

## LOCAL GROUPS AND INSTITUTIONS IN REGARD OF SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT A CASE STUDY OF WATER USERS ASSOCIATION IN SEILA AREA FAYOUM GOVERNORATE, EGYPT

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### ABSTRACT

External institutions are essential for enabling farmers and communities to gain livelihoods in a sustainable way, in regard of sustainable agriculture and rural development (SARD). Therefore it is important to investigate it from an important entry point which is local groups (LGs) and institutions and its relationship with such external institutions, because these local groups are essential in achieving sustainable agriculture and improving peoples livelihoods. Besides external institutions can play an important role in enhancing and mainstreaming these local groups and institutions either on the local level or international level.

The research was divided into two phases: first, the screening phase to select 3 or 4 significant stories through certain criteria, second phase an in-depth study of this selected significant story which mostly fit with the criteria. Though, the research was conducted with a water users association on East Seila canal formed through the Institutional and Social Innovations in Irrigation Mediterranean Management Project (ISIIMM) which played an important role with them. Various methodologies and participatory tools were used such as: personal interviews, meetings, re-

source mapping, Venn diagram, seasonal and crop calendar.

The main research findings are: water user association (WUA) – the selected significant story is mainly engaged in agriculture, deals with conservation of natural resources, particularly water management, it had positive impact in improving people's livelihoods, as productivity and income increased i.e. wheat average productivity reached 15 "Ardab" (1 Ardab wheat = 150 kg) sold at a price of L.E.175 for 152 kg weight to the government, while sold to merchants with L.E. 190 for 172 kg weight, and cotton reached 7 "Kentar" (1 Kentar cotton = 157.5 kg) sold at price of L.E. 500-550 (weight 157.5 kg) for both government and merchants, besides new crops were cultivated such as sugar beet; regarding gender there was no any female members. Further, some fallow lands were cultivated and conflicts among farmers on irrigation priorities were reduced. The relationships with relevant external institutions are strong, but WUA still need more legitimacy and more interaction with other farmers and relevant authorities.

They face some technical problems such as: broken vents, instability of water level, violations on the path way, also financial problems such as: shortage of financial resources, and lack of knowledge about how to develop their financial resources, lack of training on water management,

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beside institutional problems such as: low legal status and legitimacy to address any personnel, incomplete relationship between the WUA and irrigation authorities, and no place for the association for meetings, many farmers still don't know the WUA. Additionally there are some social problems that lead to technical problems and breaking the vents such as heritage problems among families.

Nevertheless, no doubt that the project played an important role with such local group and enhanced them to solve their own problems and achieve positive impacts, whether technical, social or institutional in such short period. Hence, WUA can contribute more effectively not only on local level, but also at national level. Therefore, it is recommended to extend the project or provide any other means to help WUA; specially they are newly formed and need more training in various issues so they can be sustained and self-reliant.

## INTRODUCTION

People are the core of any successful sustainable agriculture rural development (SARD), as people are the goal and target in same time. SARD is from and to people, that means their participation is essential and vital in all stages of the whole process since setting their priorities and needs until forming relevant policies and decision making.

Sustainable livelihoods is putting "people" at the centre of development, a livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. So a livelihood is sustained when it can cope with and recover from stresses, shocks and maintain or enhance its capabilities and assets currently and in the future, while not undermining the natural resource base.

Rural development organizations are the brain of human beings as they are the dynamics, planners, and orient all rural people livelihoods, also responsible and lead change movements and development. Sustainable agriculture (SA) cannot succeed without the full participation and collective action of rural people. The success of SA depends not just on motivations, skills and knowledge of individual farmers, but also on "action" taken by local groups or communities.

Local institutions are effective because they 'permit us to carry on our daily lives with a minimum of repetition and costly negotiation'.

Therefore, groups are commonly formed to take charge of a new activity and/or manage a new resource, such as water users' associations for irrigation, credit groups for loans and so on. But such local groups do adapt and change their roles and responsibilities as internal and external conditions change. Accordingly, this research is mainly concerned with exploring and investigating the role and approaches of external institutions in supporting sustainable livelihoods in agriculture and rural development (SLARD) processes.

As external institutions are essential for enabling farmers and communities to gain livelihoods in a sustainable way, therefore it is vital and worthwhile to investigate it from an important entry point which is local groups and institutions and its relationship with such external institutions (governmental, international & NGOs), because these local groups are essential and crucial in achieving sustainable agriculture and improving peoples livelihoods. Besides external institutions can play an important role in enhancing and mainstreaming these local groups and institutions either on the local level or international level.

### 1. Research Objectives

The general objective of this research is to collect and validate information about WUA in "Scila" area, "Fayoum" governorate. In order to achieve that the following specific objectives were determined:

- Investigate the WUA (formation, roles ..etc.)
- Identify its relationship with external institutions.
- Identify their problems and needs.
- Investigate other farmers' opinion about the WUA.

### 2. Guiding Concepts

Many concepts guided this research and combining them together was important but also difficult because they all are somehow connected to each other and integral. As the research main objective mainly tackles SLARD through investigating the role of external institutions from the local groups' point of view, therefore the following concepts represented important milestones in this research: the livelihood approach, sustainability, sustainable development, rural development, sustainable agriculture and rural development.

### 3. Territorial Description

The research was carried out in one of Egypt's Middle governorates, which is Fayoum, in Seila village and following is a description of the governorate in general and the specific studied area in particular.

#### 3.1. Reasons of selecting this area

Fayoum is one of the pioneer governorates in implementing water management projects from a long time especially by Dutch agencies, as it represents a unique geographical area and special irrigation system as shown below. Besides WUAs took place first in this governorate.

#### 3.2. Fayoum Governorate as a Regional Basin

Fayoum governorate is located 97Kms south Cairo. The total area of Fayoum is 6068.7 Km<sup>2</sup>; inhabited area is only 1849.64 Km<sup>2</sup>, representing nearly 31% of the total area. Fayoum is surrounded by desert from three sides (north, west and south) adjacent to "Beni Suef" governorate east, therefore, it is a green oasis located in north of the western desert south Cairo. Fayoum has a very specific nature because of its geographical and topographical characteristics as a depression and its closed drainage system and the altitude of about 60 m below sea.

#### 3.3. Studied area (Seila)

Seila canal area serves about 10040 feddans (1hectar = 2.38 feddans) distributed among five main (mother) villages with their satellites. They all belong to the same district (markaz) but five different local units. This adds to the complexity of the irrigators in the area.

##### 3.3.1. Seila Canal

Seila canal is fed from Wahby canal through a huge gate, which was built a century ago. It is regularly maintained every 5 years. New systems for improvement of irrigation and drainage are applied. Most of the irrigation vents were broken and repaired by bricks, but now they have been reviewed under the Ministry of Irrigation improvement plans. There are 8 Branch (Secondary) Canals fed by Seila primary canal. They are: Seila Sharqi, Seila Garbi, Seila Qebli, Hayar, Roda, Gafada, Ausia, and Hariq.

#### 3.3.2. Agricultural economy

The total cultivated area in Fayoum district (markaz), where Seila is located, is 78020 feddans. The cropping area is 181622 feddans, the area cultivated with traditional crops and vegetables is 74883 feddans, area of fruits is 3968 feddans, aromatic and medical plants 447 feddans, area of nurseries is only 11 feddans, and area of palm dates is 196 feddans.

#### The main features of agriculture in Seila area are:

Soil is sandy and yellow light soil, main summer crops are: rice, cotton, maize, sorghum, sesame and sunflower, while main winter crops are: wheat, berseem and beans. Most of the lands suffer from salinity and small part of it has surface (tile) drainage system, fresh irrigation water is mixed with drainage water in the main canal. Farmers use water wheels and pumps because the level of some lands are higher than the canal level, over quote planting of rice is widespread, most of the vents are broken, farmers suffer from desalting (mechanical cleaning) in many locations along some canals, most of the houses built along water canals discharge their solid and liquid wastes in these canals.

#### 3.3.3. Hydrology

Seila primary canal, which is fed directly by Wahby canal, through an iron gate, is under the management of the district engineer of Seila. Water is distributed to the farms through vents, or off takes, which control the amount of water to be allocated to served area. Water allocated to each farm is determined by the amount of time flow, which is directed to each specific farm. The responsibility of the irrigation authority is to insure the level of water in the canal, while the distribution of the allocated water is fully the responsibility of water users according to the Motarfa system. New systems of drainage, such as the tile (sub-surface) drainage, have had their impacts on the available levels of irrigation water and the kind of cultivated crops.

#### The amount of water is estimated according to the following formula

- Weekly time period for irrigation per feddan (per hour/or minute) =168 (the total hours of

the week) / the served area (by feddan). Areas served by vents are also varied. A relatively large number of vents (40 vents) are serving relatively small areas (up to 50 feddan), compared with relatively small number of vents (4 vents) are serving relatively large areas (more than 300 feddan).

### 3.3.4. Land use

The main utilization of land in the Seila is for agricultural purposes. The majority of land holdings in the area are relatively small. About 89% are holding up to 5 feddans, compared with less than 1% holding 50 feddans and above.

Seila area includes 5 main villages, namely: Seila, Al-Salhaia, Ai-Robeiat, Al-Basuneia, and Al-Makatla. There are 55 satellite villages (ezbas or hamlets) affiliated to these 5 villages.

### 3.3.5. Water Users Associations

There are 102 Water Users Associations in Seila, about one half of these associations (47%) involve less than 15 male members and about 38% involve from 15 to 44 male members. Number of female members in these associations is relatively small, more than one half of these associations (about 56%) do not involve any female member. One third of these associations involve from 1 to 4 female members.

The studied WUA was formed through (ISIIMM) which started in May 2003 and to be ended in April 2007. Its overall objective was to overcome current contradictions associated with local water management in Mediterranean catchments areas through innovative institutional and social solutions, based on an understanding of six axes; social, institutional, agricultural, historical, hydrological hydraulics and territorial.

**The ISIIMM target groups were:** public authorities and rural municipalities, river-basin authorities, water user organizations, environment and development NGOs, local and regional development organizations.

**The main activities of ISIIMM were:** facilitating coordination between water managers and other actors in each river basin, strengthening institutional capacities and training in irrigation water management, promoting a better understanding of the key axes through project partners networks, identifying solutions to problems of water conflict,

developing organization system of information and research of irrigation societies (OSIRIS) that will underpin the different axes of ISIIMM and exchanging information and know-how.

### 3.3 6. Institutions

There are several institutions that might provide the needed support and back up to WUAs. The most important of these institutions are the following: five agricultural cooperatives, two local units (in Seila and Nasriya), one local council (in Seila), one village bank (in Fayoum), a water board (in Ousiya), one community development association (Seila) and one health unit (in Seila).

## 4. Research Methodology

In order to fulfill the previous objectives, various methods (qualitative and quantitative) and participatory tools were used whether in screening phase or characterization phase.

In screening phase the following tools were used: personal interviews, meetings, and in characterization phase: resource mapping, Venn diagram, seasonal and crop calendar, pair-wise ranking, semi-structured interview, and questionnaires with six farmers as case studies.

## 5. Research Findings

The research findings include findings from the two phases: screening and characterization phases.

### 5.1. Findings of screening phase

After exploring the situation of local groups and institutions in Egypt in the screening phase, it was found that the first Egyptian rural development movement started in - approximately - 1908 by establishing the agriculture cooperatives and in 1937 the Egyptian association for social studies was established. There are many governmental and non-governmental organizations in rural Egypt in general but the main organizations can be summarized as follows: educational organizations (schools), health organizations (rural health units), economic organizations with social frame (agriculture cooperatives), NGOs (community development associations "CDAs"), local management organizations (village local units).

Four significant local groups (LGs) were found: community development associations (CDAs), agriculture cooperatives (ACs), water



user associations (WUAs) and rotated association "Gam'iah" for saving money (a type of LGs but unofficially approved). These LGs matched to some extent with the specified selection criteria: engaged in agriculture and conservation of natural resources, fits with TEES test, has positive impact in improving people's livelihoods, fits with SA goals, consider gender and participatory issues and its relation with external institutions.

There was no LG totally initiated by people, except "Gam'iah" for saving money. And any other LG is mainly formed within a project or certain governmental or non-governmental body or agency (national or international).

After evaluating all four LGs, WUAs were selected as most of the selection criteria did fit with it, mainly depend on the participatory approach in implementation, operation and maintenance and also ensure sustainability. On the contrary, community development associations (CDAs) are mainly not concerned with agriculture issues and rotated associations for saving money which neither deal with agriculture nor with conservation technologies.

Agriculture cooperatives (ACs) are economic and social units, that deal and work in the agriculture sector and with farmers, but their role is to provide agriculture inputs, cooperative marketing and provide loans to farmers, but they do not take into consideration conservation of natural resources, and moreover the participatory approach was not fully considered.

CDAs deal with various issues that help to improve the local community and people's livelihoods; they target youth, women and men, besides they work in different fields such as health, environment and family. Both CDAs and ACs have positive impacts on local community and also negative. Their relationships with other external institutions exist, but the role of ACs weakened due to liberalization policies, although currently they are trying to revitalize their role again. CDAs through various projects learn how to do fund raising, submit proposals and networking also with other CDAs, as most projects focus on capacity building of such associations, though their role is enhanced and becoming stronger than before, but they cannot yet affect existing policies.

Therefore, WUAs were selected as they fit with TEES test: technically was appropriate as now farmers use padded irrigation canals that ensure no waste in irrigation water, also to distribute water on equal bases and no leaking, so it is environmentally efficient, economically viable, as

farmers do not pay any fees except what they pay for maintenance and was socially acceptable since farmers who suffered from conflicts because of irrigation priorities, violations regarding the vents or path ways were main problems, have better situation now and farmers accepted it, but still WUA need more legitimacy and more interaction with other farmers.

## 5.2. Findings of characterization phase

In general, members of WUA in studied area indicated that, "Seila" Al-Sharqi canal, have no houses around it except very few ones. Mutarfa system was established from a long time in farming and irrigation in Fayoum governorate, but there are some differences in its application among different areas. Farmers now cultivate rice, although it needs great amount of water, but its price is high so they continue on cultivating it. Besides, water is available to them after the implemented improvement irrigation projects. Almost all agriculture activities in Fayoum in general and Seila in particular, are carried out by men, no women are involved due to the prevailing traditions and customs. Even if women inherit lands, they normally hire labors to cultivate their lands, but actually there are women who work in agricultural activity. There was a problem regarding a watermill across the Seila canal which was affecting water stability, as the owners controlled all distributive vents, so farmers and irrigation department agreed upon transferring the mill vents to a weir "Haddar", but mill owners filed a case to stop that, claiming that this mill is a monument and irrigation insisted on the technical importance of such transformation and still the problem is in court.

**The following findings were revealed through participatory methods and tools used with members of WUA in Seila Al-Sharqi canal:**

### A. Resources

- The following resources and infrastructure were shown by using resource mapping tool:
  - a. Local unit, health unit, veterinary unit.
  - b. Azhar elementary school, Azhar preparatory school (boys), Azhar preparatory school (girls), Seila girls institute (KG, elementary, preparatory and secondary) – under construction, Seila elementary school, Seila preparatory school, secondary school, girls friendly school (Sadikat Al-Fataiat).

- c. Youth center, agriculture cooperative, community development association (CDA), Seila Coptic association, social unit.
- d. Seila maintenance center for covered drainage, fire unit, ration office, post office, 7 animal wealth associations, 12 Masjid (mosque), 3 bakeries (traditional "balady" bread), 3 bakeries (white "afrangee" bread and other products), repair workshop (youth graduates), floor tiles factory, gas station and 7 pharmacies.
- e. Water resources for irrigation; Seila Al-Sharqi canal (Bahr) taking from → main Seila canal "Wahba" canal → "Yusuf" canal → "Ibrahimiah" canal → River Nile (Assuit).
- f. Agriculture drainage water is used via two pumping stations located on agriculture drainages, which go to the canal.
- g. Drinking water resources: "Al-Azab" water pumping station taking from "Yusuf" canal (bahr).
- h. Drainages: Seila surface drainage and covered drainage.
- i. Seila canal (bahr) has 7 vents: "khor al-feque, balsha, abdel aal, menissa, sharq al-bahr, khalifa" and end vent with a mixture canal for irrigation water with agriculture drainage water areas of each vent.

Results also revealed that Seila canal in the past was called "Khabeeh" bahr and drinking water resources before 1952 was the west Seila canal "Seila AL-Gharby" which was called women's canal (bahr) "Nesswan" as women used to gather every day there to wash their cloths and kitchen stuff and personal conversations took place.

The inhabited residential areas are located at the south west of the canal, which includes all previous resources. There are shops and a market held every Wednesday selling everything, vegetables, fruits, cloths etc., and roads inside the village are not paved, houses with cement is everywhere, sanitation is in some cases drained in canals mixed with clean water which ends to the fields and to human.

## B. Crops and seasons

The seasonal and crop calendar showed that mainly two main cultivation seasons exist: summer and winter. The main crops are: wheat, clover "berseem", sugar beet, cotton, maize and rice the following shows for each crop its land preparation period, growth period, no. of irrigations needed, harvesting, productivity and prices:

- Wheat: land preparation starts in October, growth period last for about 6 months from November to April, needs 6 times irrigation and one before cultivation, harvesting in May. The average productivity per feddan is about 15 "ardab"; government pays L.E. 175 for 152 kg, but for merchant about L.E. 190 for 172 kg.
- Clover "berseem": land preparation starts in August, growth period last for about 9 months from Sept. to May, needs 13 times irrigation, harvesting in June. The prices is about L.E. 2500 and clover gives many numbers of harvests plus the last one and it is cultivated for the two seasons; summer starts from May to August, winter from September to April.
- Sugar beet: land preparation starts in August, growth period last for about 7 months from September to February it depends on when cultivation started as in general its growth period is about 210 days and there is an early cultivation which takes place in 15<sup>th</sup> of September, needs 6 times irrigation, harvesting in March.
- Cotton: land preparation starts in February, growth period lasts for about 6 months from March to August, needs 10 times irrigation, harvesting in Sept. The average productivity per feddan is about 7 "kentar" for 157.5 kg weight with L.E. 500-550, government pay same as private dealers but companies pay all at once, but government pay in installments one L.E. 400 in advance and second at end of the seasons and according to Bursa prices.
- Rice: land preparation starts in May, growth period last for about 4.5 months from mid May to September, needs 20 times irrigation but rice needs water all the time, harvesting in October. The average productivity per feddan is about 3 "tons", with prices of about L.E. 1000 per ton. They cultivate rice because water level increased and it is profitable.
- Maize: land preparation starts in April, growth period last for about 3 months from May to July, needs 6 times irrigation, the crop has 2 cultivation seasons as its growth period is short (90 days), harvesting in August. The average productivity per feddan is about 10 "ardab", with L.E.150 for 142 and 162 weights.

They mentioned that winter season needs less irrigation than summer, and for about 5 months the water becomes less. They calculate each ones allocation from irrigation water according to this formula:

Average irrigation water needed for each feddan = vent served area by feddans / weekly hours "this is called "Menaouba system" and is used from a long time.

They mentioned that sugar beet needs less irrigation water, on contrary wheat, as the land in wheat is flat though absorbs more water, but in beet it is in lines so takes less water. They added that profits from sugar beet is higher than wheat and that will cause problems in future, as farmers will stop wheat cultivation and go for sugar beet, this will deeply affect animal wealth as wheat residues are used as foddors and also it represent an important food for human beings (a strategic crop), plus new GATT polices will affect these farmers and new policies should be formed.

**C. Institutional profile**

The following external institutions deal with WUA in "Seila Al-Sharqi" but the type of rela-

tionship differs from one to another: irrigation engineering, drainage engineering, agriculture cooperative, village bank, local unit, community development association (CDA), ISIIMM project, Dutch project, and general department for water steering (counsel).

The following Venn diagram (Figure 1) shows that relationship is very strong between WUA and irrigation & drainage department and water steering department, medium relationship between WUA and agriculture cooperative was found, as for the village bank, relationship is far. But small interaction exists with the local unit, due to the improved legal status of WUA and also because the association is newly formed and yet they didn't face problems directly related to local unit. A strong relationship was found with CDA and ISIMM project. As for the Dutch project, this is still in process, so their relationship with it is not yet shaped.

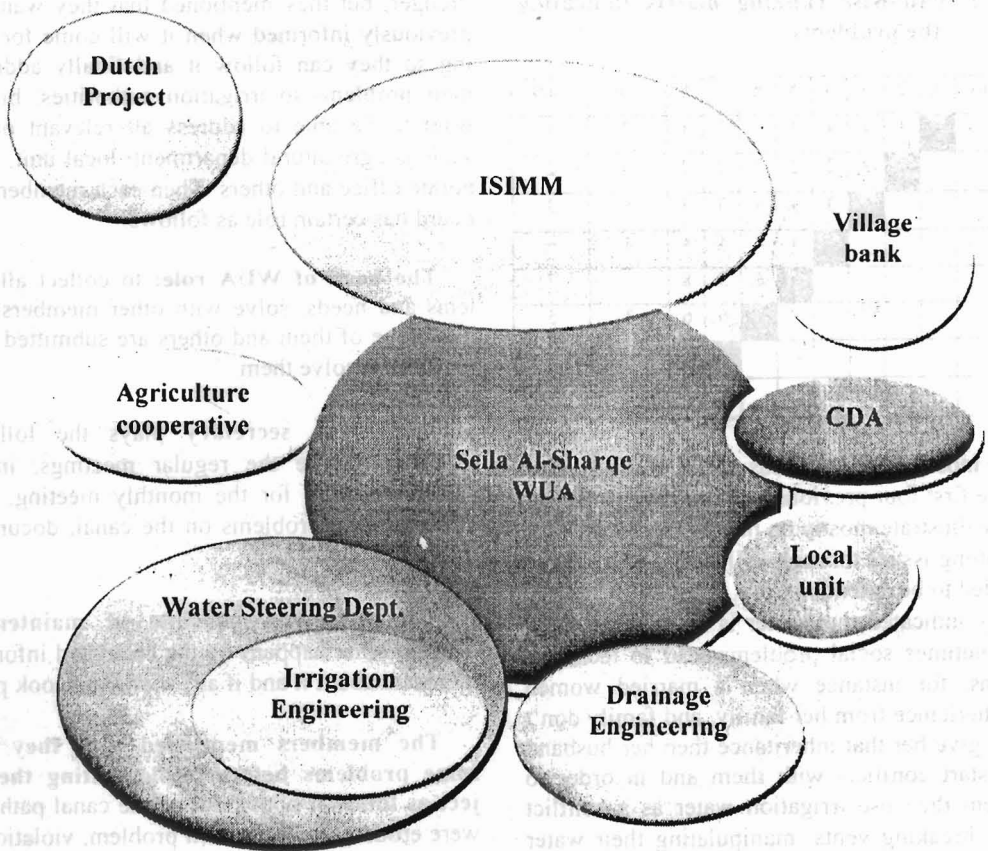


Figure 1. Venn diagram

### D. Problems

The following problems were addressed by members of WUA and were ranked as shown in the pair-wise ranking matrix (Table 1):

1. The weak legal status to empower WUA role that would give them legitimacy to solve any problems and address any authorities.
2. Training on irrigation management.
3. Incomplete relationship between WUA and irrigation authorities.
4. Continuous instability in water level.
5. No financial resources available, which hinders the WUA from going on with their roles.
6. The WUA meetings agenda and what they reach is not fulfilled.
7. The responsible person of canal (monitoring any violations by farmers, observing water level, ticket fines for such violations) work without WUA.
8. Winter block of water is irregular (opening and closing times).

**Table 1. Pair-wise ranking matrix indicating the problems**

Problems	1	2	3	4	5	6	7	8	Score	Rank
1		1	1	1	1	1	1	1	7	1
2			2	2	2	2	2	2	6	2
3				3	3	3	3	3	5	3
4					4	4	4	4	4	4
5						6	5	8	1	7
6							6	6	3	5
7								8	2	6
8									0	8

The most important needs of WUA are formed from the first four previously mentioned problems, but they illustrate mostly on having the legal status and training issues through ISIMM project as they demanded to be extended.

They indicated that water is valuable to them and sometimes social problems lead to technical problems, for instance when a married women have inheritance from her family, and family don't want to give her that inheritance then her husband family start conflicts with them and in order to hurt them they use irrigation water as a conflict base by breaking vents, manipulating their water share and so on. But they said due to water problems in the area, people now are more concerned

with such crucial issues so they start to out their disagreement aside for a while.

Through a semi-structured interview with WUA members, it was indicated that the studied WUA was formed in 2004 through ISIIMM, members are formed from head of WUA, deputy, secretary, treasurer, maintenance and repair member and 4 members, and ISIIMM formed 8 WUA. Beneficiaries from each vent are determined then one representative from each vent (each vent serve about 100 feddans) is chosen through elections and some uncontested. The no. of vents are 7 and the end vent have 4 representatives as it serve an area of about 356 feddans, though representatives from each vent are determined according to the served area and some vents are considered one vent due to small served area, so the total number are 11 representatives.

**Roles of WUA:** meetings monthly to discuss problems and needs, repairing vents, eliminating any violations on the canal, monitoring the dredger, but they mentioned that they want to be previously informed when it will come for cleaning so they can follow it and finally addressing their problems to irrigation authorities, but they want to be able to address all relevant partners such as agricultural department, local unit, governorate office and others. Then each member in the board has certain role as follows:

**The head of WUA role:** to collect all problems and needs, solve with other members or by him some of them and others are submitted to authorities to solve them.

**The WUA secretary** plays the following roles: determine the regular meetings, inviting WUA members for the monthly meeting, determine existing problems on the canal, documentation.

**The person responsible of maintenance,** monitor what happens on the canal and inform the members about it and if any violations took place.

**The members mentioned that they faced some problems before implementing the project as follows:** both sides of the canal path ways were eroded, the water mill problem, violations on the path way by farmers, broken vents, instability of irrigation water, rice areas were undetermined,



pumping water by machines without any rights, which affect other farmers.

These problems still exist, but through WUA and irrigation dept. some of these problems were solved and is less now and other problems need to be solved.

**The main activities of the village:** agriculture, animal breeding and commerce, they mentioned that March and April there is no activities in them and income becomes less.

It was indicated that animal wealth is threatened as imported breeds affect the local ones and now new diseases merged they didn't hear about it before and they require to encourage the local breeds as it can cover the local needs and also to find a solution for high prices of fodders.

In addition, one six (1/6) of areas are fallow lands, about 120 feddans due to unavailability of irrigation water especially in summer season.

The most crucial problem they are suffering from is cultivation of the right side (40 km) of the mountain in Fayoum, as these lands were sold to some people (army and police associations, business men and actors) and were reclaimed but on the water taken from "Wahba" main canal through pumping motors and they fulfill all their irrigation needs by this way and this of course affect the farmers need on the other side, as they suffer from lack of irrigation water, instability and that's why they mix irrigation water with agricultural drainage water (through irrigation authorities) and no matter they complained about this situation nothing is done, as they mentioned that these people are wealthy and have strong relationships with authorities.

Accordingly, another problem merged from this mixture and which sometimes is mixed with sanitation water, kinds of snails and worms appeared in water and in some plants (clover) so they are worried a lot about it because they will affect their plants and will cause health problems. Also salinity increased and some unusual weeds appeared in their lands. They also mentioned that ISIIMM truly helped them as for the first time they were able to sit together and discuss their problems and seek solutions for it, besides now poor farmers can sit together with big farmers equally with no class differentiation, so that's why they want the project to be extended and they feel that other projects used to give them money without feeling this strong relationship with their personnel and they felt the project impact on them. Another point raised by them that also for first

time the project let them meet people working in irrigation dept. (engineer, head of the dept.... etc.), as they didn't know them before.

**The following findings were revealed from personal interview questionnaire with six farmers not members of WUA as case studies:**

Farmers' general knowledge about the project was to some extent good but they need more awareness and have relationship with WUA. They indicated that the project started from 3 years and achieved the following: right path way was repaired, canal sides were padded which resulted in preserving irrigation water, repairing broken vents, formed WUA on the canal, members were elected from farmers in order to solve canal problems among farmers, regulating irrigation through decreasing water in one vent and increasing it in another and finally problems found its way to authorities.

**General information about the interviewed farmers:**

- **Age:** between 35-55 years (average age = 44.8)
- **Experience in agriculture work (years):** between 28-45 years (average= 34.6%)
- **Location on "mesqa":** along the canal (beginning, middle and end)
- Most farmers indicated that the project was good about 66.6% (4 of 6 farmers)
- Five farmers indicated their satisfaction upon WUA performance about 83.3% (5 of 6).
- As for the relationship between the WUA and others, 3 farmers (50%) indicated that such relation exists, 2 (33.3%) don't know and one said no (16.6%).
- As for future strong representation of WUA, 4 (66.6%) indicated its possibility and 2 (33.3%) don't know. In regard of the effect of the project on cropping patterns, 5 (83.3%) said yes and one (16.6%) don't know.
- As for increased income and farmers' livelihoods because of the project, 4 (66.6%) said yes and 2 (33.3%) don't know. The Size of land ownership: varied from 2 to 19 feddans most of them owned, except one has part owned and other shared, 48.62 feddans owned and 3 feddans shared.

**The following problems faced them prior to the project:** most irrigation water outflow in Seila main canal due to no supportive walls exists, path

way on the left side of canal needed repair, broken vents, irregular cleaning of canals, collapse of viaduct on canal banks, weak and unstable irrigation water level, irregular winter blockage time, breach cultivation of rice, violations over canal pathways, irrigation department did not pay attention to covering canal sides, canals polluted with sanitation drainage, the water mill problem.

So, problems prior and after the project still exist, and match to some extent with problems mentioned by members of WUA, although some of these problems were solved by the project, but still others need to be solved. For instance the two canal pathways were totally unsuitable for use, the right side was repaired by the project in collaboration with irrigation department but the left side needs to be repaired.

#### Roles of WUA

They indicated the following roles played by WUA: report and contact authorities about problems and seek solutions, limiting violations, awareness of water importance and equal distribution among farmers, demanding canals rights, report about broken vents and solve it, social problems related to irrigation are solved by WUA.

So there are quite similar to the roles mentioned by members of WUA, which reflect high awareness of the interviewed farmers.

#### Formation of WUA

Elections on each vent (according to served area) member's representatives are elected, and then board members for canal are chosen from them. WUA meet on monthly bases.

**In regard of operation and maintenance mechanisms, its worthwhile mentioning that the studied WUA is still newly formed, so such operations are not done by them yet like other WUAs, but it's done by irrigation department at canal level, but as for field ditches "mesqa" it's done by farmers along with agriculture department, some other cleaning are done by farmers.**

The dredger is sent by irrigation department in collaboration with WUA, when part of the canal sides collapse to dig the canal and cleaning process, also responsible about any establishments on the canal and repairing broken vents, it was revealed that farmers do mixing irrigation water with drainage water.

**In regard of management of WUA and farmers they mentioned that it include:** collection of money from farmers (but still under process with studied WUA), meetings once a month to discuss and solve problems, each family whether on the canal or vent has a representative, and they bring the dredger together to clean, WUA and farmers on "mesqa" do management issues together, address relevant authorities to solve some problems. But they still lack training on management issues.

**In regard of satisfaction upon WUA performance,** farmers indicated that due to newly established WUA they generally satisfied about their work but indicated that still more is needed and added that WUA in collaboration with ISIIMM and irrigation department achieved the following: number of problems was solved, summer fallow areas decreased from 50% to about 20%, demanding for farmers' rights, farmers know now Seila irrigation engineer and irrigation authorities, water level increased, problems among farmers and violations were decreased.

**Problems facing WUA now:** no financial resources, weak linkage between WUA and some farmers' beneficiaries, strengthening the relationship among WUA members, no legal status for WUA, weak connections with other authorities, some scheduled processes are not fulfilled.

**Their future perspectives towards WUA was to:** strengthen communication and interaction with farmers, strengthen the relationship between WUA and authorities, some members need to be changed, invite authorities from agriculture and health departments to discuss problems, availability of financial resources to solve little problems, awareness campaigns for farmers.

Though, they suggested the following in order to have a strong representation of WUA: meetings should be on regular bases, determination of public problems, new ideas to be disseminated and exchange experiences within and out their governorate, regular meetings with relevant authorities, collect subscriptions from farmers to use it in canal maintenance, declaration of the WUA and forming its legal status, training WUA members, farmers participation with WUA to solve problems.

Though, the project (as an external institution) changed to some extent cropping patterns and farmers income, as feddan productivity improved, irrigation water increased, though fallow lands

were cultivated and productivity increased, some areas started to cultivate rice after stability of water level, as they didn't cultivate it before due to lack of irrigation water, besides new crops such as sugar beet were cultivated.

**The farmers suggested the following to ensure WUA sustainability after project ends:** increase awareness among farmers, enhancing farmers' capabilities to solve their own problems amicably, existence of a well-known office or location for WUA, strengthening the relationship among WUA members, spirit of patience and not to give up to be ruled, changing some inactive members, provide the legal status, farmers' participation in maintenance, solve the mixture of irrigation water, drainage and sanitation.

## 6. Conclusion and recommendations

It is important to enhance the role of such local groups and institutions through studying, analyzing and evaluating their roles and approaches in regard of SA, its impact on peoples' livelihoods, and how to strengthen their relationship with other external institutions and create a effective network among them in order to play an important role in forming local and national policies. This was what the research tried to achieve.

It was revealed that using participatory approach in improving water resources management is vital, as more people became aware of their situation and seek improvement of their livelihoods. They become more involved in community action and willing to exert more efforts to be part of the decision making process and affect formed policies. But in order to fulfill that, support by government and other relevant personnel should be provided. This support should be within an appropriate legal and institutional context, which was revealed from the research findings, to help these local associations to ensure its sustainability and effectively perform their roles towards their community. In addition, there is an essential need of capacity building to members of WUA to increase their knowledge and upgrade their skills in areas related to water management and conservation of natural resources moreover how to improve their livelihoods and participate in decision making process and forming relevant policies. Empowerment of farmers and partnership and strong linkages between WUA and external institutions is vital.

Beside developing the legislative context for functions and activities of such associations and setting the needed criteria for responsibility and accountability in water management, particularly in cases of violating water management regulations and measures.

Finally, it is important to involve local NGOs, representing different stakeholders in utilization of water resources and in irrigation water management as a whole.

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حوليات العلوم الزراعية

جامعة عين شمس، القاهرة

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الجماعات والتنظيمات المحلية فى سياق الزراعة المستدامة والتنمية الريفية  
دراسة حالة لرابطة مستخدمى المياه فى منطقة سيلا، محافظة الفيوم، مصر

[ ٤٢ ]

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العلاقة من خلال التعرف على أحد الجماعات المحلية وعلاقتها بتلك المؤسسات الخارجية.

ومن ثم تم دراسة رابطة مستخدمى المياه التى تكونت من خلال أحد المشروعات المنفذة (ISIIMM) فى أحد المحافظات الريفية المصرية وهى محافظة الفيوم، فى قرية "سيلا" بمركز الفيوم، حيث أستخدمت عدة طرق و أدوات بحثية بالمشاركة مع أفراد العينة مثل: المقابلة الشخصية، الاجتماعات، خريطة الموارد المجتمعية، Venn diagram ، الخريطة المحصولية والموسمية. وقد أجرى البحث مع رابطة مستخدمى

تعتبر المؤسسات الخارجية (هيئات دولية، إتحادات، نقابات، منظمات المجتمع المدني) والبرامج والمشروعات المنفذة من خلالها ضرورية وحيوية لتمكين المزارعين ومجتمعاتهم من إكتساب سبل المعيشة المستدامة، وتفعيل دور الجماعات المحلية سواء على المستوى المحلى أو القومى لكون هذه الجماعات والمؤسسات تلعب دوراً حيوياً فى تحقيق التنمية المستدامة وتحسين سبل المعيشة للمجتمعات الريفية. ولذا يعتمد البحث الراهن على دراسة تلك



العادل لمياه الري عبر الفتحات. ولكن هذه الرابطة لا يوجد بها أية أعضاء إناث نظراً للعادات والتقاليد الاجتماعية، كما أنها تفتقر الى الاطار القانونى الذى ينظم عملها ويضفى عليها الشرعية عند تعاملها مع كافة الجهات والاطراف الاعتبارية داخل أو خارج مجتمعهم المحلى، حيث تعتمد فى شرعيتها على قرارات إدارية وليس قانون خاص بها. كما ان هذه الرابطة وكونها حديثة التكوين لم يتعرف عليها بعض المزارعين، وكذلك تعرض الرابطة لمجموعة من المشكلات الفنية التى يحاولون تقليصها ولكنها مازالت موجودة لإرتباطها بجهات أخرى، مثل إستمرار تذبذب منسوب المياه بالترع فضلاً عن كسر الفتحات، زراعة الارز بالمخالفة للنسب المسموح بها، تلوث الترع، تخفيف المشكلات بين المزارعين على أولويات الري التى تم معالجتها الى حد ما بعد تبطين القنوات وإنشاء الرابطة، ومشكلات مالية ومؤسسية مثل عدم وجود موارد مالية للرابطة وعدم تلقى مجلس الإدارة للتدريبات الكافية والخاصة بإدارة المياه وكيفية تطوير موارد الرابطة، وكذلك كيفية التعامل مع بعض المشكلات الاجتماعية بين الاسر (الميراث) التى تؤدى لصراع على المياه وتكسير الفتحات.

ومما لاشك فيه أن هذه الرابطة ومثيلاتها فى المجتمع تلعب دوراً حيوياً فى الزراعة وتنمية مجتمعانهم المحلية، إضافة الى أنها حققت نتائج إيجابية سواء على المستوى الفنى أو المجتمعى أو المؤسسى.

ولذا يوصى البحث بإستكمال النواحي التنظيمية والفنية لأمثال هذه الرابطة من خلال أحد البرامج أو المشروعات، وخاصة أنهم مازالوا فى إحتياج لبعض التدريبات وخاصة فى مجال إدارة المياه وتبادل الخبرات مع النماذج الناجحة ليتمكنوا من الاستمرارية والاعتماد الذاتى على أنفسهم.

المياه على بحر "سيلا" الشرقى فى الفترة (فبراير- مارس) ٢٠٠٧. وقد تضمنت الدراسة مرحلتين: الأولى، دراسة وإستكشاف الجماعات المحلية (٤ أو ٥ جماعات) من خلال مجموعة المعايير التى تصب فى إطار التنمية المستدامة والتنمية الريفية وإختيار تلك التى تتحقق فيها هذه المعايير، والثانية دراسة الجماعة المختاره بصورة أعمق (خصائصها، مشكلاتها، أدوارها).

وقد توصلت النتائج الى أن الرابطة المدروسة تضم تسعة (٩) مزارعين حيث تم إختيارها وفقاً لمجموعة من المعايير تتحقق عناصر الزراعة المستدامة والتنمية الريفية والتى منها على سبيل المثال: أنها جماعة محلية ترتبط بالزراعة وتهتم بالحفاظ على الموارد الطبيعية وتحديداً إدارة المياه، وحققت نتائج إيجابية فى تحسين سبل المعيشة للأفراد المجتمع المحلى.

وقد أتضح جلياً دور المشروع فى تكوين الرابطة والتي نبعت الحاجة إليها من وجود مشكلات فنية، واجتماعية، واقتصادية ومؤسسية، الأمر الذى تطلب معه تكوين هذه الرابطة على بحر سيلا الشرقى.

وقد تبين أيضاً أن تشكيل الرابطة حقق نتائج إيجابية ملموسة منذ إنشائها منذ ثلاث سنوات، حيث زادت الإنتاجية ومن ثم الدخل الفردى للمزارعين، فقد وصل متوسط إنتاجية الفدان من القمح نحو ١٥ أردب، وبيع للحكومة بسعر ١٧٥ جنيه لوزن ١٥٢ كجم، وللتجار بسعر ١٩٠ جنيه لوزن ١٧٢ كجم، والقطن نحو ٧ قنطار (وزن ١٥٧,٥ كجم) بسعر ٥٠٠-٥٥٠ للحكومة والتجار. إضافة الى زراعة تراكيب محصولية جديدة مثل بنجر السكر والذى يحقق لهم عائد أكبر من القمح، إضافة الى وجود علاقة بالمؤسسات الخارجية تتفاوت فى قوتها من مؤسسة لآخرى (مثل مشروع ISIIMM، إدارة الري)، كما تم زراعة بعض الاراضى البور مما ساعد على زيادة إنتاجية المزارعين، وضمن التوزيع

الكلمات الدالة: الزراعة المستدامة، التنمية الريفية، الجماعات المحلية، رابطة مستخدمى المياه

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