (IRG et al., 1999a).

Between 1995 and 2005, more than 40 Water Boards have been established in Fayoum by the Dutch-funded Water Board projects (APP, 2007). They were trained to plan and execute (by themselves or through local small contractors) O&M works on a yearly basis, with funding channelled through the Technical Assistance, thus circumventing the legal constraints faced by MWRI to transfer funds to WUA's (APP, 2007). This temporary solution was supposed to be addressed by the revised law which was to empower WUAs above the mesqa level and give them autonomy. Although the work was supervised by the MWRI, the process was largely driven by the BCWUAs assisted by their own Federation Engineer (district level).

After 10 years (in 2006) the Dutch government decided to channel the funding through MWRI in an attempt to 'internalise" the process. The minor maintenance works and the weed control program came under the Ministry and had to comply with its central tender regulations. The planning process is still done by the WUAs but the execution is now managed by the MWRI, although WUAs can still be sub-contracted for some work by the contractors.

Ultimately it was expected that the users would bear the costs of O&M of the part of the system they manage. This would amount to a shift of about 50% of the current government expenditures on O&M to the Water Boards (farmers) or an expenditure of about EGP 15/feddan per year (Table 2). The overhead costs for the Water Boards for running their organization are estimated to reach about 15 EGP/feddan per year (Abdel-Aziz, 2003).

The BCWUAs established in the IWRM 1 project (USAID) have been assessed by means of questionnaires by BCWUAs' boards and by district engineers (Barakat, 2009). They show that communication has improved markedly between managers and farmers. However, the activities that involve a degree of transparency and accountability have been the least adhered to: for example the information on the award of maintenance contracts, or the involvement of farmers in the monitoring of progress and quality control of works was found in only 40-50% of the associations. The joint review of recorded water levels on the branch canals also occurred only in 62% of the cases during the time of the project. These procedures have now seemingly been discontinued.

In spite of optimistic policy expectations, achieving sustainable local financing for canal and drain maintenance proved to be much more difficult than expected. The 2012 final Project Completion Report of the LIFE-IWRM Project (Phase II: 2009-2012) mentions a few cases in which BCWUA

members helped MWRI by collecting money to share in the cost of maintenance (IRG, 2012). Although this is expected to increase, they appear to be isolated cases. A structural problem remained that local financing plans and cost recovery by BCWUAs required an amendment of Law 12/1984. Several steps were undertaken by the MWRI to draft and submit a new law on Stakeholder Participation, which they considered more appropriate. However, since September 2009, the Egyptian Cabinet did not move forward with this initiative and did not amend Law 12 for unknown reasons and the LIFE Project decided in March 2011 to stop local financing work (IRG, 2012). There is no indication that these cost recovery initiatives have been further developed without the legal backing since the Egyptian Revolution of 25 January 2011. This is a significant drawback for these policy initiatives directed at user participation, since "true participation is in decision-making and sharing financial and management burdens" (Kotb, 2010).

The second LIFE-IWRM project spent much effort on the formation of IWMDs with a new integrated water management approach and BCWUAS to represent water users from different branch canals in the new IWMDs. BCWUAs were trained to effectively participate in decision-making regarding water management activities. More than half of the farmers in the area were aware of the BCWUA and perceived benefits in terms of better water delivery, better canal maintenance and better information (IRG, 2012). The BCWUAs dealt effectively with maintenance, by developing lists of maintenance priorities along the Branch Canal and submitting them to the IWMD for inclusion in maintenance planning. Also the monitoring of the maintenance works was carried out by these user organizations. Maintenance clearly received the highest priority of the project training, and canal operation only received attention towards the end, resulting in less improved water management practices and performance. However, the BCWUAs were also functioning to resolve conflict at the local level. An IWMD Manager somehow summarizes a central idea behind the project and states how it has been realized:

> "Now I have a trained staff with modern equipment. We can handle O&M of both irrigation and drainage. We have good relations with BCWUAs and many problems are solved by the BCWUAs or my staff before I hear about them." (IRG, 2012: 13).

Consequently, the Project Completion Report reports the emergence of strong relationships between BCWUAs and IWMDs, based on the strategy of establishing IWMDs first which subsequently establish and support BCWUAs. Clearly, the BCWUA water management activities of the project "were designed to assist IWMD staff" (IRG, 2012: 6). This relates to a concern for their viability formulated as a 'lesson learned' by the project:

> "BCWUAs must assume increasing levels of responsibility to remain viable and effective; obtaining legal status is a necessary precondition for that to happen." (IRG, 2012: 26).

The LIFE-IWRM project has faced a set of institutional problems in its second phase that complicated the implementation of Integrated Water Management Districts (IRG, 2012):

- The MWRI had a special Integrated Water Management Unit that was disbanded during the first year of IWRM II (2010) when the USAID funding terminated.
- A portion of the MWRI staff believed that LIFE-IWRM did not have support of the MWRI top and would not be continued after the project. This contrasted with Phase I implementation when Minister Abou Zeid issued written instructions to the field staff for this purpose.

- MWRI postponed the consolidation of the Drainage and Irrigation Directorates into Integrated Water Management Directorates. The transferred drainage machinery was unusable and the staff in the districts was hoping to be transferred back to the Egyptian Public Authority for Drainage Projects (EPADP). This resulted in substandard performance of the IWMD in drainage. The district integration process is thus incomplete and requires full authority of the districts over drainage.
- Accurate supply and demand data are not flowing on time between the Ministry of Agriculture and Land Reform (MALR) and the IWMDs, resulting in inaccurate calculation of crop water requirements, making monitoring of water demand vs. supply difficult. To achieve water conservation, a close working relation between MALR and MWRI at both central and field levels is needed.

Several questions emerge when reviewing the achievements and limitations of these projects:

- What are tangible benefits for water users to remain involved in and sustain BCWUAs or district- level Water Boards when the legal status and transfer of concrete O&M and financial responsibilities are not forthcoming?
- Are the BCWUAs, designed to assist IWMD staff, capable of demanding improved services from the IWMDs, i.e. improve their accountability and transparency?
- How are mesqa-level WUAs represented in the BCWUAs and how are both periodically elected and renewed?
- What is the current support at the higher levels of the Ministry for further expansion of IWMD, which at some point was considered as a national policy?

4 Irrigation improvement, institutions and water user organization

Following the EWUP project (1977-84), a series of irrigation improvement projects combined ideas of infrastructural and institutional modernization, which were conceived as parallel but in practice institutionally separated and hierarchically structured processes (see IWMI-WMRI report 4). Infrastructural interventions included the introduction of collective pump stations (PS) at mesqa-level and the technological adaptation at branch canal level to a continuous flow regime. Infrastructural improvements were undertaken under the Irrigation Improvement Sector (IIS) by civil engineers, institutional modernization was implemented by the same sector, but by a specialized agency called IAS mostly staffed by agricultural engineers. In the Ministry, with a large tradition of civil engineering, the former jobs in design and construction of the new infrastructure mostly carried out from capital city offices, enjoyed clear superior hierarchy, prestige and privileges over the latter engineers who were locally stationed to organize the farmers according to largely pre-determined designs. This institutional fragmentation, construction bias, hierarchical differences and top-down design process have reproduced themselves and heavily impacted in the organization of water users.

The IIP project (1987-) and later the IIIMP project (2006-) institutionalized the policy ideas of PIM by introducing WUAs at the pump station level and BCWUAs at the level of the secondary or branch canal level. The original IAS methodology to form WUAs in the IIP area consisted of 5 to 7 phases (Mott MacDonald, 2008 a, b):

1. Entry
2. Initial Organization

3. Preparation for Mesqa improvement
4. Participation in Mesqa improvement
5. Regular Operation & Maintenance
(6. Formation of Federations at branch canals)
(7. Continuous monitoring and evaluation)

In this original set-up the formation of mesqa-level WUAs was thus done before the formation of 'BCWUAs' (name varies according to institutional context), supposing an organizational link between the two levels. Under IIP, a special IAS project component became responsible for these seven steps, which later resorted under IIS (IIS-IAS). The latter two stages were later shifted to another specialized agency, because of institutional re-organizations and donor pressures: after 1999, the Central Directorate of IAS (CD-IAS) became responsible for BCWUA formation at the secondary level (phase 6), which was seen as a sign of further institutionalization of user participation (MWRI-WBP, 2005). WUA formation for the purpose of irrigation improvement (phase 1 to 5) remained under the special IAS section of IIS (IIS-IAS). Under IIIMP phase 6 became superseded by the BCWUA formation and also Phase 7 became the responsibility of CD-IAS.

From around 2009, under IIIMP the idea gained strength that BCWUAs or Water Boards could play a major role in the promotion and participatory planning of infrastructural modernization and integrated water management and the organization of BCWUAs should therefore take place 'ahead of physical works' and the organization of WUAs. Different donors and ministerial agencies were involved in all of these steps. Under the influence of the Dutch-funded Water Boards Project the establishment of Water Boards received increased attention as a centre piece of decentralization and IWRM policies, which was combined with "a leaner approach for WUA establishment" (WB-IIIMP, 2009: 23). WUAs would be established by the BCWUA so that integration would be complete (ibid). Since the establishment of WUAs was directly linked with improvement works at mesqa-level, which were significantly delayed, the supposed organizational link between BCWUAs and WUAs in fact weakened.

The Water Board project influenced the BCWUA's organizational structure. The general assembly is comprised of three interest groups: Agricultural (farmers or agricultural water users), Residential (households in villages) and Industrial Base Units. These areas are represented by one person each which (are represented to) elect the Executive Committee/Board of the BCWUA. The proportion of base units varies per area. In the Delta, the Board was "typically selected in a close interaction with the supporting project/agency rather than from an assembly or list" (MWRI-WBP, 2005: 6). The Executive Board of a BCWUA varies between 5 to 13 members and is responsible for the day-to-day management of the BCWUA and its wider institutional relations. The functions of President, Treasurer and Secretary and others are voluntary and not paid. The Water Board Project put significant emphasis on 'streamlining gender' and including women in the representative structure and Executive Board of the BCWUA, and CD-IAS project staff was convinced that women should especially represent the residential areas. This disregards that women are also agricultural users of water (Barnes, 2013)

5 BCWUAs in the Central Delta

5.1 Introduction

The research for this report was informed by a number of earlier research and project activities. In early stages of the project the research team undertook a literature review of different project

experiences in Egypt with the establishment of WUAs, water boards and BCWUAs[3]. Below we will summarize and use the findings of those activities and the questions that it generated. Subsequently, both an exploratory survey (see IWMI-WMRI report 1) and a WUA survey (see IWMI-WMRI report 4) at pumping station-level WUAs (PS-WUAs) were held and the research team asked questions about the working of BCWUAs in the project area.

To further research some of the questions identified with the literature review and the surveys, a focus group discussion was held with BCWUA leaders in Kafr el Sheikh at 11 September 2015 (see paragraph 5.3). Afterwards, and based on the gathered information, a semi-structured survey with a list of key-issues/questions was designed and carried out for a sample of 15 BCWUA cases, mostly in the tail region of Meet Yazeed, between October 2014 and February 2015 (see paragraph 5.4). To contextualise the findings, the research team carried out a number of additional interviews with key-informants, such as Irrigation District staff, IIS-IAS and CD-IAS staff, etc. The findings of this survey are thus discussed together with relevant findings from earlier surveys carried out in the framework of the ACIAR project.

5.2 Exploratory and WUA surveys

During the exploratory survey semi-structured interviews were held with farmers, field operators and irrigation managers, throughout the Meet Yazeed irrigation system and the topic of BCWUAs at the branch canal level was raised on occasions. During the ensuing WUA survey of 50 pumping stations the representatives from these pumping stations were asked about their relation with the BCWUAs. The exploratory findings from these surveys will be summarized below.

The research team documented that indeed BCWUAs were created at most Branch Canals where IIP/IIIMP had been active in the Meet Yazeed area. The step-wise process through which they were created however differed depending on which phase of IIP 1, IIP 2 or IIIMP it had been created in. However, a significant group of water users were not necessarily aware of the existence of BCWUAs, their organizational roles and task areas or the fact that the BCWUA's General Assembly was elected by water users. A BCWUA president at Bosees canal estimates that of the 8-9000 farmers there are perhaps only 1000 farmers who know about the BCWUA and its activities. In fact several of the BCWUAs were dormant, although they existed on paper and people were elected to BCWUA board positions, but were not fulfilling any tasks. When searching for a BCWUA along El Khawaled BC, the researchers spoke to at least 10 people who denied the existence of such an organization, before finding somebody who knew contact details of the former president of the BCWUA. In other cases, farmers along a branch canal did know of the existence of an organization at branch canal level and could mention the name of one or two persons active in it, but could give little detail on what was their exact function in irrigation management. A question about the usefulness of BCWUAs received mixed replies, dependent on farmers own experiences with the organization and the potential role that BCWUAs could play as a link between farmers and the irrigation district or higher irrigation levels. Some people stated the organization is useless, not active or not relevant, since people do not know what they are doing and they only exist on paper but do not work and are not active in problem solving at the canal level. The people, who thought positively about the role of the BCWUAs, were often in some way involved with them, directly or indirectly, and therefore had also more information about their meetings or trainings with the irrigation staff in the capital.

In the WUA survey among 47 representatives from PS-WUAs, 38% stated that a BCWUA was formed, 34% that it was not, and 28% did not answer the question. Many WUA representatives from pumping

[3] See IWMI-WMRI report 2 'Brief Retrospective on Water User Organizations in Egypt'.

stations were not well informed about the formal roles of BCWUAs. Findings suggested a weak institutional link between the PS-WUAs and the BCWUAs, which was confirmed by the following encounter: along El Khawaled canal, a board member indicates that their BCWUA is 3 years old (04-04-2013). He tells that they attend trainings, workshops and they have a membership card so they can contact the District engineer or when the problem is not solved at that level, the Sub-secretary (governorate). They had training on 1) the rotations inside the canal and 2) about the WUA rules. He is a member of both a PS-WUA and the BCWUA and admits that there is not sufficient contact between them. Nevertheless, they are trying to negotiate with the farmers at PSs along the canal to determine the irrigation rotation. He is positive about the mesqa improvement (cheaper irrigation), although he cannot use his own PS, because it cannot not pump water to their higher lands. From his statements it appears he is not entirely aware of the available water distribution infrastructure on his branch canal. This and other cases suggest that board members were selected partly as a result of their demonstrated willingness to promote IIP interventions and the introduction of BCWUAs. Their readiness to promote a BCWUA is not necessarily based on positive personal experiences with project interventions.

In a select number of cases, a majority of water users were aware of the BCWUA and especially of the leader who was representing the BCWUAs at different government levels. The BCWUA was almost a synonym with the person who was known to be leading it (often the chairman/president), because of his effective leadership. Take for example the case of chairman Ali M of the Monshah Branch Canal, who is well-known as an effective problem solver among water users along the canal. The reason that he is known as such is that he is also an *ulamaah*, who works as an inspector of mosques for the Ministry of Religious Affairs. For his job, M is able to move from place to place in the area, because he needs to check the mosques. He uses these opportunities to also inform himself about the farmers' water problems and people come and tell him when they have a pressing issue. Since he also needs to visit the Ministry's office in the regional capital of Kafr El Sheikh, he also visits the irrigation district or general directorate offices to pass on the problems or requests to the district manager or even the General Director. Of course other chairmen of BCWUAs may not have the same opportunities, although possibly having similar leadership skills. The BCWUA's chairman positive role was in this case strongly associated with the personal leadership qualities and opportunities more than with the institutional role of the BCWUA per se. Limitations of the BCWUA that farmers identified was that they did not have a fixed office and did not have a formal meeting during the past 2 years.

When asking PS-WUA representatives about what BCWUAs do, the more informed and involved water users suggested the following roles and tasks:

- Go to meetings called by IAS or irrigation staff
- Inform irrigation staff about water-related complaints
- Forming institutional link between farmers and irrigation district
- Protect the canal and its cross-section from infractions
- Supervise the irrigation scheduling
- Supervise the PS-WUA formation
- Supervise canal maintenance
- Request new infrastructure such as a re-use pumping station or a bridge
- Follow up canal and maintenance problems and monitor contractor's work
- Coordinate and solve conflicts and water problems between PS-WUAs at a BC

As previously stated, the introduction of BCWUAs in IIP/IIIMP occurred with the promise of the introduction of continuous flow (CF) at the branch canal level. CF was a major incentive for farmers

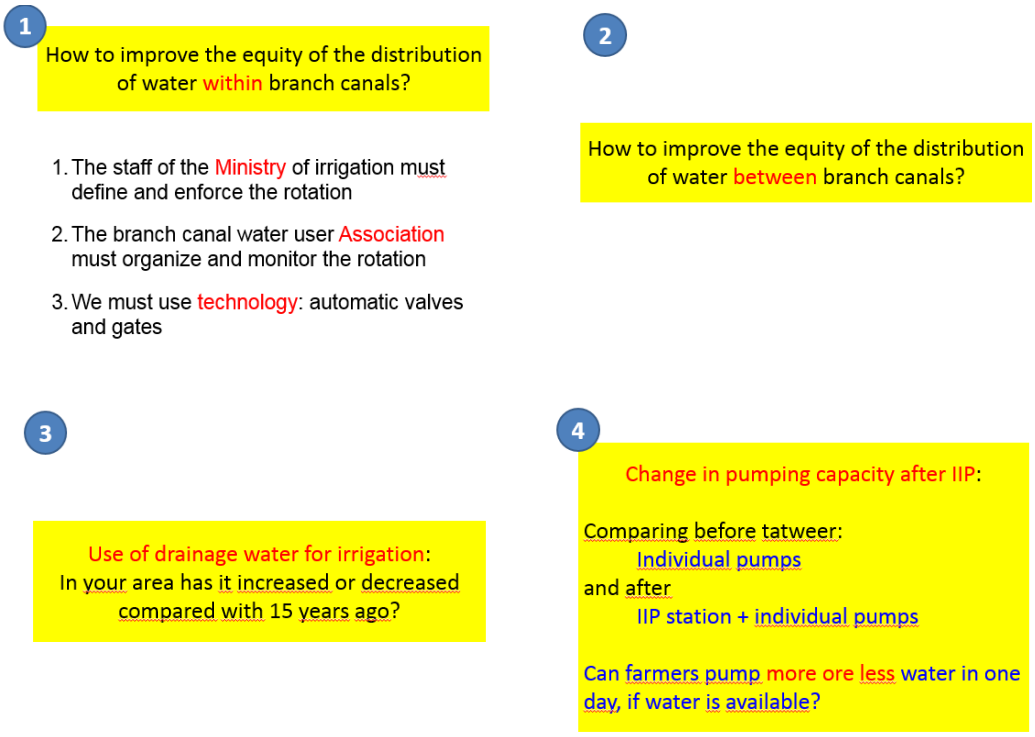
to go along with the improvement projects, especially in the way that CF was often presented to farmers: 'you will be able to take water all the time' (often without mentioning that the available water would be less, because more equally distributed). However, these expectations were not met, because CF could not be implemented during the IIP and the IIIMP project (up to present). This also implied that the BCWUAs did not play a role in the implementation of CF, a role that could have given the organization a public figure and clear task. Currently, the automatic and radial gates that were installed for continuous flow are not working and even obstructing the flow, so they do not generate a positive association with farmers. The failure to implement CF has eroded the credibility of the BCWUAs. By continuing the existing system of rotations, in which the number of on-days is distributed over different reaches of the canal (allowing irrigation in the water scarce middle and tail reaches), there is a limited role and credit to be earned for the BCWUA among water users. In a rotation system, the authority of the BCWUA to implement a rotation and restrict pumping in the head and middle reaches depends on the organizational link between the BCWUA and the PS-WUA or the mesqa.

5.3 Focus group discussion

On 11 September 2015 a focus group discussion was held with BCWUA leaders in Kafr el Sheikh.

Figure 2. Pictures from the Focus group discussion

The discussion questions were formulated around general questions meant to elicit passionate responses from the farmers:



5.4 BCWUA Survey

The survey used a semi-structured approach with the following set of questions/issues to be discussed with the BCWUA representatives that the research team visited in their homes or offices. The questions were mainly qualitative in nature and required full descriptive survey reports. Given the restricted number of the sample (15) in the project area, no statistical representativeness was possible and sought. The following topics were discussed during the interviews.

1) The historical and organizational trajectory of the BCWUA
2) Elections and re-elections of Assembly- and Board members of the BCWUA
3) Composition of the board (how many per reach, sectors, women)
4) The role of (CD-)IAS
5) The role of IIP/IIIMP improvement
6) Training
7) Main problems along the BC
8) BCWUA responsibilities in water distribution, maintenance, fee collection, conflict resolution, etc.
9) Frequency and place of meeting, resources (office, records, bank account, money, etc.)?
10) Meetings with Project and Irrigation Management Staff
11) Capability BCWUA of acquiring improved service
12) Contributions and effectiveness of BCWUA
13) Law for BCWUAs
14) Future of BCWUAs

6 BCWUA Survey Results

6.1 The establishment of BCWUA and representative basis

As explained in section 4, there are basically two possible sequences in which WUAs and BCWUAs were established:

1. IIP and IIIMP (1987-2009) first established PS and organized WUAs and later established BCWUAs

2. Since around 2009 IIIMP (2009-present) established BCWUAs before or together with PS-WUAs (WMRI, 2009).

The first group of these two types of cases had a longer history and was therefore larger (see Annex 10.2 for BCWUAs included in survey).

An example of the first sequence, where WUAs preceded BCWUAs (IIP1), comes from the Bosees BC. IIP started from around 2002 (until 2009) to construct PSs with diesel pumps. In the view of Mr. B[4], who was a well-to-do farmer, government official and local leader, IIP first built the PSs and only later initiated the WUAs. IIP was difficult to apply since most farmers were against and refused from the beginning. He played a role in convincing farmers to accept the project. He was an employee of a government department in Riad district for Religious affairs (al Waqf), working as an administrative staff. As a result, he was familiar with the engineers and government officials and he helped them with convincing farmers.

In the end, farmers at Bosees followed IIP, since they recognized that it would continue with or without their approval. He told them they could better go along, so that it would have some benefits for them. The IIP staff first concentrated on constructing the PS. Only after this they began to think about whom to deliver them to and who would sign for reception, so then they started organizing the WUAs. This actual order of organizing WUAs was the opposite of what was formally planned (WUA before PS; see IWMI-WMRI report 4). The IIP came many times to the BC and he helped them by bringing farmers together so that they finally received the PSs.

His own PS consisted of 45 feddan with 5-6 valves and 9 users. It lies towards the end of the middle stretch on the right side of Bosees. Yet, it has not worked for more than 10 years now and remained unused for irrigation and currently stores hay and other things. The users removed the pumps and kept them in his house. The problem was that the intake pipe was too high and often at least one meter above the actual water level so that the water could not enter the PS (design levels were based on designed canal profiles and continuous flow, both far from the actual canal reality (See IWMI-WMRI Report 4). Therefore, the farmers refused to operate it unless IIP would lower the intake. In spite of many promises, IIP never corrected this. This case shows that actual project experiences do not always live up to the promise of 'improvement'. However, the constant reiteration of the label of improvement (*tatweer*) makes this difficult to perceive, even for people who are closely involved.

The BCWUA started in 2006. Because Mr. B had had a lot of contact with IIP/IAS staff and as a result of his job, he was familiar with the engineers and government officials in the regional capital. In 2006 CD-IAS asked Mr. B and some other local leaders to organize and prepare a meeting with most farmers around Bosees to form a BC-WUA. Around 100-150 people came to his house, outside on the porch. The objective was to select 3 farmers from each reach of the BC. B asked a social leader Said from the end of the canal to sit together and select 3 members for the tail reach. For the middle

[4] Names are anonymized.

reach he asked another older farmer to determine the members and the first reach also determined 3 people. Mr. B was also proposed to be part of the BC-WUA and he became the treasurer. Finally, this produced a list of 9 board members. This list was presented in the overall Assembly meeting and people were asked if there was any objection? They accepted. The IAS received a statement with all 100-150 signatures of people and the list of 9 selected people.

Of the 9 board members in the Bosees BC-WUA, two are women, both around 30: One is his daughter and the other is an educated woman from a nearby village. He remembers that at a meeting at his house he asked these women to sit separately from the men, behind the corner, so that they could interact, but not be seen by the other men around the corner. They followed his request, but they could hear and speak during the meeting. This case and others suggest that IAS/IIP pre-selected known local leaders to organize the BCWUA election process and eventually many were nominated and ended up having board positions. Because PS-WUAs preceded the BCWUAs, these known leaders were often those who had promoted IIP improvements and used their influence favourably to convince people of going along with the project.

In the second example, at Monshah BC, the BCWUA was formed in 2003 at the same time of infrastructural improvements of IIP. IAS organized an assembly meeting consisting of around 50 members, with 4-5 people from the housing area (women) and 45 from agriculture (15 per reach). The latter group represented farmers along the canal, but not through the 80 PS of the BC. Although Mr. M was not present he was elected as a member of the BCWUA board nevertheless (see section 5.2). After selecting 13 board members, who represented irrigators from 3 canal reaches (head, middle, tail: 4, 4 and 3), they elected a president and the other positions (secretary, treasurer, etc.) from among them. Industry is not represented on the board, since there is little of it on the canal. There are 2 representatives for housing, who are women. One is educated and went to university, while the other has had secondary education; they are both young, from 24-26 years. The male representatives are generally older men.

The second election was only held by CD-IAS after a period of 7 years in 2010. The Assembly of 50 first voted for the president and then the other positions. The first president had been from the tail reach. An agreement was reached between the middle and the head reach (15 representatives each), to elect their candidates. In this manner, Mr. M was elected as president and he has been ever since. Mr. M was, as described in 5.2, besides a respected local leader also a government employee, who frequently travelled between his home area and the regional capital. Also in this second example, CD-IAS seemed to have an influence on the nomination of important board positions of the BCWUA. The influence of the female representatives from the housing area, given their age and gender difference, seem to have little influence on the board with a majority of older male representatives for agriculture. Like in other rural organizations, women do not normally get chosen to represent agricultural water use for main board positions. Elderly and institutionally experienced men who represent agriculture dominate the BCWUAs.

Well-endowed, -educated and -connected men in government, business, and mosques with leadership qualities tend to become BCWUA presidents. That this is the case is not a coincidence, they explain. When there is a problem at the BC (e.g. a bridge to be fixed, maintenance issues, restoration of a canal embankment, a conflict over a PS, etc.), these leaders have to be able to speak to highly placed men in the public administration, such as the General Director, the Under-Secretary, or IIIMP representative, or politicians who can give support to their cause, and explain what the issue is. Not many people can do that and have the preparation for that. They preferably should also have a good or close relationship with these higher placed irrigation officials, when they want to achieve something for their BC. "He explains that this job is mainly volunteer work, and that you have to have

good communication with the irrigation staff in face to face meetings and to have a good relationship with others." Further, a president needs to have sufficient land, money and a car, which enhance their capability to move around and visit offices when it is required, which is necessary as it is a volunteering job and there are no funds for such activity. Several of the BCWUA presidents have private businesses and in some cases an office in the governorate capital, which allows them to visit the district or a higher Irrigation officer there.

But besides that, they also need some authority among the water users. The president from upstream part of Halafy BC explains that he is also head of the cooperative, so people get the fertilizer from him; they have to listen to him because of this power; they also have to listen when district people come to ask him to help enforce the rotation. From all the other positions and roles he mentions (sugar refinery committee, group to electrify islah pumping station) it is obvious that he is a very influential leader in the area. Another president states that it was not because he is handsome and sweet that they selected him to be president of the BCWUA. He claims that what mattered was that he had land at the end of the canal, which is a good indicator of what is the final situation at the canal concerning water distribution; he has a big area, so he has the capability (money) to travel around, he also stays in the capital, where he has an office, which is a big advantage, because they call him on his mobile and he can go directly to the district. His capability has to do with his car to move around, the money he can spend money without being compensated, his social status, he explains indirectly.

Another benefit that some prominent board members have is that their house is big enough to allow the organization of a substantial meeting and this is all the more important because the majority of BCWUAs do not have an office. At the end of the middle reach of Bosees, Mr B has his house. "This is the house of a well-to-do man and a local leader. The house is large, with a substantial front porch, suitable for meetings, and a lot of machine equipment lying around the courtyard. Workers come to consult him from the entrance. Mr. B is clearly used to receiving people and organizing meetings".

That B is a social leader and not some ordinary farmer, is something that he would not state himself, but becomes clear from how he describes his own position in the community. This partly explains why he is willing to fulfil this function over a long period and go through significant trouble without being paid. He explains that his family was like a pioneer in this reclamation area, so he became the first person in the area to make houses. He is also accustomed to attend the *maglis orfi* (customary form of conflict resolution, usually attended by respected elderly). For this you have to be patient and judge, he explains. He also does volunteer work with the mosques. He even does the call for prayer. This is regardless the salary and all volunteering work. If somebody asks him to help, he cannot refuse. For example, there was driver of an excavator working in the area and he invited him every day to stay, come and eat at his house. Finally, this man with his machine blocked a pipe near his land (bad luck). But he has to do this; it is like a moral duty, regardless of the personal result. Further, he was also on the board of the Bosees cooperative, already for 25 years as a member and for some time as a chairman. In addition, he mentions the fact that he was a soldier in the war, in the second army, working in the air defence but on the ground.

From the following case it becomes clear that a BCWUA president can become a social leader that functions as an intermediary for the government to implement its national project. H. considers himself to be a key-person in the area. So if people come to his area, they should visit him first. That is the right way to enter, he explained. They should first ask around who are key persons around here and talk to those people first. He sees himself as a volunteer. If you ask him, he will give you information about the existing situation, if he knows.

The experience with IIP/IIIMP (the distinction is often not made by farmers) on the canal began with a big clash in a PS at the beginning of the canal. He found the government engineers in an argument with the farmers. They tried to implement the project, but the farmers refused. There was a lot of suspicion. There were stories that this was an American project and that they would soon start to price water as one of the hidden goals. People thought that an American company would come and start to sell the water to the farmers, so they refused and did not allow the staff to go into the field. An irrigation engineer tried to calm them. But the IIP called the police to solve the issue. Police came to investigate the issue. H. knew some of the police officers and went to their office and later waited to talk to an IIP Engineer. He tried to solve the problem by arguing that they should come through the door. He also suggested to let those that refused to take on the project, but just continue and don't make a problem. Negotiations started to go in the right manner.

The intervention of a sociologist who worked for IIP, made a difference in how they came into the area during the initial year between 2006 and 2007. He did a survey of the area and made a list of key persons and important farmers to contact. This list was recommended to the IAS. In this manner IAS went to the field to ask farmers if they agreed. They then put a circle of farmers to nominate for the BCWUA. Later there was an election. But these people were then already nominated. IAS was looking to form BCWUAs to do many future roles, such as (shared) water distribution, to give their opinion on the rotation, excavation needs, restoration of canal embankments, etc. They would have meetings in the field and in offices. Then they elected the nominated persons in most cases. After forming the BCWUAs they had 2 meetings in the offices in the capital.

The representative basis of the BCWUAs is mixed. The selection of BCWUA leaders whom the researchers have talked with are generally a group of men committed to represent the cause of agricultural water users (often conceived as men) and to a lesser extent household water users (often conceived as women) from a BC. They are often (male) mediators between the interests of (male) farmers and the institutionalized interest of government agencies that implement projects or manage water, and as a result agricultural water use takes prominence. Nevertheless, it is difficult to see BCWUA representatives as freely elected, since their candidacy was often pre-arranged by the way in which influential leaders were identified and the elections were subsequently organized. Their required favourable opinion of improvement and their often close relations with irrigation staff and the government, limit their independent ability to make project- and irrigation staff accountable for service provision and quality of work. Gouda (2013) qualified the formation of BCWUAs by CD-IAS in Kafr el Sheikh as top-down, which privileged traditional village leaders and power holders.

The (voluntary) work of BCWUA leaders is further severely constrained by several factors that will be discussed below. The representation of women is not insignificant, but appears more of a token measure, driven by donor pressures, which does not carry a lot of weight in daily practice. They are invariably selected to represent domestic water use and not agricultural use, although women may play a significant role in irrigated agriculture, which is usually however downplayed (Barnes, 2013). The representation of industry is also limited. The representation of different canal reaches of BC is relatively equal in terms of number of representatives from each reach in the General Assembly (e.g. 15 per reach) and on the BC board (e.g. 1-4 for each canal reach). Yet, there are some indications that coalitions are formed to elect a new president or board, when particular head, middle, or tail interests dominate too much. In one case the complaint was that board members from the head were not active in representing tail farmers, since they already have good access to water, and they do not care about others. In another case, board members from the head and middle of the canal formed an electoral coalition to replace the president from the tail with one from the middle.

When discussing the topic of training with board members, it is remarkable that many do not necessarily remember or recognise the fact that they received training. Nevertheless, a basic training was carried out by IAS staff at the time of official formation and re-election of the BCWUA. After some further interrogation board members would remember that they went to the CD-IAS office and/or training centre and had some sessions with professionals, which could be considered as oral training. The topics of discussion were about how to form a BCWUA, its constitution and roles, and the benefits of improvement. The training approach and topic choice appear very instrumental to project implementation. The BCWUAs were given a template for its constitution, roles and rules that they could adjust to their will, yet it was in practice often faithfully adopted. The instrumental approach further left little space for people to refuse the project interventions at mesqa and branch levels, in spite of sometimes legitimate reasons. When farmers indicated they wanted to discuss design and construction issues, such as too high intakes associated with the continuous flow assumption, there was not much opportunity for that. Some board members state that they did not learn anything in these 'trainings', they just spent some time, but others state that more training is needed again, for example on: BCWUA roles, the importance of water conservation, environmental issues, law and legislation. However, since the Egyptian Revolution in January 2011 most of the ongoing training activities and meetings organized by CD-IAS have stopped and have not continued since. This is also the reason why no new elections have taken place in the BCWUAs, which CD-IAS would need to call for. CD-IAS and IIS-IAS mostly seem to focus on forming new BCWUAs and WUAs. There are few arrangements for those BCWUAs that already exist for some time.

Over the years, most of the CD-IAS efforts appears to be focussed on forming new BCWUAs and having elections for new boards, but in between less attention and resources are available for sustaining the existing ones. This is somehow understandable, as most ministerial targets and budgets for training would be available for setting up new BCWUAs and not for maintaining the existing ones. IAS now and then organizes meetings with BCWUA representatives, but in between those little is actually happening. The president of the Ghabat BCWUA tells us that at the beginning, before the revolution they kept doing the meetings every month, and the ministry was sending IAS employees to follow their work. Now they are doing the meeting according to the needs. Most of their meetings are in the summer season … (during period of high water need). Although he denies that the revolution has affected them, he claims that lately the IAS staff does not come anymore to follow their work. Several other BCWUAs confirmed that since the Revolution the support from the CD-IAS has reduced. At the time of research, BCWUA board members were uncertain when new elections would be held, given the volatile national atmosphere. CD-IAS calls for such elections and planned to have many of the elections during 2015 (see Figure 9).

Initially, most BCWUAs started enthusiastically with monthly meetings, but over time people did not turn up and the frequency reduced. Currently, most do not have the monthly meetings and their contact with the irrigation district is too sparse and dependant on the district engineers willingness to involve water users to have a steady organizational process going. The BCWUA is then practically limited to the individual role and leadership of a select number of board members, when they are approached by farmers or district staff.

From their perspective, the CD-IAS set up a meeting each month with irrigation district engineers and managers, IIP, other sectors, and representatives from 2 or 3 BCWUAs, to discuss farmers problems (they had 11 associations + 4 committees). In the beginning these meetings were good and they would write down a list of problems and decisions. BCWUAs would normally take their complaints to the meeting, where they should be solved immediately. After the Revolution, the meetings have been discontinued, and definitively since the integrated districts were put on the backburner (2014).

6.2 Administration and resources

As a consequence of the fact that the Egyptian law does not recognize BCWUAs as a legal entity and only a ministerial decree acknowledges them, these organizations have no possibility to collect fees, provide services against financial contributions, maintain a budget, keep a financial administration and make expenses. This makes them organizationally weak, with limited possibility to strengthen them. Their legal and administrative situation presents a bleak picture when compared with that of the PS-WUAs, which do have a legally recognized authority to collect money from water users for the service they provide. But the PS-WUA is simply at a different level, which has no financial link with the BC level.

Figure 3. BCWUA offices and meeting spaces, near houses and businesses

The BCWUAs all received an initial start-up fund of 3000 EGP to furnish their office. With this, several have bought some basic furniture (a desk, table, etc.) for the office. Only a minority have an arrangement to hire an office space, since they do not have budget for that, but the president or another board member may have a space to host the office and meetings connected to a house or business.

As one of the few, the Abu Mustafa BCWUA rents an office consisting of one space in a village near the canal. The president proudly states that they make minutes of their monthly meetings between the different reaches. Hag Kemal of the Masharqa canal has an office at his house and this space is furnished for BCWUA meetings, as indicated by several lists and regulations on the walls which indicate the board members and the committees they partake. After they formed a new board in 2007, which replaced earlier boards, IAS asked them to cover the following activities:

1. Agricultural committee
2. Housing + environmental committee (women)
3. Conflict resolution between farmers
4. Irrigation committee

Each committee was assigned 3-4 people. After some time, they were called for a training. A proposal for internal regulations and planning for the board was given to them to which they gave written comments. IAS took these and produced a final document, which was finalized in December 2013 (after 3 years). Hag Kemal shows to have a good organization and records, with all the documents that come from the drawers of his working desk. In order to be able to give exact answers to questions, he consults the documentation and records that he has kept for the BCWUA. He also keeps a visitor's list in a large notebook in which visitors can make their comments. Hag Kemal knows all the engineers involved in IAS, IIIMP, the district, and even the Undersecretary, and he has many of their numbers in his phone. The president presents a positive exception by closely meeting an administrative ideal according to bureaucratic standards. How this relates to the BCWUA's actual activities on the BC will be discussed in 6.3 and 6.4.

However, most BCWUAs do not have an office so if they meet it is usually informally in the open, in the field, in the shadow of a tree, at a house or at the mosque. For example, the Melaha BCWUA has no place to meet, so they have no place to keep records and they also do not have a monthly meeting. Instead its 3-4 board members meet in the field and discuss a certain problem, but they hardly meet at the Irrigation District to discuss these issues with the engineer, although in such matters they often have to wait for help from Irrigation staff. They are also not compensated for the work, since they are voluntary positions for which they receive no salaries, unlike the irrigation officials. In the beginning (2008), it was promised that they would receive a subsidy and work with a budget, to rent a permanent place, but six years later nothing has happened. The expectation raised among board members was that there would be more donor money following as a support, but this did not materialize. Not having an office space, did of course not help to keep up regular meetings and referred back the BCWUA to informal contacts and encounters. It also did not allow keeping an administrative record, a financial administration, minutes of meetings, etc.

The treasurer of the Bosees BCWUA explains that he does not keep any books, since there is little to administer, except for the 3000 EGP that they received and put on the bank. According to the Monshah president there are several difficulties in the BCWUA to which money is key:

- They received 3000 EGP from IIP to encourage the formation of the BC-WUA. They put it on the bank, but this money is only reducing there, since there is no use to it. The idea was to collect fees but this is not possible because of the legislation. He acknowledges that even with a law that allows fee collection, there would still be a problem, because what would they do with that money, since they do not have a plan.
- They have no permanent office, so since 2010 as president he has offered a hall in his house to have meetings
- He tried to have a monthly meeting according to the regulations, so he invited everybody through the phone, but only around 8-9 came. He wanted to have meetings when they would have serious recommendations to the IAS or the Undersecretary they would write a statement and present it to both.

Emtedad Shalma BC presents a variation on these same issues. The former president asserts that they would have to receive some help/subsidy from the government to achieve their responsibilities. On paper the BCWUA has rules and regulations but actually the organization does not exist. They do not have any real validity. They had some meetings with IIP staff but there was no result. Another thing that they need is a permanent place to meet. IIP promised to deliver money for such a place. In reality they do not have a monthly meeting. Only the IAS staff sometimes asks to have a meeting in Kafr El Sheikh according to their plan. This is the only way to meet them, they do not have any routine meetings. Afterwards "they say thank you and that's it". There is no money to cover their

expenses. Unlike the PS-WUA they are not able to seasonally collect fees. In sum, they should receive material and moral support (interest) from the government.

In some case however, and although associations do not really have a specific income, they can collect some money, for example 2 of 3 pounds per feddan when there is a need to rent a mechanical hoe for some dredging.

6.3 Role in O&M

A central role expected to be fulfilled by the BCWUAs is to assist in the planning and implementation of both Operation and Maintenance activities. This is justified by the facts that they have intimate knowledge of the reality on the ground, that they can assist the engineers in enforcing water distribution, and that participation has the potential to instil a sense of responsibility, if not ownership in farmers.

Surveys at the national level showed that a high percentage of farmers express their desire to be included in the decision-making process regarding canal operation and maintenance activities (El-Zanaty & Associates, 2001). Willingness to participate in WUAs and to share the cost of upgrading the irrigation and drainage systems in their local area is also high when associated with promises such as continuous flow or improved drainage. The desire for more consultation, discussion, recognition, attention from officials is widespread and also shows a feeling of hopelessness of those located at the very tail end of both water distribution and decision-making systems. For example "nine in ten farmers would like the irrigation engineer to consult with them on matters such as branch canal operation, scheduling cleaning, the rotation, garbage in canals and illegal outtakes" (El-Zanaty & Associates, 2001).

In different institutional building projects involved, farmers have expressed a willingness to take on the O&M activities on the branch canals (IRG et al.; 2001a). They indicate that trash removal and preventing dumping trash and sewage in the canals would be improved if BCWUAs had the authority to maintain the canals and punish polluters; and that they can do many of the branch canal O&M operations at lower cost than the currently contracted private companies (IRG et al.; 2001a), which are widely criticized for the speedy way in which they expedite their work and the severe problems induced by careless execution (deepening of canals that lowers water levels, dredging of banks in a way that induces landslides, removed material deposited on the side and obstructing movement, etc). Often, however, "it was felt that the issues and implications related to cost recovery were not adequately understood by WUA shareholders at the time of implementation" (IRG et al., 1998b), and the degree of involvement announced, as well as purported benefits, did not materialize.

As part of the establishment of Integrated Districts in Kafr el Sheikh Directorate, each month the CD-IAS office used to set up a meeting with irrigation district engineers, engineers from IIP, drainage and other sectors and representatives of 2 or 3 BCWUAs, to discuss farmers' problems. Although their main role was to help establish IIIMP pump stations, these meetings were used to write down a list of problems reported by farmers' representatives and decisions. Farmer representatives normally took their queries or complaints to the meeting, with expectation that they would be solved immediately (if minor), or registered for likely action. They could also write official letters at any point in time independently from the meetings. According to CD-IAS officials, when an Association sends an official letter, the district cannot ignore it and has to take some action. Typical issues addressed during meetings include 1) repairing structures, breaches, gates, opening drains to divert water from them, embankments slides, adding gates to control mesqa, etc, 2) maintenance issues such as dredging, and 3) water delivery. The regularity of the meetings and the commitments of

district officers were severely affected by the 2011 revolution and later discontinued (2014), when the Integrated Districts were put on the backburner.

Maintenance requires capital and machinery, which explains why the role of associations is understood as contributing to setting priorities and to planning, as well as monitoring the work of contractors. In Kom el-Roz El-Gedida Association, the district engineer was said to disclose and discuss with farmers the annual plan of maintenance prior to implementing but this practice was discontinued after the revolution. The contractor is now working without the BCWUA being informed and/or asked to supervise the work. This was echoed in Halafi Canal (Upstream) BCWUA, where at the beginning of the Association there was a very good contact with the Ministry: "They would listen to us and solve our problems, like when we asked for an iron bridge to be constructed, or some pitching, or improving the inlet of the Moheet canal", but this was terminated by the revolution. "Now the contractors are even doing their dredging at night so that we cannot monitor them; we did complain about the work of the contractor doing the dredging but now he is the one complaining about us! We also complained about the contractor who did the pitching, because he did it in the wrong place!"

In the downstream El-Daramally canal there were complaints about the IIP engineers as "they ignored the BCWUAs when they did the rehabilitation of the canal, they didn't consult [us] about the places to build rock embankments (pitching), and also the quality of the work was poor". The engineer was reported to have indicated that "the canal is the ministry's responsibility and the mesqas is yours, you can interfere only if we do work at the mesqa level". In contrast, in Halafi downstream (Hag Yussef BC), they were tasked with observing the work of the contractor and would report to the engineer if there was a problem, after what he would usually take action. One farmer also mentioned an on-going pilot project, where an enhanced role of BCWUAs in maintenance is being tested, which could involve having machines, equipment, money, and fee recovery.

On balance it is apparent that farmers appreciated the possibility to come up with a list of problems at the level of the branch canal (e.g. a bridge to be fixed, mesqa inlet to be repaired, a mesqa reach to be covered, maintenance or dredging issues, etc.) and to be heard by the district engineers. When requests could be attended, this not only helped to improve relationships between farmers and District officials, but also often boosted the legitimacy of the Association (or of its president). But without a clear political will to continue empowering the BCWUAs, these linkages promoting participation or accountability soon became obsolete in the face of political instability (revolution), insufficient funds to answer all requests, the willingness and capacity of contractors to evade scrutiny, and the preference of some district engineers for bureaucratic practices based on authority and discretion rather than idealized co-management modalities.

An equally important matter is the distribution of water along the branch canal. Because of the length of most of these canals it is necessary to establish a rotation pattern between two or three successive reaches, in order to make sure that water reaches the most downstream users. The design and enforcement of those internal rotations are probably the most crucial aspects of water management in the Delta, in terms of ensuring a degree of equity and predictability in supply. Ideally, compliance with the rotation schedule -checking whether particular users are abstracting water in turn or not- could be ensured by the BCWUA, as an alternative to or in addition to the authority of the engineer who represents the Ministry.

In the Halafi Canal Upstream, for example, although the rotation schedule establishes that they have three or four days during which they are prevented from pumping between 7 a.m. and 17 p.m. (but they can pump at night, largely as a result of a pragmatic realization that there is no way to enforce any discipline during the night), it is hard to control pumping or diversion because only three mesqas

can be closed (others have broken inlets). Before the revolution irrigation staff would fine people (like 700EP) when found pumping out of turn, but this is not possible anymore.

In the absence of formal authority, it is very important for presidents of BCWUAs to yield certain power and credibility and have some social prestige to be able to impose some decisions on fellow farmers, as already emphasized earlier. One of them, for example, is also head of the cooperative (so people get fertilizer and also the stamps needed for administrative procedures from him), member of the sugar cane factory committee (which has been established to check about how the sugar content is estimated, in order to avoid cheating), and is in different ways a very influential leader in the area. This allows him to exert a degree of authority, albeit insufficient.

In Hag Yussef canal (Halafi downstream), they have four or five days 'on' during summer, to serve 17 mesqas, most of them 1.25 km long. After two days, they close the 12 upstream mesqa in order to have water reaching the last five ones. The cooperative has hired people who are dropped by a car on the morning of the third day, and who are tasked with making sure that the mesqas are closed. But several important points need to be noted here: first, this practice was already implemented before the BCWUA was established; second, this was done through the Cooperative of Village 5; third the cost for this labour is added to the bill that each farmer has with the cooperative (which includes tax, fertilizers, etc.) and not extended to village 3 and 4 (let alone upstream reaches), which are part of the BCWUA but do not pay because they do not feel concerned; fourth, the system is implemented only within their canal reach: If they see upstream farmers using water out of turn they cannot intervene directly, because this would create a conflict. In other words, their authority is limited to people depending on the cooperative and they have no legitimacy to enforce rules at the branch canal level; fifth, the application of the rotation is more difficult than before, because of the increase in the cultivated rice area: when demand increases relatively do supply, distributing water becomes more difficult (see IWMI-WMRI Report 4).

A similar system is implemented in nearby El-Daramally canal (downstream), where the BCWUA helps the district engineer implement the rotation within the canal, to enable the water to reach the end. They have 11 mesqas served by this canal, they leave the water for the first 4 mesqas for two days, after what they close the 4 gates and let the third day to the next 4 mesqas, and then they close the 8 mesqas for 24 hours to enable the last 3 mesqas to irrigate. They hire labour and a car to help the engineer from the early morning to 4 or 5 o'clock: the gates of the mesqa intakes are eroded or destroyed and the farmers have added pipes beside the intakes, which they block with straw packs. This costs from 500 to 600 EGP. They collect the money from the 5 downstream villages, which are the only ones to pay, 10 to 50 EGP per farmer per year.

After the establishing of the BCWUAs, farmers were working more effectively with the engineers in enforcing the rotation within the canal. The meeting was held every month and they would report the problem to the engineers. "Now no one attends these meeting and they are not considering us at all. – What has changed? - The reason is maybe the engineer has changed and the one in charge now doesn't care about WUAs". "The police and the district engineers should listen to us and act when it is needed. We used to make reports about violations and send them to the district, but they didn't do anything. At the beginning of establishing the BCWUAs, they were taking action (...) The engineers should be aware of the role of the BCWUAs and believe that it is for helping them, not to hinder their work; we can follow the work of the contractors during the maintenance and the construction of pitching".

Such collective mobilization has also been seen occasionally in Bosees canal. The BCWUA has tried to stop pump stations at the head of the canal to abstract water out of rotation. But farmers make clear that they do it "under the umbrella of the engineers". They would not go by themselves to do this

because this would create serious problems/conflicts with the farmers. A group of farmers has visited the district to ask for help and they patrol with the engineer along the canal to close gates (they also bring a cart with rice straw to obstruct the pipe inlets). It must also be noted that farmers acknowledged that they would have done this in any case (regardless of whether there was a BCWUA or not), because it was absolutely vital to them.

This shows that at this moment BCWUAs are unable to enforce a rotation by themselves, without the authority of the district engineer. When asked whether they would envision a full transfer of responsibility for enforcing rotations, BCWUA members clearly state that they do not expect to be able to do this alone, and that they will still depend on the Ministry's engineer. They consider that they are "the eyes of the engineer", because they cannot manage without him. One stated that "we never really had the idea that the rotation could be fully under the responsibility of the Association; it is and must remain a cooperation". Some examples of working corporations were observed. In the El Monshah canal (middle reach) it occurs 2 or 3 times during summer that the gatekeeper, district engineer, or even the Undersecretary come to the area to enforce a rotation when this is necessary. Last summer the president participated in this two times together with the irrigation staff. "On all but one of the mesqas there are improved PS, which are then asked to stop irrigating. The one traditional gate can be closed by the bahar. They went and stayed at night to apply the rotation". In another canal one BCWUA member was satisfied about the kind of "pulse" irrigation system, which combines the high discharge at the head and the prohibition to use water until it has reached and filled all the mesqas. They established this pulse system together with the Director in Kafr el Sheikh.

It is not fully clear whether the relative powerlessness of the Associations and the lack of responsibility for water distribution in the branch canals, is fully structural or a consequence of the fact that they have not really been empowered. Associations registered violations and handed them over to the district because they did not have authority to act on them directly. The non-respect of the rotation, for example, was a major threat to the credibility of the BCWUA. Unless they had particular social prestige and power, BCWUA leaders could not legitimately impose anything. One president stressed that being "an active president means you will not necessarily be appreciated by all, because you have to be active in enforcing the rotation or informing the engineer about infringements, or even activating fines". They really hope to have the law empowering the associations; "with a stronger law I could report infringements directly to the police station; farmers would fear and respect me". Currently, the BCWUA president is only a farmer among others, and if he tries to exert too much authority, people just tell him so.

One BCWUA board member also links this limited capacity to the lack of financial power to face expenditures. In his case this means that he spends time solving collective issues without pay or compensation. A BCWUA president stresses that while the pump station-WUAs are doing some things BCWUAs are volunteer work. "A government employee does salary work, should I then do it as a volunteer?" Many times he went to speak with the *bahar* to arrange the rotation, but then other farmers imagined (there were stories circulated) that he had a special deal with the *bahar* to get extra water, and this whilst he does this as a volunteer. This anecdote illustrates that the function is not really motivating, as it has the potential to attract problems with little personal benefit.

Another board member believes that without continuous flow there is no such role for BCWUAs. Nevertheless, after changing many PS from diesel to electricity, there is a hope of a revival of the continuous flow, because if all stations work with electricity this "will give the opportunity to stop PS through the control of electricity", an idea that has already been applied. When the irrigation engineer could not do the rotation he called the electrical engineer to cut the electricity to the PS (...). "I think this is possibly the only way to distribute the water at the canal". This solution was also

implemented in the Masharqa canal, after the president of the BCWUA met the engineer (by chance) in the middle of the canal and went to him to help him with handling the scheduled irrigation. In this canal most of the supply comes from the drain, which disadvantages PS at the head of the canal. He suggested the engineer to switch off the electricity box nearby his station, which stops 8 downstream stations (out of 15) so that other 7 PS towards the head could irrigate. After some discussion the engineer accepted that this was a good idea and implemented it 2 or 3 times last summer.

In the downstream branch canals, farmers often reported that nobody told them about the formal rotation. One of the farmers asked: "Do you think that the irrigation engineer will give us details concerning the timing of water? Actually it is 1 day on and around 7 days off for the canal water. But the re-use pump station at the tail of the canal is actually the main source of water during the summer, which is sometimes not enough. This station is operated continuously during the 3-4 months of summer". This illustrates a very important point about the predictability of rotations, and therefore of supply. One IAS officer noted that "the engineer does not want to commit to a timetable because he knows supply can be changed at upper levels. Yet between 1 March and 1 April they should have a meeting to distribute the table with the expected rotation". This means that district engineers are unlikely to be supportive of accountability mechanisms regarding water distribution because they are themselves subjected to uncertainty regarding how much water they will be given and when. In El Monshah canal, for example, "the problem that I observe is that there is no working [cross]regulator on the canal. Officially the rotation is 4 days on and 6 days off for the summer. The actual situation is that the engineers and baharee from the district try to adjust the rotation to the actual water levels in Meet Yazid canal. So actually they may receive 10-11 days 'off' and 6-7 days 'on'. Clear information on rotations is further undermined by the fact that most canals now also rely on pump stations abstracting water from secondary drains. Supply therefore becomes partly continuous of the downstream end and this weakens the necessity to enforce clear-cut rotations.

Engineers are quick to explain that the system is hierarchical, and that they depend on how much water is given to them [Kafr el Sheikh] by Gharbiya governorate, which in turn depends on Manufiya. So it is beyond their control to commit on a given pattern of supply. One of them added "How can you have a good distribution, when there are so many general problems. The idea of water user participation was a very good idea, but is difficult to apply with all the problems that we have here. First we need to solve those problems and then we can apply this idea". Such uncertainty in supply is actually one of the major factors that have undermined collective action of WUAs worldwide.

The traditional lines of command, from the directorate to the inspectorate (removed in places where integrated districts have been implemented), to the district, and then to the gate keepers, have also been partly altered by the advent of ubiquitous mobile phones, which allow information to be gathered in, and reported from, the fields by different people, and communicated in real time. One engineer explained that "the manager in Kafr el Sheikh has connections with farmers at the end of canals and he contacts them by mobile phone; this helps him manage everything from his office". Maisa, president of the Bashair BCWUA, surprisingly does not reside in the area but in Kafr el Sheikh. On the other hand she is quite influential and is connected through her mobile with people in the area. She can therefore quickly intervene at the level of the directorate in case of need. It is apparent that communication through mobiles has somehow improved information flows and water distribution. This is however very difficult to evidence and analyse because all these communications are intractable.

It is clear from many accounts (see more on this in section 6.4) that the degree of collaboration between farmers and district engineers is very much dependent upon the personality of the latter. When asked for a solution to this problem a BCWUA president explains that the main solution would

be "to have the Undersecretary bringing all the Districts together and give a strong recommendation that they have to collaborate and consider the BCWUA as a hand for them. The user representatives will tell you the existing situation because they live around the canal and they will tell you the truth about water levels, rotations, and embankments. The solution has to come from their boss, there is no other option". This, again, points to the paramount importance of the manifestation of support to BCWUAs from the higher levels of authority in the ministry.

Farmers convened in a workshop to discuss the role of WUAs indicate "that the opportunity to dialogue with senior ministerial officials on a regular basis would provide a significant psychological boost to support the fledgling WUA organization" (IRG et al., 1998b). Likewise the question of the amendment of Law 12 in order to legally allow for full-fledged and autonomous BCWUAs or district water boards is believed to be key to improving their position to negotiate with MWRI staff and widening their scope and self-reliance in contractual matters, but also to "increasing the WUOs' self-esteem" (APP, 2007).

6.4 Conflict resolution and problem solving at the BC

One of the major expected benefits of Participatory Irrigation Management was the 'resolution of water-related conflicts' (IRG, 1999a). As a result, international organizations have placed a large emphasis on their support for BCWUA- and Water Board formation, on training activities, focused on conflict resolution, communication and moderation skills, and action planning (Water Boards Project, (1999-2006); Water Stability Project (2005-2009); Water Management Improvement Project, (2000-2007); LIFE (2000-2012).

The idea of giving BCWUAs a task in the resolution of conflicts and problem solving between farmers at the BC is that this would reduce the pressure on the higher management levels of the Irrigation Ministry. This is voiced by the president of the Bosees BCWUA: "The difference between before and after the Association is that before all farmers would go individually to the district and this created a mess". Now they first ask the president of the Association to solve the problem; if it gets worse than many people will gather, take a bus and go to Kafr el Sheikh or to the district". According to the president, the BCWUA considers itself as "the eyes of the engineer", because they cannot manage without him". Besides indicating an ideal self-perception of the BCWUA president, this quote indicates that BCWUAs experience some limitations in exercising this role and remain dependent on the government irrigation staff.

That conflict resolution between farmers was seen as a major benefit for the MWRI by CD-IAS, is indicated by the fact that they asked BCWUAs to form a special committee on this activity during the formation of the BCWUA board. Also engineers from the Irrigation sector recognize that this is a potentially great benefit for them: before farmers come and complain to the Irrigation Directorate or District they would discuss these with the BCWUA so that the irrigation staff can deal with 1 or 2 people, instead of large unmanageable groups. Several BCWUA board members refer to this responsibility. Mr. N of the Bahr el Nur BCWUA clarifies that his role as a member in the BCWUA was to solve problems. His function was to solve problems and conflicts among farmers by '*orfu*' (a customary tradition of conflict resolution at village/community level). He solved many problems like this. Many were about irrigation scheduling, others about the high costs of maintenance. Many of the IIP PS actually stopped working after installation. One alleged reason was that the contractor brought old pumps that he painted and installed as if they were new. After that they quickly broke down. Problems of this nature were attempted to be resolved, before the BCWUA actually stopped functioning at Bahr el Nur BC (2011). According to the treasurer of the Bosees BCWUA there are not many conflicts between the farmers about water. But he was once asked at another canal for a

problem at a PS. They asked him for the '*maglis el orfi*' (customary conflict resolution). They asked him to attend and determine who was wrong. A certain farmer took the right to irrigate out of turn. They had a meeting and the problem was finished. International projects have generally assumed that a new organization like the BCWUA can upscale or draw on the 'social capital' of a customary tradition of community conflict resolution, but this does not necessarily work at the level of a BC which exceeds the mesqa or community level (Gouda, 2013).

The first limitation that BCWUAs experience is their lack of effectiveness in mediating conflict between water users. When many farmers are not aware of the existence of the BCWUA, not convinced that they represent them well or that they can achieve something for them, it is not likely that they will use the BCWUA to resolve their conflicts and problems. They might still go directly to the district, the irrigation directorate or even the Sub-secretariat to pressure for a resolution of their problems. The research team has observed this happening on several occasions. In the summer of 2013 in the critical period of rice transplantation a group of farmers from the tail of Abu Mustafa, went in 2 minibuses to the office of the Under-Secretary to complain about a non-functioning cross-regulator installed by IIIMP for the purpose of Continuous Flow, which was actually blocking the flow to the tail (a high sill). Although the president of the BCWUA stated that he was informed about their complaint and supported them he did not go with them to the capital. The farmers succeeded in pushing the district engineer to come up with a creative solution and construct a bypass beside the structure with a lower pipe, which improved the situation slightly and for some time. Whilst visiting the offices of the Irrigation Directorate at several occasions between 2012 and 2015, the research team observed many of such farmer missions, often involving water shortages or conflicts, and have little reason to believe that these were significantly reduced through the intervention of BCWUAs. This was also confirmed by the Undersecretary of Kafr El Sheikh who stated that there was something wrong in the organization of BCWUAs and this did not change the last 15 years. He stated that in the absence of organizations any farmer can go by himself and come to shout at him or go directly to the Minister. In his view, the BCWUA should inform them earlier about urgent problems. Also the Director of Western Kafr El Sheikh stated that they expected the BCWUAs to be more active in solving problems by themselves or discuss these problems with them.

Figure 4. Farmer mission to the Irrigation directorate about a dysfunctional cross-regulator



The second limitation of BCWUAs is the lack of formal authority that the BCWUA has to intervene, solve conflicts, or apply a sanction, e.g. in the case of an infraction or a conflict. For any problem that farmers cause the BCWUA can officially not intervene and depends on the district engineer to act, as has been mentioned above in the case of enforcing the rotation system (see 6.3). This generates the critical question of how can a BCWUA resolve conflicts and problems at the BC when it does not have effective authority in water distribution, maintenance of canals, or administer any funds.

To better understand the limits to BCWUAs authorities in conflict resolution, it is good to look at an example. One of the pilot projects that came to be known as a success-story in conflict resolution was the Al Qon village in Western Kafr El Sheikh (CARE-SRU, n.d.). It was one of the four cases of 'Water and Stability Project', financed by the Dutch government and implemented by CARE, which "seeks to find and test effective mechanism/s to manage conflict around water in Egypt" as managing conflict in a participatory manner will reduce the severity and the negative social impacts (CARE-SRU, 2007: 2). Al Qon was selected because of it high number and severity of water conflicts associated with rice cultivation and various farmers' irrigation malpractices and the incomplete implementation of IIP (Adly el Tanani et al., 2010). A primary project component was the identification of a conflict-management-mechanism which was then provided with support in the form of capacity-building and awareness sessions in the field of conflict management over irrigation water and the best usage of water. The BCWUA of Sheikh Ibrahim was branded as an ambitious organization, reason for which Al Qon received the grant.

The efforts of the Al Qon WUA did not go unnoticed and the Ministry chose its association as a model for Sudanese and other foreign visitors. On World Water Day, the Ministry organized a competition for the most active associations implementing activities related to water and Al Qon won the second place for "their efforts to develop and preserve resources and their protection of the environment" (CARE-SRU Success story, date unknown). The BWUA president confirms that they received a lot of international guests from foreign countries, such as the Netherlands, Germany, Japan, Care Egypt, etc. In the guest book the Director of CARE-Egypt writes: "Thank you for showing us your experiences. I was especially interested to learn about how you are addressing conflict issues. The Association and the … are a great role model!", Aug. 2008). The BCWUA received a gift from CARE to solve the problem of water in the BCWUA. They received training for example on problem solving, involving 'Adat al Arab' (customary problem solving). He also was invited to go to China. The board further went to many places such as Benisuef and Aswan, to share their experience.

Figure 5. BCWUA recognitions

According to the project evaluation water conflicts arise among farmers at the tail-end because of a mismatch between supply and demand of water. Water supply is scarce because of the tail location of Al Qon and insufficient water supply due to government control. High water demand is (mostly) caused by too much rice cultivation. What has further worsened water conflicts among farmers is the inefficient implementation of the improvement project. This project forced farmers on the same tertiary canals to share the same station and to follow an irrigation schedule. "What causes conflicts to burst is the combination of the two factors: the lack of water availability and being tied to a schedule when water is available" (Adly el Tanani et al., 2010: 5 (Annexes)). For instance, some famers would open valves during times when the water is allocated to another party. Other problems included the theft of the water pumps and the disposal of household and industrial wastes into canals. Besides these more local problems, the larger underlying problems are however not conflicts that lie within the authority of a BCWUA to solve.

Several visits to the project area have shown that the BCWUA is led by an active social leader as president. He maintained good relations and was fully supported by CD-IAS and irrigation staff. Already before the project, he was instrumental in solving a water problem by organizing farmers and pressurizing with the Irrigation Directorate to create a connection between the Nashart drain and the Waslit Bahr Sheikh Ibrahim canal (BSI). Around two decades ago, they had a problem in this tail area because insufficient 'fresh' water was reaching to grow rice. By constructing this connection in the second half of the 1990s with USAID support, water is led in from the highly situated drain to the canal, which offered a temporary solution in the critical summer months. The main reason of this success was that they already solved this main problem by themselves, the Irrigation Director indicates, even before the BCWUA. The leader demonstrated his qualities, was selected as BCWUA president, and the coordination with the Irrigation Directorate remained good since. In spite of the good cooperation, however, the BCWUA has no authorized role in water distribution (rotations) or maintenance. A visit to the location shows this constructed connection is still functioning, but has generated a water quality problem. Increasingly, this tail area has become dependent on the re-use of drainage water, which is increasingly polluted and mixed with household and industrial waste water. Again, this issue is beyond the reach of the BCWUA.

The BCWUA board with the help of the project was able to do many important things, among which the inclusion of gender concerns and women representatives in the BCWUA, the reduction of farmers' complaints and organizing the process of conflict-management, increasing the partnership and communication between the BCWUA and the government institutions, establishing an NGO which allows the involvement of donor agencies and financial sustainability (Adly el Tanani et al., 2010).

However, a visit to the area showed that the BCWUA could not play an effective intermediary role regarding conflicts and problems that transcend the level of the BCWUA. Along the Gabal canal (which branches off from Bahr Sheikh Ibrahim) in the Al Qon village, a selection of people met by the research team do not know the BCWUA and do not recognize its electoral legitimacy. They were very concerned about two problems that affect the village and the farming around it. First, because the BC passes through the village it has become a disposal point for household waste and the release of sewage water, which mixes with the lower quality water that they already receive. Second, the contractor working for IIP has not completed the improvement works and left 6 out of 7 PS on the BC unfinished. Attempts have been made to get farmers to receive these PS, but they have refused so far and the judge released them from an obligation to pay until works are actually finished. These two structural problems clearly exceed the authority of the BCWUA. In the case of the second conflict, the BCWUA president who is expected to maintain a position favourable to improvement works and its wider institutional set-up, cannot effectively represent the affected farmers. In crucial issues related to irrigation improvement and water distribution, the BCWUAs will find it difficult to demand accountability from the Irrigation and Improvement Sectors. Documenting and upscaling traditional conflict management mechanisms in the organizational design of BCWUAs failed to resolve such conflicts, as they firstly clearly exceeded their authority (cf. Gouda, 2013) and secondly because this often entails the idealized codification of local experiences according to international project and bureaucratic needs (Mosse, 1999).

6.5 Institutional relations of BCWUAs

In this section we will discuss how BCWUAs are institutionally embedded and relate to higher Ministerial levels that implement the government's IWRM policy. Egypt has experienced a large and variegated number of projects devoted to farmers' institutional building at different scales, in line with the magnitude and importance of its irrigated sector. Nevertheless, according to several reports, relations between farmers and authorities remained unsatisfactory, despite intensive training and awareness raising activities.

When water user empowerment and expected benefits are not forthcoming, participation and collective action are severely dented (Abou-Seida, 2001). Farmers expect that the benefits of irrigation improvement interventions and water user organization at different scales have to offset the additional costs in terms of financial contribution or transaction costs in building and sustaining organizations over time (IRG et al; 2001a). Most development projects tend to minimize the transaction costs of the collective action that is requested from farmers, whether in cash, labour, time or other in-kind contributions (IRG, 1998b). In contrast, the expected associated benefits are limited because of the lack of substantial improvement in water supply and the minimal shift in decision-making power. Expectedly the cost/benefit ratio to farmers remains too high and WUOs appear to be little sustainable. Only when collective management is unavoidable such as in collective PS, do WUOs endure in one form or another (formally or informally), mostly out of necessity. At higher levels such a necessity does not exist. Hence, when tangible benefits, transfer of concrete responsibilities and legal status are not realized, BCWUAs or Water Boards at district levels will not be sustainable.

Barakat[5] (APP, 2007), while stating that "the participation of WUOs in water management is still extremely low", stresses that both WUOs and MWRI staff have a poor understanding of the possibilities and the limitations of participatory water management, see one another more as antagonists than as partners, and have not embraced the reform agenda in any significant way. What

[5] Based on a questionnaire filled by a sample of water managers and users.

can be done to change this situation? To "overcome the continuing reluctance of some MWRI staff to increase the direct involvement of users in water management", the Ministry will continue to support communication and awareness programs (El Atfi et al., 2007), and provide staff with responsibilities, training, equipment, software and encouragement (El Atfi et al., 2007). While an adequate budget and legal reforms are seen as necessary to achieve PIM/IMT objectives of ensuring the sustainability and replication of WUOs, the analysis of bureaucratic resistance sketched out above raises doubt on whether these will be sufficient.

In IIIMP there now seems to be recognition that institutional development must come as the first step in the mesqa improvement process, before construction works (IRG et al. 1989). The timing of establishing mesqa- and PS-level WUAs: before, at the same time, or after BCWUAs (World Bank, 2005) has been amply discussed according to different sources. In practice, however the two are developed quite independently from each other. Some also stress the need to first establish all integrated districts (IWMDs) within the larger hydrologic/organizational unit (Directorate) at one time, and then have IWMD staff organize and support BCWUA formation (El Atfi et al., 2007). This partly seems to have contributed to an instrumental approach in which BCWUA are designed to assist IWMDs. Still others promote establishing "water user organizations at the branch canal level, allowing for eventual expansion to the district level" (IRG, 1999a).

There is a disconnect between the enthusiasm shown by donors, aid experts, and some officials convinced of the need for IMT and the implementation level where understanding and acceptation of the reform is limited, which "results in misunderstandings, major irritations" (APP, 2007). It is apparent that the conceptions of participatory management in circles of decision making officials of the MWRI are "confused and sometimes contradictory" (APP, 2007). While some genuinely believe in the merits of shifting governance, the balance of power and responsibilities, many see participation as a means of increasing the contribution, in kind or cash, of end-users. There is however little evidence that this is actually being realized. It is telling that all the measures meant to instil a higher degree of accountability or transparency are those that are loosely adhered to, even during the life time of the projects. While official discourse of aid professionals and some officials is centred on instilling in farmers a 'sense of ownership' it is often the objective of transferring the 'management burden' to farmers which has dominated (Moustafa, 2004).

There are clear disincentives for most staff to fully embrace the logic of management transfer. Transfer is likely to be associated with a loss of prestige, power, legitimacy, and even jobs (Hvidt, 1998). For this reason, it is somehow odd to expect from the line agencies that they would support the reforms. This also poses the question of what is the exact role of the Ministry in the establishment of farmer organizations. With regard to the establishment of the water boards, for example, the question was raised of whether the "power and freedom [was] to be entrusted to water users to create Water Boards, along with applying to MWRI for establishment request and support, or [was] MWRI to carry out the task of their establishment?" (APP, 2003). This structural constraint can be removed by strong high-level political will (overriding the agency's preference for the status quo) and/or measures to relocate redundant staff or facilitate their hiring by the WUOs themselves; both measures/conditions that are absent in the Egyptian case. Some have raised doubts as to whether the MWRI top is fully committed to IWRM and water user participation independent of donor support, when it will significantly change the status quo (IRG, 2012). Admittedly, management difficulties exist to ensure a more predictable water supply because of the complexity of water management in the Nile delta. Each level depends on how water is apportioned and distributed at upper levels, which reduces its autonomy in improving supply. The lack of managerial flexibility to local or regional requirements for decentralized management is further reinforced by the centralized decision-making structure in the Ministry (Merrey, 1998).

When the BCWUAs have limited formal authorities, as shown in earlier sections, they continue to depend strongly on their link with the Integrated Districts (IWMDs) and the superior irrigation offices. Hence, this link depended very much on the willingness of the District engineer and his superiors to interact with the BCWUAs. This varies greatly from one engineer to the other. There are several examples where engineers have facilitated the cooperation with BCWUAs, yet examples of the opposite also abound. One engineer is described by farmers as being "rigid", and skilful at doing away with instructions from the Undersecretary, with whom farmers have a good relation. "Some engineers want to have the upper hand in spite of farmer organizations". Another BCWUA president explains that "the irrigation district considers itself as the engineers, who are responsible for water management". They see the farmer organization as something marginal or not important. Many times the district was not cooperative and farmers suspected that the engineers might see the BCWUA as a competition. They are concerned with who will take the upper hand and have the authority: the engineers or the BCWUA members. According to yet another BCWUA president "The engineers do not really want to have Water User Associations: because the engineer must comply to what has been promised, or feels forced to follow the request of farmers, and they don't like that; they consider they are responsible for the job and are the only ones to take the decision".

A former Ministry official indicates that some Ministry employees do not want to assume a regulatory role:

“The problem is the feeling of the Ministry, and the Ministry here is not only the minister, but all the employees of the Ministry. They really don’t know that their job is only regulatory. And if you want to keep the system working you have to put in time. They have to sit in their offices and think: “What is going to happen today and what is going to happen after one day”. But they always feel: No, we are too strong. If we are out of the system, the system will collapse. And this is not true. Or this is true because, they push these farmers and these users to be very much dependent[6]”.

Gouda (2013) indicates that some District personnel (baharee, engineers) perceive the BCWUAs as competition, since they replace or discredit their own role and prevent fringe benefits, as clearly expressed by the Dutch team leader of the Fayoum Water User Organizations project in 2010:

"Especially since the district irrigation engineers still perceive the branch canal level as their own domain and think that the involvement of the BCWUAs '…would mean that they [district irrigation engineers and the MWRI] have failed…'" (Gouda, 2013: 213).

This perspective on BCWUAs has gained strength over time because of structural changes in the Ministry. The top of the Irrigation Sector has gradually decreased its attention for water user participation. During the initial years of PIM policies, there was a lot of emphasis on the fact that District Engineers had to attend BCWUA meetings and act on their requests. However, with the continued absence of a BCWUA Law, the event of the Egyptian Revolution (2011), decreasing donor interest and the apparent abandonment of Integrated Districts (2014), the policy in support of BCWUAs is less clearly supported from the top down to the field. Over time BCWUAs found it increasingly difficult to convince district engineers to attend their meetings, act on their demands and inform them on planned interventions on their BC. The following individual experiences of BCWUA presidents regarding their institutional link with the Integrated Districts and the CD-IAS show this.

Initially, the expectation that was raised among BCWUAs was to have a good and close coordination with the irrigation staff, a former board member remembers: "They said that if you have a problem

[6] Interview former MWRI official 2-7-2015.

or a comment (e.g. on IIP PS design) you can go to the irrigation staff for them to solve it". They went and met with the Irrigation District and the Under-Secretary, they said hello but he did not find any concern among the engineers, they did not pay attention. “There was no result, all the work was in vain. So the BCWUA is not a credible organization".

Mr. N was a member of the BCWUA board in Bahr el Nur. They often went to the General Director and they had long talks, their suggestions were listened to and would be followed up, but finally nothing happened. Both the inspector and the District engineer rarely attended their BCWUA meetings, because of no real interest from engineers to stay with them. They asked the District engineer to inform them about the rotations or excavation work, but that did not happen. So there is no real cooperation between the BCWUA and the ID and the former have no real task. This is why he refused to become the BCWUA president, when he was asked for this position.

BCWUA representatives are generally aware of their responsibility to interact and discuss their problems with the District engineer, the General Directors and the Under-Secretaries. Such interactions with different levels of the Irrigation Sector happened several times in the experience of most BCWUAs, but those occasions reduced over the past few years. Besides the effect of the Revolution, there appears to be doubt about what the BCWUAs can actually effectively achieve. In talks with the Under Secretary and Directors in Meet Yazeed, there currently appears to be significant scepticism about the current and potential contribution of BCWUAs to water management and conflict resolution.

A BCWUA president voices his opinion that a real coordination between CD-IAS – Irrigation Districts and BCWUAs does not exist, for example on the cleaning/excavation of the BC. He is always asking the district engineer, "please call me before you come to the area, I will bring people to assist you", but he always finds him in the field without notification. This is bad communication/coordination, although they have a good relationship. This has to do with the character of the engineer and this will not change. Even a better relation with the Undersecretary, who asked the district engineer to comply with farmers proposals, did not actually change his disposition.

A different BCWUA president emphasizes that he has a good relation with the irrigation district and with the inspector; who told him, "please call us when you have any problem". They were suffering from water shortage many times and asked the District to modify the rotation, by adding additional on days and claim to have succeeded.

Another BCWUA board member states that actually the organization does not really exist, since there is no monitoring from the CD-IAS personnel, they attend the election but after that they go away. The irrigation engineers further consider themselves government (authority), "they do not have to work with the farmers, who have no authority. They look at them from a higher position". Once he met the District engineer in the field and he raised a problem with him, but the engineer stated that that was their own affair. So the farmers (BCWUA) and the engineers never meet, only during the initial training. But they never met in the district office and the BCWUA does not have an office. As a result, he considers that "irrigation and drainage water are the Ministry’s responsibility, they also have the authority. When they use this authority they can control many of these problems. They can go to the area and check the situation, write a statement to the police and then the police can exercise a punishment. But they do not do this".

The varied degree of participation of BCWUAs in the irrigation districts in Meet Yazid, in part reflects the inability of, or delay in, establishing District Water Boards (DWBs) and IWMDs, which were centre-pieces of the government’s donor-supported policy. "*District Water Boards* are WUOs at the (Irrigation) District level and form a counterpart organisation for the lowest MWRI hierarchal level.

DWBs comprise all the BCWUAs as well as other users of the water management infrastructure in the District" (MWRI, 2009: 8). However, both DWBs and IWMDs, in which BCWUAs would formally participate and assume joint responsibilities, were not established, which has weakened the Ministry's resolve towards implementing user participation. DWB formation was intentionally delayed until all BCWUAs were formed in all the Branch Canals of a District (MWRI, 2009: 36). Yet, both were not formed since also the formation of IWMDs was delayed. In 2014, the Ministry decided to stop the formation of new integrated districts and only continue with supporting the existing districts. The Ministry's policy of Integration encountered several challenges (APP, 2015):

- A lack of harmony and equity between engineers because of a variation in salaries, incentives and systems of work between irrigation and drainage engineers in the integrated elements.
- Establishing integrated districts under executive projects instead of the irrigation sector results in a lack of administrative supervision to sustain them
- Before applying it at district level, integration should first occur at higher levels
- Complaint-based water management focusses the attention of district engineers on solving water supply problems, rather than on maintenance of drains.
- WUAs/BCWUAs still not effective, which increases the work for district engineers
- Insufficient number of engineers for the work load
- Bureaucracy in fixing maintenance machinery that require rehabilitation
- No Monitoring and Evaluation system to follow the IWMDs

IWMDs were advised to be responsible only for water management, but the maintenance responsibility, plus staff and machinery, would (temporarily) return to the Drainage Authority (APP, 2015).

7 Discussing empowerment, accountability and sustainability

To assess the functioning of BCWUAs at the branch canal level in the Central Delta, we have reviewed a number of factors that are generally thought of as important in the empowerment of water users in improved irrigation management and for the accountability and sustainability of their organizations: BCWUA formation, training, a new law for BCWUAs, the system of irrigation water supply, authorities in O&M tasks, scaling up, and institutional support.

7.1 BCWUA formation

A review in IIP and IIIMP areas, shows that the formation of BCWUAs is still relatively top-down and pre-structured in a way that became instrumental for the government and its institutions (cf. Gouda 2013). Initially, BCWUA board members were often pre-selected with the idea of promoting the national project of IIP/IIIMP among water users. It is difficult to see BCWUA representatives as freely elected, since their candidacy was often pre-arranged by the way in which influential leaders were identified as candidates and the elections were subsequently organized. It is therefore not also surprising that they were not actively representing farmers in conflicts concerning these improvement projects. Looking at the profile of people who become BCWUA presidents, it is striking that they are usually well-endowed, -educated and -connected men in government, business, and mosques with particular leadership qualities. Another way to categorize these local male leaders is as traditional or emerging 'power holders', but the question is really how much power they hold and

resources they control in BCWUAs. Nevertheless, their voluntary position does involve a degree of influence and status. They often have good relationships with higher placed irrigation officials which are beneficial when they want to achieve something for their BC. However, it complicates matters when they are expected to make the irrigation - or improvement sector accountable for the services that they provide. Further, the representative basis of BCWUAs among water users is weak, among others because the elections for BCWUAs only include selected representatives from different canal reaches instead of including all water users. As a result, many water users along BCs are not aware of the existence and functions of the BCWUA. What adds to this is that there is a weak institutional link between the pump station-WUAs and the BCWUAs, since the former are not represented in the latter. This constrains the BCWUA's authority and effectiveness in implementing rotations (see also IWMI-WMRI report 4). In addition, the representation of women in BCWUA is not insignificant, but appears more of a token measure, driven by donor pressures. The two women often chosen on the BCWUA board do not hold positions with influence..

7.2 Training

Institutions generally have a high expectation of how training of water users and government staff can change their knowledge and behavior to prepare them for new responsibilities. However, in many cases such expectations are not met, both in terms of who it reaches and what impact it has on their (individual and collective) capabilities. Training for BCWUAs often reached only a select group of people and does not extend to all 'water users'. Understandably, training was targeted at board members of BCWUAs, who consequently received privileged information about meetings and other incentives and as a result had better access to irrigation and project staff. That such information does not automatically trickle down to all relevant farmers becomes clear when considering that one branch canal serves hundreds to thousands of farmers. Most of those farmers that the research team spoke to were not informed about the existence of BCWUAs, did not consider themselves as BCWUA members or even 'water users'. Although a basic training for the BCWUA board of one or two days was usually carried out by CD-IAS staff at the time of official formation and (re-)election of the BCWUA to prepare them for their tasks, many board members when specifically asked actually do not remember or recognize the fact that they received training.

The training that was given to board members focused on how to form a BCWUA, its constitution, roles and rules, and the benefits of continuous flow or improvement, which was instrumental to government policy and served the institutional interest. However, it covered less ground in empowering water users versus government offices to improve the improvement project interventions when they did not meet their expectations. In that sense, the impact of training on shaping a new relation between water users and state institutions remained unsatisfactory, according to several reports discussed before. Over the years, most of the CD-IAS efforts focused on forming new BCWUAs and having elections for new boards, but in between elections less attention and resources are available for sustaining the existing ones, which does not strengthen the sustainability of BCWUAs.

The capacity of training to overcome bureaucratic resistance and change behavior for the benefit of water user participation was also grossly overestimated. To "overcome the continuing reluctance of some MWRI staff to increase the direct involvement of users in water management", the Ministry will continue to support communication and awareness programs (El Atfi et al., 2007), and provide staff with responsibilities, training, equipment, software and encouragement (El Atfi et al., 2007). The analysis of bureaucratic resistance sketched out above raises doubt on whether such training and other measures will be sufficient, when it runs against well-understood interests. In sum, the amount of effort and money spent on training of BCWUAs does not stand in relation to the impact achieved.

7.3 A rotational - or continuous flow supply system

A key element of the package of irrigation improvement and water user participation that was attractive for farmers and created a clear role for BCWUAs was the promise of continuous flow. The optimistic recommendation that continuous flow and BCWUAs would operate prior to mesqa improvement and that BCWUAs could assist in O&M at the branch canal and help setting up the WUAs at the pump station level (IRG et al., 1998), proved unrealistic. However, because continuous flow could not be implemented during the IIP and the IIIMP projects (up to present), the BCWUAs could also not assume this role that would have given the organization a public figure and clear task. In sum, the absence of CF and the continuation a rotation-system has weakened BCWUAs.

The failure to implement CF has eroded the credibility of the BCWUAs. By continuing the existing rotational system, there is limited scope and credit to be earned for the BCWUA among water users. The authority of the BCWUA to implement a rotation and restrict pumping highly depends on the authority of the district (or directorate) engineer and on the organizational link between the BCWUA and the PS-WUA or the mesqa. Both are currently weak, for reasons that were explained in this report. During the focus group discussion, BCWUA leaders unanimously called for a stronger role of district engineers to implement rotations.

Without CF, a stronger role for BCWUAs is difficult, although not impossible. BCWUAs could potentially play a more empowering role in mediating design and construction problems with IIP/IIIMP by problematizing for example the high intakes associated with the continuous flow assumption or the quality of construction work. However, BCWUA leaders indicated there was not much opportunity for that in the training sessions or other interactions with project engineers. Such interactions between civil engineers and farmers in design and construction are generally structured in a top-down manner. The two reported cases of BCWUA board members who promoted improvement and continuous flow among farmers, but could never use their own PS because of a (too) high intake associated with CF or high lands, tragically shows that actual project experiences do not always live up to the promise of 'improvement'.

Currently, the automatic and radial gates that were installed for continuous flow are not working and even obstructing the flow. Farmers' mobilization to resolve this problem is unlikely to be articulated through the BCWUAs, since they played a role in their promotion. The case of the farmers who successfully pushed for a (temporal/partial) solution for a non-functioning cross-regulator installed by IIIMP was supported but not led by the BCWUA leaders. Some board members hope that the electrification of all PS along a BC will increase the opportunity to enforce the rotation and control abstraction through the control of electricity. But even in that case, the BCWUAs role would be limited.

7.4 A 'new' law

International organizations and select Ministerial offices have called for several decades now for a new law on BCWUAs that would allow them to function as autonomous organizations with concrete operational and fee recovery responsibilities and accountable to the water users. The last attempt failed in parliament in 2011, only just before the Revolution. As a consequence of the fact that the Egyptian law does not recognize BCWUAs as a legal entity and only a ministerial decree acknowledges them, these organizations have no possibility to collect fees, provide services against financial contributions, maintain a budget, keep a financial administration and make expenses. This makes them organizationally weak, with limited possibility to strengthen them. Their legal and administrative situation presents a bleak picture when compared with that of the PS-WUAs, which do have a legally recognized authority to collect money from water users for the service they provide.

But the PS-WUA is simply at a different level, which has no financial and organizational link with the BC level.

Since, the law has been proposed and promoted on numerous occasions, but was not accepted by parliament, there can be serious doubt about whether the Egyptian State will allow the development of decentralized bodies with financial revenue capabilities that do not entirely fall under state control. There exists a longstanding reluctance at different political and bureaucratic level to empower associations that may gain some political role and threaten the status quo. In the post-revolutionary era, it is even more unlikely that this will occur, given the security consideration that such organizational spaces may be used for political, religious, unionist or terrorist activities that turn against the state order.

7.5 BCWUA authority in O&M tasks

In spite of a long list of potential activities that the BCWUAs could be involved in, in practice they have few actual O&M tasks for which they are really responsible and visibly influential in decision-making. The BCWUA has no authorized role in water distribution (rotations) or maintenance. In the end, they therefore depend a lot on government staff in playing their role, for example in determining maintenance priorities or in the crucial enforcement of rotations. At this moment BCWUAs are unable to enforce a rotation alone, without the authority of the district/directorate engineer. We report several cases where the BCWUAs do bring about a rotation with the support of the engineer, but they have no illusion that they would be able to do so without the latter's support. When board members engage in enforcing rotations they often rely on other sources of authority, credibility and prestige such as being on a social leader involved in community conflict resolution, a cooperative head or member of the sugar cane factory committee. But often such authority does not automatically extend much beyond the reach of the canal that they represent. The BCWUA leaders need a degree of (formal) authority among water users along the whole stretch of the branch canal to be able to effectively exercise concrete O&M tasks and take decisions that would also have negative impacts for some (e.g. over-irrigating head end farmers). In the way that they currently are (not) resourced and legally acknowledged, the BCWUA by itself lacks the formal authority to intervene, enforce rules, act on violations, solve conflicts, or apply a sanction, e.g. in the case of an infraction or a conflict. It also limits them in exploring new areas of responsibility. For example, some BCWUAs leaders indicate that they could play a role in trash removal and preventing the dumping of trash and sewage in the canals if they had the authority to maintain the canals, collect fees and punish polluters

Given the unpredictability of water supply in the centralized, hierarchical and interconnected irrigation system of the Nile Delta, the transfer of water distribution responsibilities to bounded decentralized units such as BCWUAs has risks. Decentralized user management depends on a reliable upstream supply and an organized restraint in water use to not negatively affect downstream users. There are few indications that both these conditions are met.

7.6 Scaling up

Even those BCWUAs or Water Boards that were identified as success stories by international organizations (Al Qon in Western Kafr el Sheikh and Bahr el Nur in Eastern Kafr el Sheikh), are in spite of all the international support, not in any significant way involved in the O&M of the BC. This squarely remains the responsibility of the Irrigation Directorate and the District. Conflict management among water users is conceived as the main source of the success of these BCWUAs and a major benefit of PIM policies. This entertains the suggestion that this builds on a pre-existing

form of social capital of community conflict resolution at the mesqa-level and in WUAs. But the possibility to codify such idealized local traditions (Mosse, 1998), train water users in them, and scale them up beyond the community-level is highly overestimated. Gouda (2013: 238) consequently argues "that there no experience that can be scaled up from the local level…", based on her findings in the Kafr El Sheikh area. Moreover, there are structural problems and conflicts, with regard to water supply, water quality degradation and contractor non-performance that exceed the authority of the BCWUA to resolve. In the case of the third type of conflict, a BCWUA leader who is expected to maintain a position favorable to improvement works and its wider institutional set-up, is not likely to be an effective representative of the affected farmers. In crucial issues related to irrigation improvement and water distribution, the BCWUAs thus have limited means to hold the Irrigation and Improvement Sectors accountable for the services that they provide. This lack of authority of BCWUAs and the lack of accountability of government institutions towards them does not favor the empowerment and sustainability of BCWUAs.

Gouda (2013) reports on a case in Kafr el Sheikh (W10, Saf Saf) where the top-down formation of a BCWUA resulted in it not being functional. Because this BCWUA was formed before the formation of the WUAs under IIIMP, it could also not have built on the WUAs experience of conflict resolution. She also states about another famous case that:

> "*Since the 1990s, the MWRI together with Dutch support formed WUOs on the branch canals in Fayoum. However, after about twenty years of BCWUAs formation experience in Fayoum showed limited success. These projects did not up-scale the positive experience of water users' groups as theoretically sought by the World Bank projects in Kafr El Sheikh, but sought to apply foreign (imported) concepts.*" (Gouda, 2013: 218).

The latter point can in fact be extended to all the Dutch, American, Japanese, German and other models for higher-level water user participation that aid donors have introduced in the past three decades. Added to this must be the longstanding Egyptian experience of adopting such foreign models and transforming them into something that does not fundamentally change the status quo.

7.7 Institutional support

Currently, the institutional coordination between CD-IAS, the Irrigation Directorate and Districts and the BCWUAs is weak. Initially, after the formation of BCWUAs there was a strong commitment of CD-IAS to organize meetings between the Irrigation Districts, the Directorate(s), and BCWUAs, but this decreased over time. The regular meetings became less and BCWUAs were only called upon when the Irrigation Director wanted to talk to them, hardly ever on the initiative of the BCWUAs. Farmer groups often addressed immediate concerns directly with the Directorate and even the Under-Secretariat, bypassing the BCWUA and the District. The Directorate and the Under-Secretariat observe that the BCWUAs have not significantly reduced their transactions costs of dealing with large numbers of farmers asking for more water or to resolve other problems. Since the Egyptian Revolution, farmers in generally have clearly become more vocal and less respectful towards government authority. At the same time, the irrigation staff is still under pressure to resolve those problems, which the BCWUAs cannot, so their interest in sustaining BCWUAs has decreased.

Understandably, the CD-IAS emphasis came to be more on forming new BCWUAs rather than sustaining the existing ones. However, when BCWUAs have limited formal authorities, they depend strongly on the personal willingness of the District engineer and his superiors to interact with the BCWUAs and discuss their problems. This varies greatly from one engineer to the other. There are several examples where engineers have facilitated the cooperation with BCWUAs, yet examples of the opposite also abound. Rather than a firm policy orientation the BCWUA involvement therefore

became dependent on individual priorities. However, since district engineers are often circulated because of the general lack of engineers and the understaffing of positions this is not a basis for institutional continuity of the BCWUAs. At higher institutional levels several essential pieces of the IWRM policy are also missing. Both DWBs and IWMDs, in which BCWUAs would formally participate and assume joint responsibilities, have not yet been established in the Kafr El Sheikh Directorate, which has weakened the Ministry's resolve towards implementing user participation.

The Egyptian Revolution of 2011 has undoubtedly discontinued many of the institutional efforts to regularly bring together water user representatives and government engineers. Since then the meetings have completely stopped for a long period, since the entire government apparatus was in disarray. BCWUA leaders indicate a high degree of uncertainty about the future role of the BCWUAs and the government's commitment to them.

8 Conclusions

In the Central Delta, the majority of BCWUAs are legally, financially, representationally and institutionally weak organizations, which potentially might, but presently do not play a significant role in the Operation and Maintenance of Branch Canals. BCWUAs are organizations without a legal recognition, resource base (fee collection), offices and records, actual responsibilities and weak accountability and institutional links. This has not favoured the empowerment of water users and the sustainability of BCWUAs. Hence, the main conclusion remains the same as before, "that none of the BCWUAs established so far (and being monitored) has actually achieved the level of sustainability" (MWRI, 2009: 61). International projects initially build up a level of institutional strength of WUOs, but after completion the sustainability declines (APP, 2007).

The experience of BCWUAs contrasts with the informal organization of water users around mesqas and pumping stations, where a degree of collective action for O&M exists occurs, although not necessarily under formal WUAs (see IWMI-WMRI report 4). However, these local experiences have for different reasons discussed in this report not been up-scaled to the BCWUA level.

With BCWUA leaders and water users in general, there is large uncertainty about the current support at the higher levels of the MWRI for further expansion of IWMDs and the involvement of BCWUAs, which at some point were considered as a national policy. There are few tangible benefits for water users to remain involved in and sustain BCWUAs when the legal status and transfer of concrete O&M and financial responsibilities are not forthcoming and irrigation management is not improving. Most development projects also tend to disregard the transaction costs of the collective action that is requested from farmers, whether in cash, labour, time or other in-kind contributions (IRG, 1998b). In contrast, the expected associated benefits are limited because of the lack of substantial improvement in water supply and the minimal shift in decision-making power.

The following assessment of the World Bank regarding water user participation in IIIMP is therefore overly optimistic:

> "*In the irrigation sector, the progress made regarding devolution of irrigation and drainage management responsibilities from a centrally managed system to a participatory and community-based water user organizations (WUOs) is* ***encouraging****. More resources and efforts are needed to make the WUOs fully operational and sustainable. The Government is particularly advised to push for legalizing the branch canal level WUO and irrigation water management district to enable them collect fees and operate with legal backing*" (World Bank, 2015).

For how long can a policy be considered promising or encouraging? And how much more resources and efforts can be invested to make BCWUAs operational and sustainable? The authors of this report fully support the call for a new law recognizing BCWUAs as a legal entity, with fee collection capacity and concrete O&M tasks, but will it come in time? Even with a law and additional O&M responsibilities that would strengthen the legitimacy of BCWUAs, it is questionable if this is not too late to make them sustainable. Even with such a law in place there is no guarantee that different sectors of the Ministry will align with it this time and will be ready to implement the law. In one way or another, this will imply the shift of power, responsibilities and resources to BCWUAs when this may not be in the perceived bureaucratic interest to do so. Assuming concrete tasks in water distribution, maintenance and fee collection is the only way in which BCWUAs can be strengthened and credibly sustained. Introducing a cultural change in the way irrigation staff deals with water users would require a tremendous political commitment from the Minister that would need to be sustained for many years.

The policy alternative that now has to be considered seriously, if this law will not materialize soon, is to release the idea of new BCWUA formation, when there is no indication that the policy will really be implemented and will get political as well as institutional support. The policy of sectoral integration and water user participation at a decentralized level is unlikely to be implemented when the state and its institutions are not committed to delegate authority and increasing levels of responsibility from higher political and bureaucratic levels to integrated districts and BCWUAs. If this assessment is considered realistic, donors should consider phasing out the funding and promotion of water user participation at the Branch Canal level. The emerging question is then what are the implications of removing this key piece of decentralization and IWRM policy and which are the available policy alternatives.

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10 Annexes

10.1 Survey questions

1) In which year and how was the BCWUA started?

2) How did the election of Assembly- and the Board members take place?

3) What is the composition of and who are elected on the BCWUA board (how many per reach, sectors, women, president from which reach)?
4) What was the role of (CD-)IAS?
5) How was the creation of BCWUA related to IIP/IIIMP improvement (PS)?
6) What training did the Board receive? How useful was that?
7) When and how were the board members re-elected?
8) What are the main problems along the BC? Where?
9) What responsibilities does the BCWUA have? (water distribution, maintenance, fee collection, conflict resolution, etc.)
10) What effective powers/authority does it have?
11) Where and how frequently do they meet?
12) What are their resources (office, records, bank account, money, etc.)?
13) How often do you meet with CD-IAS, Irrigation District, Mudir, Undersecretary?
14) Under which conditions is the BCWUA capable of demanding improved service from the Ministry?
15) What has the BCWUA been able to contribute on the BC?
16) In which field have their contributions been restricted? Why?
17) How effective are the BCWUA in the current situation? What could improve this?
18) What are alternative ways for water users to exercise influence and improve the water management?
19) How important is it for you to get a new Law that recognizes BCWUAs and grants it more authorities?
20) How often have they enforced a rotation along the BC?
21) What is the role of the women representatives in the BCWUA?
22) How do you see the future of BCWUAs?

10.2 Surveyed BCWUAs

Name BC	Established	Election	Comments
1. Daramally, downstr.	2006*	2011	Board replaced
2. Halafy downstr.	2006	2010	Board replaced
3. Halafy upstream	2002	2008	
4. Bosees, tail	2006	2011	New president
5. Bosees, middle reach	2006	2011	New president, board cntd.; 2002: IIP improve
6. Abu Mustafa, middle	2007		Parallel IIP improvement
7. Monshah,	2003	2010	New president elected from different reach; Established parallel to IIP
8. El Melaha, Hasafa & El Sant	2008	2013: new board	2000: IIP improvement
9. El Khwaled, Emtedad Shalma	2003	2008	New board
10. Abu Eliwa	2007	2011	2006: IIIMP
11. El Ghabat	2006	2010	Board renewed
12. Masharqa	2003	2011	New Board; 2007: IIIMP improvement
13. Kom el Roz el Gedida	2010		
14. Sheikh Ibrahim (Al Qon)	2005	2010	Board asked to stay on
15. Bahr el Nur	2004	2008	2000: IIP improvement; new board; 2011: Board fell apart

* These are indicative years taken from the interviewed board members and are possibly not always precise.

Figure 6. Portrait gallery of BCWUA board members

Figure 7. Major development project in the MYC command area (Source: World Bank 2005).

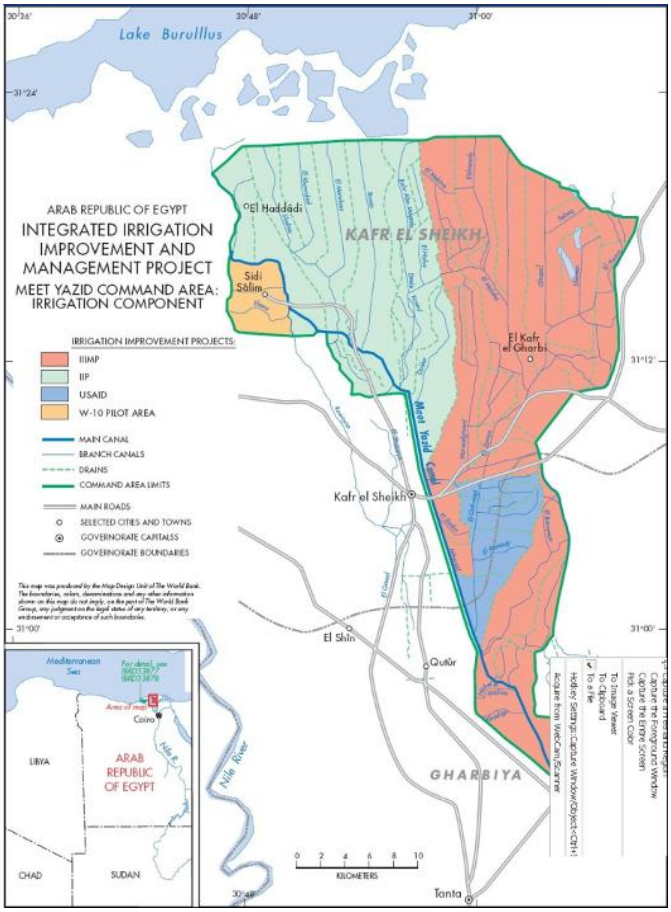

Figure 8. Planned election dates in BCWUAs for 2015

11 Water and Salt Management in the Nile delta

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