

CIHEAM

Advanced Specialized Course on "Sustainable Agriculture"

REPORT

The role of local resource management organizations: case of "Wad Omar" Multi-purpose Cooperative Society in Omdurman western rural community, central Sudan

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Academic Year 2009-2010

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Bari: CIHEAM/MAIB, June 2010

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Acknowledgement

I would like to thank the SARD Course Staff in MAI-BARI, for allowing me taking the opportunity to study sustainable agriculture. Many thanks to the lecturers of the Institute and their collaborators, for their hard work to providing scientific material value. I thank: Lamberto, Hamid, and online supervisors.

I also extend my thanks to State Ministry of Agriculture, Animal Resources and Irrigation, for their support and adoption of research at all stages. Thanks to the Wad Omar village family in western Omdurman, for their interest and participation. Specially thanks to my wife for her support until the moment of completion of the research .

I'm not excluding anyone from my colleagues, for their best help to complete this research .

Thank very much all those who helped me in the output of this research. All my love and appreciation for all .

Ammar BASHIR

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List of Abbreviations

CCU-IFAD	Coordinator of the Central Unit of the IFAD
DCDMA	Desertification Control and Drought Mitigation Administration
GMRD	Gender Mainstreaming in Rural Development Unit
IWCC	International Website Currency Converter
LGs	Local Groups
MAI	Mediterranean Agronomic Institute
MoAF	Ministry of Agriculture and Forestry
NCoSPFS	National coordinator of the Special Programme for food security in Sudan
PAEA	Planning and Agricultural Economics Administration
PAEAL	Planning and Agricultural Economics Administration Library
PRA	Participatory Rapid Approach
PRAT	Participatory Rapid Appraisal Team
RA	Rapid Appraisal
SARD	Sustainable Agriculture and Rural Development
SCoSPFS	State Coordinator of the Special Programme for Food Security
SEAGA	Socio-Economic and Gender Analysis
SMAARI	State Ministry of Agriculture, Animal Resources and Irrigation
SWOT	Strengths, Weaknesses, Opportunities and Threats
WOMCS	"Wad Omar Multi-purpose Cooperative Society
ZT	Zero Tillage

Summary

Research started by talking about "Wad Omar" village location and description of the territory: (i) boundaries; (ii) population; (iii) climate; (iv) soil; and (v) natural vegetation and crops. Dealt with in detail the establishment of Wad Omar Multi-purposes Cooperative Society: (i) the idea of establishment; (ii) role of society; and (iii) services providing. Display of land use on "Wad Omar" village.

Presentation of the research information sources in the different stages and tools research adopted. Speaking about the main research phases: (i) Screening; and (ii) Mapping, the: (i) objectives; (ii) achievements; (iii) difficulties and (iv) problems faced. Survey methodology; and research key informants.

Then turning to talk about characterization of Wad Omar Multi-purpose Cooperative Society: (i) "Wad Omar" village resources map; (ii) institutional profiles of Wad Omar Multi-purpose Cooperative Society; (iii) strengths, weaknesses, opportunities, threats; (iv) desertification trend lines in "Wad Omar" village; (v) local technology used faced desertification; (vi) relationship and institutions linkages, (vii) importance and influence; (viii) "Wad Omar" village income and expenditures sources; and (ix) review priority problems of men/women and ranking.

Then focused on sustainability discussed the socio-economic and environmental impacts for society activities.

Developed the most appropriate recommendations for: (i) the priorities problems of population groups in "Wad Omar" village; and (ii) the needs of Wad Omar Multi-purpose Cooperative Society to play its role fully.

Keywords: WOMCS; appropriate technology; food security; desertification; resources; significant story.

Introduction

Sudan geographic Location and resources

Sudan is located in the northeast of the African continent between latitudes 22.4 degrees north and longitude 38.22 degrees east, which has common borders with nine African countries: (i) Egypt; (ii) Libya; in the North. (iii) Chad; and (iv) Central African; (v) Republic of the Congo in the West. (vi) Kenya; and (vii) Uganda in the South. (viii) Ethiopia; (ix) Eritrea and the Red Sea in the East. Sudan is located within the tropical zone The varied climate between continental in the north and savannah in the center and tropical in the southern part of Sudan, rising temperatures in all parts of Sudan in the period from March to July at 42 degrees Celsius during the day and 23 degrees Celsius at night, the lower the temperatures in the period from November to February and up to 30 degrees Celsius at noon, and 16 degrees Celsius at night, especially in north. Rain rate 75-300 mm in the central areas and 400-800 mm in the south of the center and 800-1500 mm in the southern regions and tropical. The total area of cultivation of about 43,051,664 hectares, of which the exploiter is currently 15% covered by forests, native grasslands, 585 thousand square kilometers. The main sources of water: the Nile (the longest river in the world), groundwater, rain etc., and Livestock are estimated about 121 million head of sheep, camels and cattle, the discovery and extraction of minerals in certain areas and being exploration in other regions. The country's commercial quantities of gold - copper - chrome marble granite (Gate of the Sudanese economy).

"Wad Omar" village Location and Climate

"Wad Omar" village is the site of the Special Program for Food Security, located in the Western rural of Omdurman, "Umbada" locality, "El-ameer" administrative unit, along "Omdurman–Northern State" highway at the 84 kilometer. East about half kilometer from the main road. The area is open desert affected by: (i) desertification and intensive storms; and (ii) sand movement which led to the formation of sand dunes and ripples that indicate forms of the transfer and movement of sand, which is active in the direction of the north-east in winter and southwest in the autumn. The region suffers from the deterioration of pasture and forest proportion of: (i) firewood collection; (ii) use of trees as firewood for fuel; and (iii) lack of rainfall. Reducing the growth of natural vegetation and the seasonal and perennial plants. Desert climate prevails in the region which is characterized by: (i) long; (ii) hot; and (iii) high temperatures during the day. Humidity and cold during the night hours (DCDMA 2008).

Chapter I: INTRODUCTION

I.1. DESCRIPTION OF THE TERRITORY

I.1.1. Location of Wad Omar Village

"Wad Omar" village, located in Khartoum State, Umbada Locality at Omdurman province, in the Western rural. Bounded by: (i) Mehaila village from North; (ii) "Omdurman-Northern State" highway street from West; (iii) from South bounded by Soag and Ageeb villages; and (iv) Wad El-hory village from East (*See Annex: 14*). Area located in **52.2 Miles** North West of Omdurman.

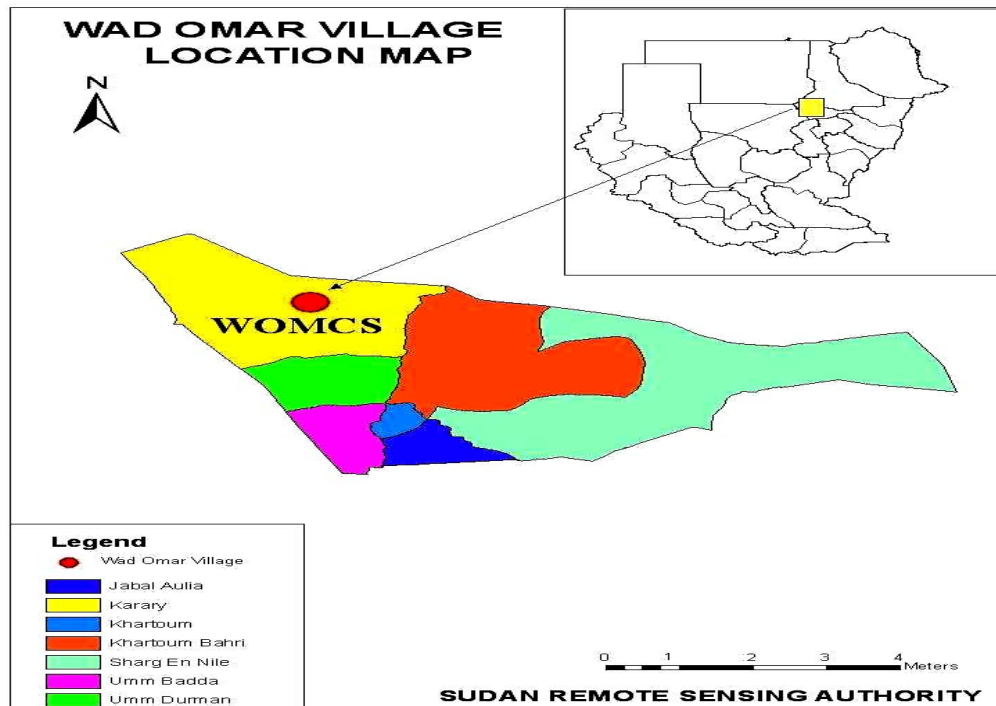


Fig. 1: *Wad Omar Village Location Map*

"Hassaniya" tribes settling in the region, and the village population estimated in 2008 by 805 habitant. The area effected by desert climate zone, where temperature increasing in Summer, decreasing in Winter. Rain fall is very rare and absent in some seasons. The village soil is dissected ridges and colluvium, the village topography is undulating with gravel on soil surface (Farah, (2008)) there are different types of soil: (i) Sand transported by wind; (ii) Clay in valleys; and Rocky soil transported by water.

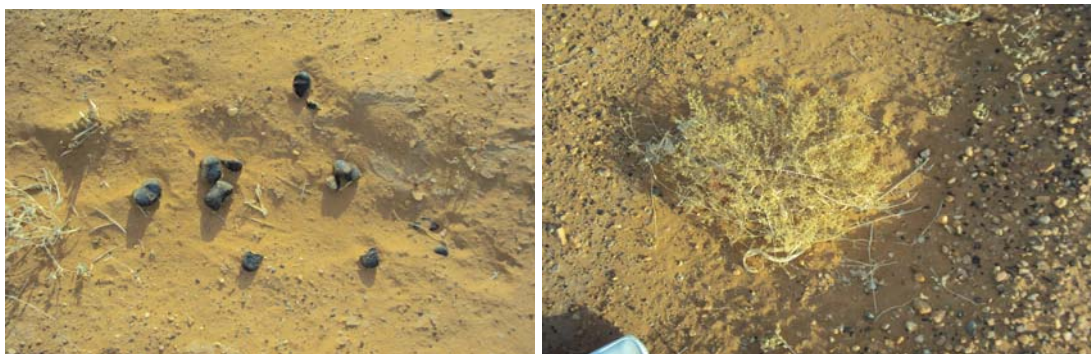


Fig. 2: *Types of soil*

Area vegetation covered by *Acacia tortillas*, *Cypresses spp* ...Other plants covering the water sites and appears in the Autumn. There are many different suitable crops sowing later in the area :(i) Onion; (ii) Tomatoes; (iii) Corn; and (iv) Watermelon.



Fig. 3: Wad Omar Village Plant Species and Crop

According to the desert climate zone, Wad Omar village grazing livestock as the main activities such as: (i) goats; (ii) sheeps; and (iii) camels. While families interested in poultry breeding.

I.1.2. Wad Omar Multi-purpose Cooperative Society:

"Wad Omar Multi-purpose Co-operative Society (WOMCS), is a formal local group of farmers organized themselves, and registered under Khartoum State Co-operative Law 1995, No; 580 (*See Annex: 12*). The establishment idea of this society comes from the settlement in the village to lead the local community on changing from pastoral community to stability agro-pastoral one. And the main role of it is help their members to improved livelihoods situation by adding an additional income sources, diversifying activities and make a full utilization of local resources which depends on dominant climate condition situation. The society improving the agricultural activities, firstly make treatments in the soil components to be suitable to agricultural process, these treatments applying in 6.5 Ha the current cultivated area managing by WOMCS. Cultivation is take place through three periods showing as fallowing (Table 1) (SPFS 2008):

Table 1: Sowing dates in different seasons in Wad Omar area:

Season	Sowing Dates
Winter	November to early December
Summer	March – May
Rainy	First July to mid August

After successful implementation composing targeted to solve soil problems in Wad Omar village, the area cultivated development becomes as shown in (Table 2) (SPFS 2008):

Table 2: Wad Omar village Cultivated area Development/Ha, comparing with others (2006-2009):

Village	2006/2007	2007/2008	2008/2009
Um Haoat 1	5.2	6.5	3.0
Um Haroat 2	4.7	6.5	5.8
EL Ziraiat	3.0	6.5	0
Wad Abdu	0	6.5	0
Wad Omar	0	6.5	5.8
Funga	0	6.5	0
Wdi ELMelih	0	6.5	0
Fatacha	0	0	3.2
Suag	0	8.2	6.5
Total	12.9	53.7	24.3

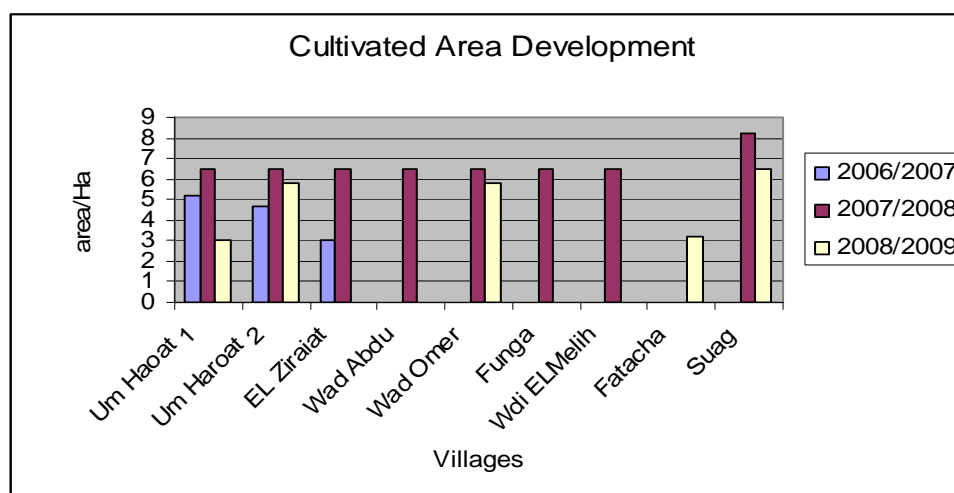
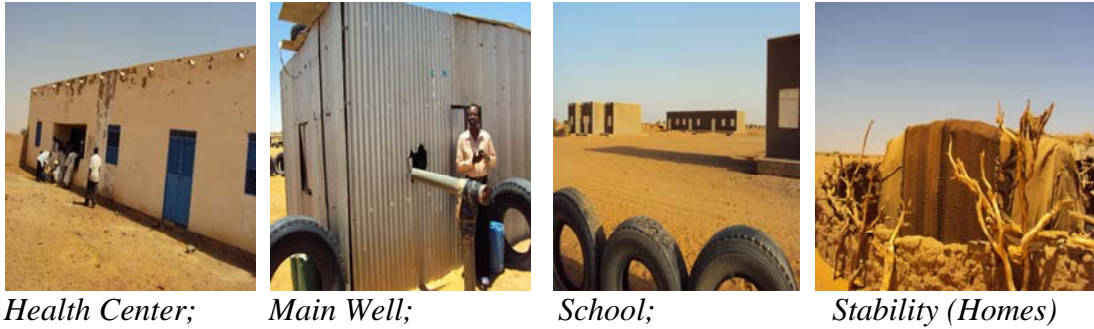


Fig. 4: Cultivated Area Development in Westarn Omdurman villages

Other important impacts for WOMCS appear in many different fields represented in improving the village services: (i) primary health care; (ii) learning; (iii) availability of drinking water; and the most important beside these services, is (iv) created stability in the village by creation an employing in agriculture field.



Health Center; Main Well; School; Stability (Homes)
Fig. 5: WOMCS providing other services

I.1.3. Wad Omar village Activities and Land Use

The main activities current here in the area is grazing :(i) goats; (ii) sheep; and (iii) camels. According to area condition, they move by their livestock in a wide range fetching the natural pasture and water. The other activity is working in agriculture field in the village. The cultivated area consists of 30 families, the crop production represents one of income sources (*See Annex: 14*).

Chapter II. :

Implemented Activities during Research Phase

II.1. Research Information

The research information can be categorized according to research phases, at the screening phase to identified the significant stories, the secondary information is the main type of information to choose one of these stories to be characterized in the second phase of research. The information collected in this phase from the following sources: (i) Gender Mainstreaming in Rural Development Unit (GMRD) - Planning and Agricultural Economics Administration (PAEA) - Ministry of Agriculture and Forestry (MoAF); (ii) National coordinator of the Special Programme for food security in Sudan (NCoSPFS); (iii) Coordinator of the Special Programme for food security- State Ministry of Agriculture, Animal Resources and Irrigation (SCoSPFS); (iv) Coordinator of the central unit of the International Fund for Agricultural Development in Sudan (CCU-IFAD); (v) Desertification Control and Drought Mitigation Administration- State Ministry of Agriculture, Natural Resources and Irrigation (DCDMA); (vi) Planning and Agricultural Economics Administration Library (PAEAL); and (vii) Master's study "The Economics of (ZT)" - Blue Nile - Agadi.

After selected this story as significant one at the end of the previous stage, the information comes from different sources such as: (i) Key informants; (ii) Field visits and (iii) Semi-structured interviews to key informants.

II.2. Research Tools

The approach followed in this research is Participatory Rapid Approach (PRA); it is an approach to development based on an analysis of socio-economic patterns and participatory identification of women's and men's priorities. The objects of using these tools are: (i) close the gaps between what people in "Wad Omar" village need and what development delivers, by putting socio-economic analysis and gender analysis together; (ii) socio-economic and gender analysis (SEAGA), helps me to learn about "Wad Omar" community dynamics, including the linkages among social, economic and environmental patterns; and (iii) helps me to understand the needs and

priorities of different people, clarifying the relevance of gender in conjunction with age, wealth. I was focusing in both women and men.

By this participatory approach I aimed to : (i) support local people in "Wad Omar" village to carry out their own development using the expertise of outsiders to help them achieve their development goals; and (ii) Establishing a basis for dialogue through which information is shared with farmers in "Wad Omar" village, those are a fundamental in PRA.

II. 3. : Screening Phase Activities (Feb. 1-28, 2010)

II.3.1. Screening Phase Objectives

Main objective of the Screening Phase is to identify significant stories on agricultural related activities that appear generating benefits to peasants' livelihood. A full understanding the definition of the significant stories, this help me to: (i) Select a territory that I know already; Where, (ii) I can easily more around for direct observations/meeting communities, collecting socio-economic data; and (iii) screening stories where peasants (individual/group) are the main actors and beneficiaries.

I am looking for three significant stories, dealing with: (i) sustainable agriculture; (ii) national resources conservation; and (iii) applied of conservative technologies based on national process.

Theses activities will be contributing to the peasants' livelihood and focused on a specific sector, to allow me to select most significant story which will be characterised.

These stories could have been promoted by a single peasant or peasant related group, based on their knowledge and capacities, and/or on their linkages to other local groups (LGs) or external stakeholder and sources of information and can be supported by favourable policies. Activities stories have already generated measurable affects on communities' livelihood or farming system.

II.3.2. Achievements

In the duration of the screening phase, identified three significant stories on agriculture and related activities that appear generating benefits to peasants' livelihood, these significant stories are: (i) Conservation Agriculture in Blue Nile area (Agadi); (ii) Rural development in Bara, Um Rawaba provinces- North Kordofan State; and (iii) Food Security and environmental protection in Wad Omar village – Omdurman Province (*see Annex: 3*). Data collected around those stories, my secondary information were collected from : (i) reports; (ii) studies; (iii) websites; and (iv) libraries. The main tools which I fallowed are semi-structured interviews to key informants selected under specific consideration such as: (i) their connections with the territories and communities; (ii) stakeholders and gender representative; and (iii) approachability and accessibility to establish links. I successful implemented many interviews.



Interview: Fatima ISMAEEL; GMRD



Interview: Ahmed EL-HAJ; CCU-IFAD



Interview: Fatima EL-TAHIR; NCoSPFS



Interview: Salah HUSSEIN; SCoSPFS



Interview: EL-MEHAINA; WOMCS chair. On: PAEAL



Fig. 6: Screening Phase Photos

II.3.3. Selection of WOMCS

After identified three significant stories, I build my selection of the main significant one based on the following criteria: (i) The originality of the story; (ii) Effects on peasant's livelihood; and (iii) my Personal research interest. Butting aware of practical aspects and the activities feasibility such as: (i) possibility to travel to specific places: consider that all the two stories located out of Khartoum boundary; and (ii) meet beneficiaries, where in Wad Omar village I can easily meet and discuss with key informants and farmers in the village.

II.3.4. Difficulties and Problems Faced

(i) Difficult of obtaining accurate detailed information, especially the type of: time series information; (ii) lack of arranging and structuring information, so to be easily accessible when needed; (iii) lack of preservation and archiving of information; (iv) some of research topics have a scarcity and poor sources; (v) the time factor is the

main constrain and this reflected on the investigation research topics as required; and (vi) lack of prepared research by institutions to support their field work (See Annex:1).

II.4: Mapping Phase Results (1 March-11 April, 2010)

II.4.1. Mapping Phase Objectives

Investigate on multiple issues that characterize the "Wad Omar" Multi-purpose Cooperative Society, the main specific objectives of this phase of research are:

(I) Concentrated around the members of co-operative society and their household: (i) preparing an exhaustive institutional profile of the cooperative; (ii) the structure and organization; (iii) outcomes on household; (iv) relationships and linkages with other institutions; (v) date of establishment; (vi) coverage; (vii) membership; (viii) inclusiveness; (ix) rules of the game; and (x) the quality of governance of **WOMCS**: [transparency of decision making process; level of community participation; accountability of board members and responsiveness after decision making].

The second objective is belonging from the special area ecological zone which is the desert climate is dominance:

(II) The importance of analysis of environmental impacts, because it is affected in the cultivated activities, reflected directly on food insecurity and lead to an other negative social impacts represented on farmers outmigration and leave their area. This analysis take place by considering the local appropriate technology Innovate and used by farmers against desertification phenomenon.

(III) Social impacts appear after the co-operative society establish in Wad Omar village, the society works to: (i) provide agricultural work on farms; (ii) education services; (iii) water; and (iv) primary health care. Which had a significant impact on the work on the stability of families in the village and to adapt and coexist with the local environment in the village and make it a productive environment rather than repellent.



Stability in the village



Local technical faced desertification

Fig. 7 : WOMCS basic message

II.4.2. Survey Methodology

The approach followed in this research is PRA. For a good applications of this approach, organize Participatory Rapid Appraisal Team (PRAT) and held a short workshop training for them, speaking a bout: (i) the SEAGA Approach; (ii) Preparation for PRA; (iii) rapid appraisal (RA) selected tools; and (iv) RA work plan. The approach tools selected are: (i) Trend Lines; (ii) Venn Diagrams; (iii)

Institutional Profiles; (iv) Income and Expenditures Matrices; and (v) Pair-wise Ranking matrix. The tools cover all kinds of information require for this research purposes with a proper application in the field level.



Fig. 8: *Preparatory Workshop*

The SEAGA approach implemented through additional support tools: (i) Analysis of secondary sources about the area; (ii) Key informants strengthening my research knowledge, providing linkages and arranging meetings with the key stakeholders in WOMCS; (iii) Fields visits allowing me to meet and discuss directly with the key stakeholders; and (iv) Semi-structured interviews with key informants.

II.4.2.1. Key Informants

The main sources of research information in this stage was confined on Semi-structured interviews with two main key informants: (i) Ms. Samia MOHAMMED - Desertification Control and Drought Mitigation Administration - State Ministry of Agriculture, Animals Resources and Irrigation; and (ii) Sheikh: Ali OMAR-(El-Mehaina) – Chairman of WOMCS.



Ms. Samia MOHAMMED

Sheikh: Ali OMAR- (El-Mehaina)

Fig. 9: Main key informants

II.4.3. Difficulties and Problems Faced

There are no difficulty in understanding the analysis tools, as it has been applied in several countries and regions of the world. But in: (i) their suitability for mobile pastoral nomadic society and put it in simple points and learn how to extract facts and information; (ii) Dimension of the relative area from Omdurman; (iii) Not to ask many questions of the analysis of non-suitability of the reality of the search area, was to overcome these problems, offering timely and most importantly the issue of research in simple language and appropriate, easily absorbed by the farm-and-answer easily; (iv) Information of a social nature, not made easily, has exceeded the research methodology this obstacle from the reality of dealing with the various peoples and nations of the earth; (v) Literacy of research community, was one of the main obstacles that we faced in the search; (vi) Non-application of such research and the methodology characteristic in a rural and simple community, which was considered the beginning of an important research tools for the use of new, more comprehensive, extensive and most successful in giving acceptable results and sick of it; (vii) Many of the concepts expressed in the task of rural society in all agility and simplicity, which may mean in some cases, lack of awareness of the real significance of such concepts; (viii) Research methodology are known to some degree, but not take place, which means that with the lack of previous research apply the same methodology (*See Annex: 2*).

II.5: Characterization of Wad Omar Multi-purpose Cooperative Society

II.5.1. Territory context analysis

II.5.1.1. Wad Omar village resources map

Wad Omar village dominated by the desert climate, which was reflected on the resource base in the region, which is characterized by the diversity of human activities, where the majority of the population practiced grazing and some of them work in the agricultural field. The region offers a large base of natural resources, can be classified as follows:

Natural water resources: seasonal valleys: (i) El-mugadam valley in the Western region, which is water running from south to north; and (ii) Bagora valley in Northern region, which is water running from East to West.

Vegetation: consists of small shrubs such as: (i) *Panicum turgidum*; (ii) *Aristida mutabilis*; (iii) *Corchorus spp*; (iv) *Cassia senna*; and (v) *Euphorbia aegyptiaca*. Some large trees such as: (i) *Acacia tortilis*; (ii) *Acacia nilotica*; (iii) *Ziziphus spina – Christi*; (iv) *Gerwia tenax*; and (v) *Saluadora persica*. A natural forest and protected grazing area. The urban environment established: Passing the area: (i) Highway street from Omdurman to Northern state; and (ii) the National Electricity Line from Marawe in the North. Several services such as: (i) school; (ii) health center; (iii) tanks of drinking water; and (iv) shopping centers. Houses built of local materials (mud and hair). The agricultural fields which are managed by Wad Omar farmers are in the center region. Fields extension to Bagora valley in the North and other extension on the Western to Omdurman-Northern Highway Street (See Annex: 15).



Fig. 10: Wad Omar agricultural fields



Electricity

Highway Street

"Bagora" Valley

Fig. 11: Wad Omar village Infrastructure

II.5.2. Institutional Profiles

II.5.2.1. Wad Omar Multi-purpose Co-operative Society Analysis

Wad Omar Multi-purpose Cooperative Society was established on 2005. WOMCS has specific goals planning to implement in the village: (i) The beginning of collective agriculture; (ii) Make services available for humans and animals; (iii) Stability of the men in the village and create employment opportunities for them; (iv) Desertification resistance by sand movement fixations (using wheels); (v) Protect agriculture products from animal entry and cause damages; (vi) Make irrigation water available from the well in the area; (vii) Food crops production especially "Okra"; (viii) Production of forages for animals; and (ix) Fixation of co-operative concept.

WOMCS management board is consisting of: (i) chairman; (ii) Secretary; (iii) treasurer; and (iv) membership (see Annex: 4). Society president and board membership are chosen by election. Membership opened to those who live in Wad Omar village, after paying the total membership fees: (i) 50 SDG (16.6 €) membership; and (ii) 05 SDG (1.7 €) entry. Women can be members in Executive

Committee, represented by two in management board. The WOMCS consist now of 80 families. Meetings are held for important matters and decisions making by participation of members.

The important achievements are: (i) Availability of agricultural labor; (ii) Participate building village dispensary; (iii) Participate building village school and preparing education requirement; (iv) Participate on sand movement fixation: sowing seedling and using plastic wheels; and (v) Social stability in the village.

WOMCS needs is presenting on: (i) Agricultural Services (Certified seeds for Abu Sabeen, Okra, Watermelon, Onion and Potatoes, Fuels for agricultural machines, Agricultural machines (plough) and Irrigation network maintenance); (ii) Increase agricultural area; (iii) Insert breeding poultry; (iv) Provide veterinary services; (v) Increase water sources from one well; (vi) Fence to protect agriculture from animals; and (vii) Place of prayer (See Annex: 5).

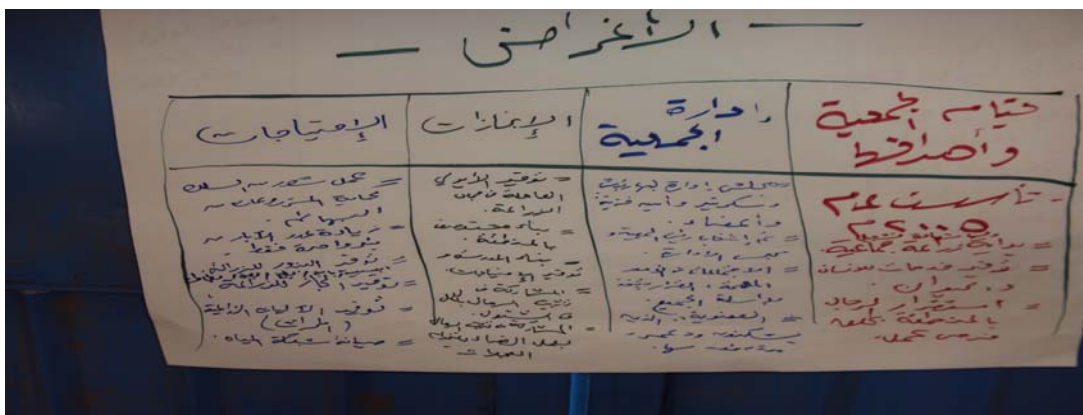


Fig. 12: Institutional Profile Application

II.5.3. WOMCS Strengths, Weaknesses, Opportunities and Threats Analysis (SWOT)

To complete the analysis for the WOMCS, an analysis of the strengths and weaknesses, and opportunities available to it, and to identify the most important threats surrounding it.



II.5.3.1. Strengths

(i) The absence of conflicts, and there is a consensus of opinion; (ii) The village enjoys stability and security; and (iii) Strength of social ties.

II.5.3.2. Weaknesses

(i) Pastoral society roaming; (ii) wide spread illiteracy; (iii) Narrow view of the future; (iv) Lack of endogenous sources of income; and (v) Poor participation in the capital of the society by not pay contributions.

II.5.3.3. Opportunities

(i) Expansion of rain-fed agriculture in the "Wadi Elmugadam"; (ii) the possible expansion of existing agricultural area; (iii) Utilize the waters of the Valley "Bagora", to improve the irrigation water supply network; (iv) Opportunities to use low-cost electricity, in the operation of wells rather than gasoline; (v) Use of electricity in the operation of laboratory services of the health center; and (vi) Establish a center for the

development of rural women to provides services in [education, food processing, energy alternatives, training and pastoral farm].

II.5.3.4. Threats

Ownership of the land area (none registered). While the Society, pastoral protected and forest are registered. (See Annex: 6).

Box 1: SWOT Elements

Strengths: the internal capacity of the project, which could contribute to meet the demands and end the threat. **Weaknesses** are: the deficit procedure, which works to prevent projects from achieving their goals. **Opportunities** are: the external conditions or certain trends have been working to achieve the goals. **Threats** are: the external conditions or trends that may affect the efficient functioning of the project.

II.5.4. Trend lines Analysis

II.5.4.1. Desertification Trend Lines in Wad Omar village:

Before 1970 the region enjoyed a good cover of vegetation, low rainfall in 1973, led to rising trend of drought in the region and this situation continued until 1983, began a period of actual drought until 1985. In the period between 1986-1989 there have been improvements in vegetation and decreased curve of drought. Dry period appeared again as a result of the increasing dust storms severely in the period between 1989 - 1992, which led to a rise of the curve in this period. Then began a steady improvement in vegetation cover, to reach its peak after 2009.

During the period between 1970-2009 a big climatic fluctuations can be described by successive waves, which was the major cause of deforestation for fuel use or sale of timber. The main reasons for improved vegetation cover, a forestation great interest and care of trees in a sustainable manner (See Annex: 7).



Trend Lines Application

Desertification

Fig. 13: Wad Omar village 1970-2009 climatic fluctuations

II.5.4.2. Local Technology used faced Desertification

To face the phenomenon of drought in the fields' area, farmers with technical collaboration with Desertification Control and Drought Mitigation Administration DCDMA; using plastic wheels in the process of installing sand, putting Seedling inside wheels and along the growth process putting additional wheels for more protection. In the project areas along the North and West palm are used in the installation processes has seen considerable success in stabilizing the sand and protect agricultural area.

They used plastic wheels because it is: (i) cheap prices; (ii) available; (iii) can be moved from one place to another easily; and (iv) has no impact on the local

environment. As the palm trees have proven their suitability to the region's environment and its ability to stabilize sand, planted in the form of lines and connect them together to be strong fences to install the sand.



Bind the stem together

Method of cultivated

Fig.14: Installation with palm trees



Fig. 15: Plastic Wheels protect seedling

Box 2: Desertification Control and Drought Mitigation Administration

Unit was established in 2001 and followed to the Minister of Agriculture, livestock, irrigation, and then attached to the Department of Natural Resources in 2005, and in 2008 became DCDMA. The **unit functions:** inventory of land affected by desertification in the state of Khartoum, desertification and drought control through a system of periodic monitoring using technologies GIS & REMOTE SENSING, implementation DCDMA activities focusing on food security projects and poverty alleviation. Environmental awareness raising risks of desertification among working in relevant agencies and between affected communities and coordinate with various relevant to combating desertification, such as: Institute for the Study of desertification and cultivating the desert (University of Khartoum), the National Research Center: (Center for Desert Research, Research Center of Land and Water - Station Soba and Remote Sensing Authority), the UNESCO Chair on Desertification, Faculty of Agriculture Department of Soil and Environment, MoAF, the Sudanese Association for the Protection of the environment, the Green Crwel, the Association to Combat Desertification, the Working Women's Association, WOMCS and National Union of Sudanese Youth.

II.5.5. Venn Diagrams of stakeholder analysis

II.5.5.1. WOMCS relationship and institutions linkages:

WOMCS have a wide relationship with many institutions in the area and outside. These relationships can be categorized as the following: First: strong linkages, there are a big connection and sharing between them, these institutions are: (i) "Soag" Agricultural Society [SAS]; (ii) Natural Resources Department – Khartoum State [NRD]; (iii) Wad Omar Herders Union [HU]; (iv) Special Program for Food Security – Khartoum State [SPFS]; and (v) Association of working women - Khartoum State [WWA]. Second: medium linkages, there are some connections and sharing, these institutions are: (i) "Khalwa" for teaching Holy Quran [KHQ]; (ii) Khartoum locality (health) [KLH]; and (iii) Union of Khartoum State Farmers [FU]. Third: weak

linkages, this group represented on: (i) Youth Club [YC]; and (ii) Disarmament and Deployment Reintegration [DDR]. (See Annex: 8).

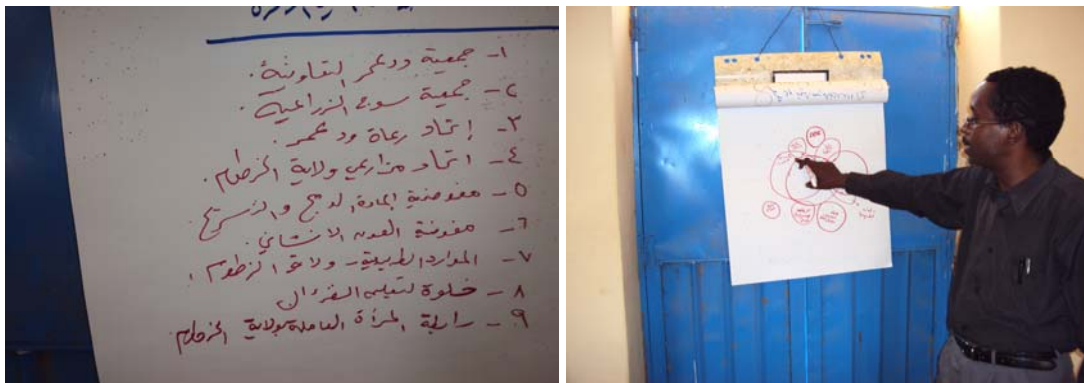


Fig. 16: Venn Diagram Application

Box 3: Special Program for Food Security SPFS

The World Food Summit endorsed the SPFS initiated by FAO to address problems of food insecurity in Food Deficit Low Income Countries. Sudan is one of the countries that requested and received assistance from FAO under the SPFS. The philosophy rationale and objectives of SPFS is consistent with Sudan's agricultural development strategy, food security action plan and related programs. The national documents prepared included National Program Document and the National Plan of Operation. Several regions and localities are identified as suffering chronic or occasional food deficit areas. The causes of the problem, however, may differ from one location to another, including civil conflict, drought, and lack of drinking water or degraded soils. The SPFS is a multidisciplinary program that combines expertise and experience from a wide range of fields to promote an integrated and participative approach to food security. The program was launched by FAO in 1994 after its approval by the FAO council at its 106th session. Moreover, the concept was endorsed by the world leaders at the World Food Summit 1996.

II.5.6. Importance and Influence Matrix:

The institutions linkages with WOMCS have different importance and influence: The institutions with High importance High influence are: (i) NRD; (ii) HU; and (iii) SPFS; institutions with High influence Low importance are: (i) KHQ; and (ii) WWA. While the institutions: (i) KLH; (ii) SAS; and (iii) FU have Low influence High importance. Some institutions not play any role but may be it is exist, this can be categorized with Low influence Low importance represented on: (i) YC; and (ii) DDR. (See Annex: 9).

II.5.7. Income and Expenditures Matrices Analysis

II.5.7.1. Sources of Income Analysis:

Men sources of income are component from three elements: (i) Livestock; (ii) Agriculture; and (iii) Entrepreneur. The income for men is coming from livestock 65%, while both agriculture and entrepreneur comes in the second level represented by 17.5%. Women income is consist of specific quality sources: (i) Poultry; and (ii) Collecting firewood. The income is distributed between two sources: (i) Poultry 70%, and (ii) Collecting firewood 30%. We can observe some points around men/women income sources: (i) the men income distribution among sources is best rather than women; (ii) women income sources concentrated specially around family

livelihoods, while men interested in huge wide range of activities; and (iii) the first attention for men is livestock while women putting more efforts on family food production.

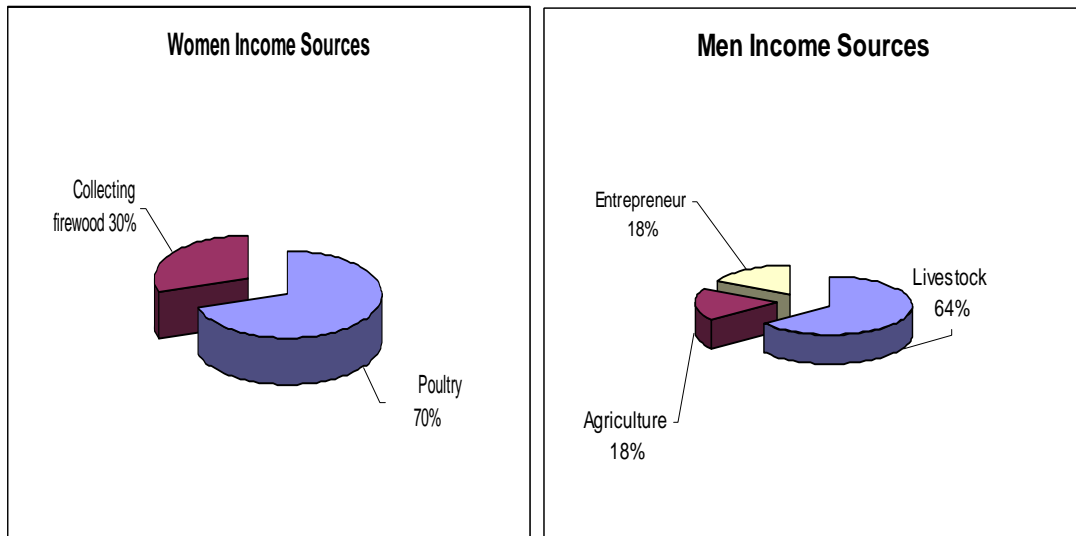


Fig. 17: Men and Women Income Sources

II.5.7.2. Sources of expenditures analysis

Men expenditures sources in Wad Omar village are: (i) Livestock Breeding 16% ; (ii) Preparing of Agriculture 20%; (iii) Cost of livelihood 20%; (iv) Education (School fees) 6%; (v) Remedy 10%; (vi) Occasions 4%; (vii) Transportation 6%; (viii) Trade 12%; and (ix) Saving 6%. Women expenditures sources are: (i) Perfume 6%; (ii) Sugar 36%; (iii) Soap 28%; (iv) Occasions 20%; (v) Transportation 10%; and (vi) Saving 0%. Here I can register some observations around this particular of analysis: (i) Preparing of agriculture and cost of livelihood are representing high score of men expenditures 20%, while women expenditures concentrated on preparing food family (Sugar) 36%; (ii) some sources are common on both men/women expenditures list: Occasions, Transportation and Saving; (iii) Women is larger social relations rather than men: Transportation/ Occasions scored high in women list (women 10/20%, men 6/4%); (iv) men putting saving percentage for crisis coping strategies, while women haven't; (v) women spend more than 50% in her family needs, while men spend only 16% for other family needs.

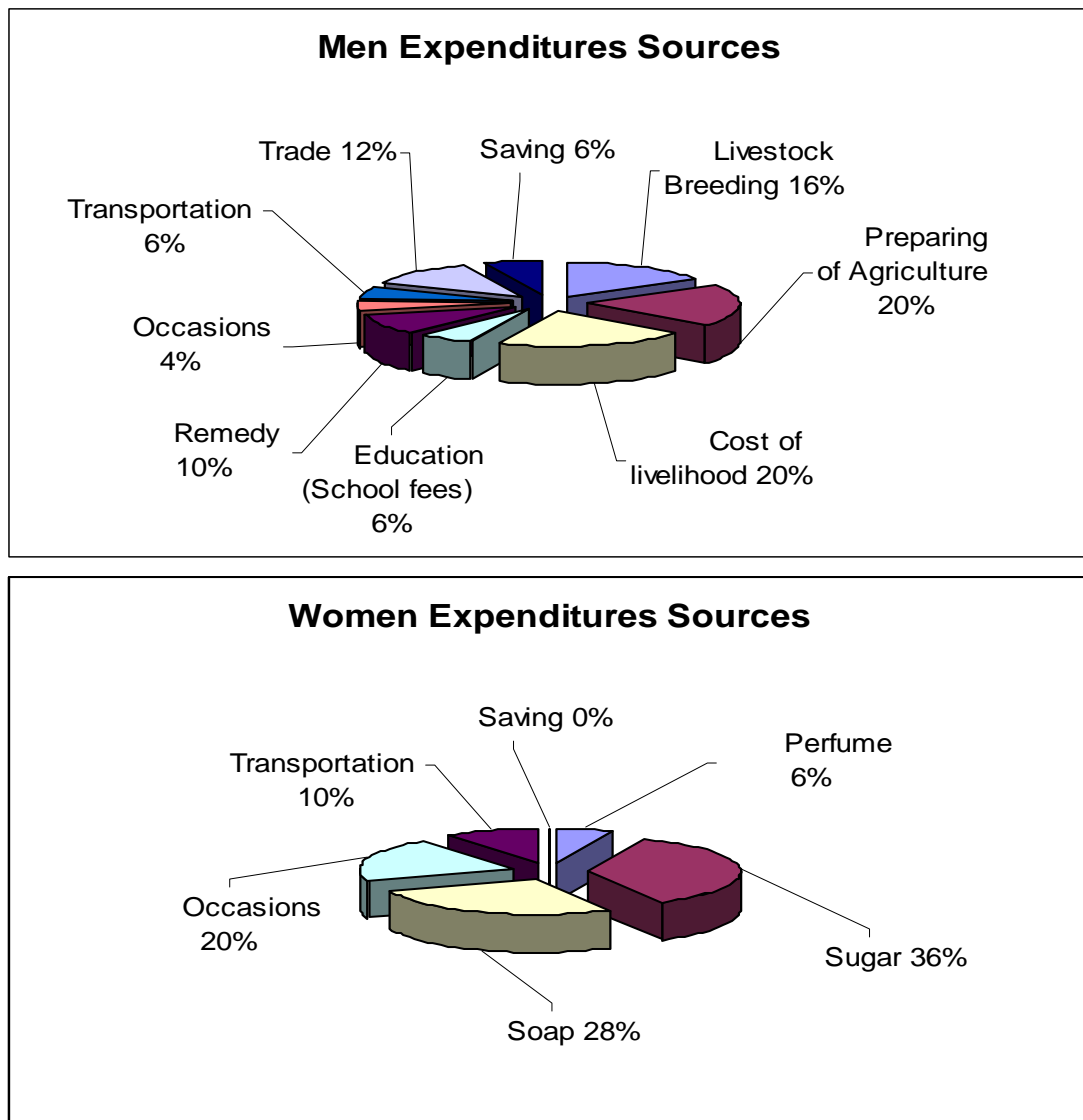


Fig.18: Men and Women Expenditures Sources

II.5.7.3. General Observations on both income/expenditures sources

(i) Both men/women in Wad Omar village have a limited source of income, versus a wide range of expenditures; and (ii) there are no common income sources between men/women, while have common expenditures (*See Annex: 10*).

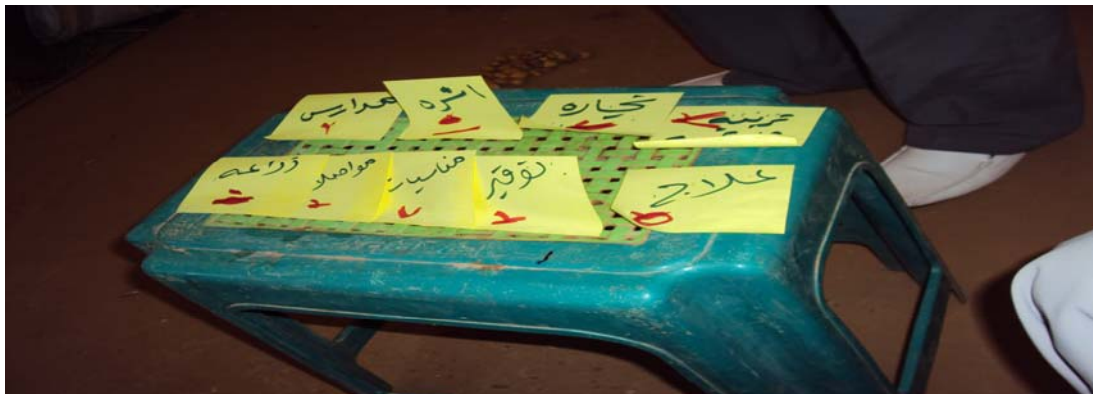


Fig.19: Income/Expenditures Matrices Application

II.5.8. Problems pair-wise ranking analysis

II.5.8.1. Priority Problems of men

The main problems faced men in Wad Omar village are: (i) Primary Education; (ii) Religious Education; (iii) Agricultural areas Limited; (iv) Agricultural Pests (Rats); (v) Primary Health Care; and (vi) Irrigation Network. The ranking of these problems based on their priorities is: (i) Irrigation Network; (ii) Primary Health Care; (iii) Primary Education; (iv) Agricultural areas Limited; (v) Religious Education; and (vi) Agricultural Pests (Rats). (See Annex:11 a.).

II.5.8.2. Priority Problems of women:

Women suffer from most important problems: (i) Nutrition; (ii) Gas; (iii) Fencing; (iv) Lack of Forage; (v) Education (illiteracy, religious); and (vi) Marketing. The ranking of these problems appears as: (i) Fencing; (ii) Education (illiteracy, religious); (iii) Lack of Forage; (iv) Marketing; (v) Nutrition; and (vi) Gas. (See Annex: 11 b.).



Women Group

Men Group

Fig. 20: Problems Pair wise Ranking Application



Fencing

Irrigation Network

Fig. 21: *Real Problems in Wad Omar village*

Chapter III.:

Impacts related to Sustainability

III.1. Social Impacts

Social impacts of WOMCS activities, represented on creation stability on the village decreasing out-migration from the area. This stability is the result of providing multi primary services such as: (i) primary health care; (ii) learning; and (iii) pure drinking water. Also stability is the outcomes of other integration factors: the improvement of Economic and Environment condition in the area discussed on the next paragraphs.

III.2. Economic Impacts

WOMCS activities in Wad Omar village, leading big revolution on the community changing from pastoral moving to Agro-pastoral stability community. Adding the agriculture as new activities in the area, and creation agricultural labor as a new additional activity in the area. This also reflected in the practice of families of the process of agricultural production and sale of agricultural products for income-generating cash as in the sale of crop "Okra" and benefit from revenue to improve the family income. This direct leading to improvement of families livelihoods rising the percentage of income from agriculture to 18% as a new source of income, this percentage is very great considering the special ecology condition dominant in the area.

III.3. Environmental Impacts

Major environmental impacts reflected clearly at the technical collaboration with DCDMA, to mitigate impacts of drought in the village. This step was done by enhancing the re-cultivate the village concept. Using simple local technology to stop sand movement in the area: (i) plastic wheels to protect seedling; and (ii) natural belt build by Palm trees to stop movement of the large sand dunes towards agricultural land.

All these changes: (i) social; (ii) economical; and (iii) environment impacts, occur continuously, by adapting Wad Omar village farmers the changes.



Stability (Social)

Agri. Product (Economy)

Install the sand (Environ.)

Fig.22: *Major Socio-Economic-Environment Impacts*

Conclusion and Recommendations

"Wad Omar" multi-purpose cooperative society: (i) achieved social stability in the village; (ii) providing work in agricultural fields. This led to the diversification of economic activities and led to improved income and standard of living in the village. Society provided the necessary services such as: (i) drinking water; (ii) education; and primary health care. And gave a good example of cooperative societies working to serve their members and provide the necessary services to them. The society must evolution its services and working to increase the beneficiaries; and work to address the weaknesses and take advantage of the opportunities available to it in the future.

Recommendations of this study is interested in: (i) Problems faced by population groups in "Wad Omar" village; (ii) the needs of WOMCS; (iii) the main external threats; (iv) opportunities available to society to take advantage of them; also very interested in the (v) environmental issue and the need to mitigate their effects.

First: Recommendations emanating from the basic problems in the village:

- Improve the existing irrigation network, and the introduction of irrigation systems appropriate to the environment of the region.
- Attention to primary health care services, and providing medical staff to work in the village health center.
- Support for basic education, religious, and to focus on creating their environment, and work to be circulated and diffusion.
- Fencing of agricultural land, to protect the animal from entering and destroying crops.
- Provide good, nutritious feed quantities and qualities required for breeding animals.

Second: Further recommendations on important issues must be increased awareness around and explore solutions:

- Attention to nutritional status, and the problems of malnutrition, and increase the level of food culture.
- Increase the current farmland, and agricultural pest control (rat).
- Find a small center for marketing and linking the city to provide necessities for the people of the village.
- Provision of agricultural services: (i) improved seeds (for crops: okra, Obusabein, watermelon, onions, potatoes); (ii) fuel farm machinery; (iii) farm machinery; and (iv) veterinary services.
- The development of poultry in a scientific manner, (70% of household income).
- Increase the sources of water to improve the supply of water to irrigate crops and for human use.
- Create a place to perform prayers, and religious education.

Third: Recommendations for developing the performance of the cooperative society:

- Review and registration of land ownership for the existing population.
- Take advantage of the seasonal water valleys in improving water supply for irrigation network.

- Benefit from electricity to: (i) light the village; (ii) raising the waters of the well; and (iii) run the laboratory equipment health center of the village.
- Establish the Rural Women Development Center (RWDC) to provide services: (i) Education; (ii) industrialization food; (iii) take advantage of alternative energy; (iv) training; and (v) preparation of pastoral farmers.

Fourth: Recommendations on environmental issues and mitigation of its devastating effects:

- Encourage local efforts in combating drought, to promote forestation popular on the area.
- Establishment of tree belts around the area to protect it from sand dune encroachment.
- The use of gas (as an alternative suitable for energy), to reduce dependence on firewood.

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ANNEXES

Annex 1: Screening phase activities report

SCREENING PHASE ACTIVITIES REPORT ACHIEVEMENTS

In the last four weeks during the screening phase, identified three significant stories on agriculture and related activities that appear generating benefits to peasants' livelihood. The main activities is data collections around those stories, my secondary information was collected from reports, studies, websites and libraries. The main tools which I followed are semi-structured interviews to key informants selected under specific consideration such as: their connections with the territories and communities, stakeholders and gender representative, approachability and accessibility to establish links. I successfully implemented many interviews, entered the platform to get advises. I found many significant stories which are mentioned below.

IDENTIFIED STORIES DESCRIPTION

Identified these three stories: 1. Conservation Agriculture in Blue Nile area (Agadi). 2. Rural development project in Bara, Um Rawaba provinces- North Kordofan State and the third one is 3. Food Security and environmental protection Program in Wad Omar area – Omdurman Province. The **first story** reflected the new technology transferred adopted and implemented there, it is a new technology that has real and strong impacts on farmers and their livelihoods improving income by decreasing the cost, environmentally conservation agriculture, save the soil fertility, reduced evaporation, save and generated soil minerals contents. Socially farmers organized themselves in groups' applied this new available technique. The **second story** speaks and takes an integrated rural development approach in wide area; beside agricultural activities this project has a wide range of components: education, health, capacity building, community development, rural woman implemented program, environmental project, enhancing management and utilization of national resources, extension services for men and women. Economically, farmers' livelihoods situation enhanced, positive social impacts. This project has sustainable services to improve target families' livelihood, raised their capacities faced various climatic changes through food security achievements and increasing farmers' income. The **third story** located in a special hard climate situation in desert region, faced critical environmental challenges, in an open area, where the migration of population increased, but after implemented program there are clear impacts summarized in: Economically: increased farmers' income from selling agricultural products. Environmentally: the farmers' solution to the sand movement used primary available materials. Socially: the farmers being more stable than before the project, because a lot of them working in the agricultural fields.

SIGNIFICANT STORY SELECTED, DETAILED DESCRIPTION

After identified significant stories. I build my selection of the main significant one based on the following criteria:

- The originality of the story,
- Effects on peasants' livelihood and my

- Personal research interest. Butting aware of practical aspects and the activities feasibility such as (possibility to travel to specific places and meet beneficiaries). Based on above criteria I select **third story** :

Food Security and environmental protection in Wad Omar area – Omdurman Province, will be mapped for collecting information in order to understand strength, weaknesses, opportunities and threats **SWOT**.

Food Security and environmental protection in Wad Omar area – Omdurman Province

- **Introduction:** Food security and environmental protection program in Wad Omar area-Omdurman Province, is the one of the food security special program areas. This program in this certain area has special characterized among other program. It is in small area but have self sustainability in activity related to agriculture, and local farmers' innovation faced the desertification phenomena. The peasants is the main actors in this area adopted with there climate conditions by simple and local matters. The impacts of enhancing farmers income it is clear and measurable, the sustainability represented on farmers benefits continuous after the foreign fund stopped.
- **Locations and area:** The program located in Omdurman Western rural 84 kilometers from Omdurman in small area estimated by 30 Fadden with small and simple agricultural equipments.
- **Area description:** The area affected by desertification, sand movement and strong wind. Sandy soil is dominant there and some clay, rocky soil. The rain is very scares and there are wells supported simple irrigation network. In this hard climate condition many crops cultivated: Okra, Onions, Tomatoes, Corn, Watermelon and Forage.
- **Sustainability Indicators:** Inspite of hard climatic conditions, the farmers in Wad Omar sustainable cultivate and seedling to enhanced there environment conditions and they have a good impact reflect on increasing income.

PROBLEMS AND CONSTRAINED FACED

I think there are normal constrained faced me in this activity research:

- Easy access to information required,
- Organizing and arrange information,
- Save the information and archiving,
- Limited of information,
- Time factor.

These factors constrained can be divided into two groups: One group faced me at the information collection level and other is related to me.

Annex 2: Mapping phase report

MAPPING PHASE REPORT

MAPPED STORY OUTLINE

"Wad Omar Multi-purpose Co-operative Society WOMCS", is a formal group of farmers organized themselves, and registered under Sudanese Co-operative Societies law. The main role of this society is help their members to improved livelihoods situation by adding an additional income sources, by diversifying there activities and make a full utilization of local resources which depends on there local climate condition situation. The main focus of this research, is make highlights in the sustainable farmers activities, in spite of there critical climate conditions, farmers here cultivated many crops which suitable to area characterized, other main focus is the local efforts to stopped and control the desertification using simple local materials and enhancing the attitude of re-cultivation the area, also this society impacts appears in many other fields: improving the village services; primary health care, learning, availability of drinking water and the most important beside these services, is created stability in the area - behind area affected by out-migration - by creation an employments. Here identified the Wad Omar farmers' co-operative society, study of desertification history, income and expenditures analysis, linkages with other outside institutions and ranking the main problems faced farmers.

SPECIFIC OBJECTIVES

The main specific objectives of this research, is concentrated around the members of co-operative society and there household, by preparing an exhaustive institutional profile of the cooperative; the structure and organization, outcomes on household and relationships and linkages with other institutions, date of establishment, coverage, membership, inclusiveness ,rules of the game and the quality of governance of WOMCS: transparency of decision making process, level of community participation, accountability of board members and responsiveness after decision making.

The second objective is belong from the special area ecological zone which is the desert climate is dominance, the analyzed of environmental impacts is importance, because of affected in the cultivated activities and this reflected directly on food insecurity and lead to an other social impacts represented on farmers out migration and leave the area. Here I consider the local appropriate technology used by farmers against desertification phenomenon.

The third objective is the social impacts founded after the co-operative society established in Wad Omar village, from these aspects I entered to the real impacts on strengthening farmers' livelihoods.

METHODOLOGY

First: the criteria of selected tools:

There are several wide ranges of analysis tools, but in this research I selected a certain approach According to:

- Kind of informations requirement: referring back to SARD staff and online tutor comments on my mapping phase workplan.
- SARD guidelines reseach home activities: select a limited number of tools allowing me to collect, complete and control the informations on my research.
- Mapping phase workplan.

Second: kinds of informations requirements

My research methodology depend also on the kinds of information which research looked for, here a several issues that I investigation in my research:

1. The institutional profiles of co-operative society in Wad Omar village, consists of: structure and organization, analysed social impact, outcomes on household and relationships and likages with other institutions.
2. Focusing analysis on the members of the co-operative and there household.
3. Analyzed of environmental impacts.
4. Describe the appropriate technology using in Wad Omar village against the desertification.

Third: approach and tools

The approach followed in this research is Participatory Rapid Approach PRA, for applications this approach, I recognized Rapid Appraisal team and held a short workshop training for them, speaking a bout the PRA concept and the tools selected according to the a above criteria and will be applicated in the field level, also in this training we put small RA work plan (timetable of tools applications in the field level). We adopted Socio-Economic and Gender Program tools, and selected tools that covered all kinds of informations collected for this research purposes. The tools selected are:

1. Trend Lines,
 2. Venn Diagrams,
 3. Institutional Profiles,
 4. Income & Expenditures Matrices and
 5. Pairwise Ranking matrix.
- **Trend Lines**: is the tool helps me to learn about community perceptions of change in the local environmental (desertification and ersion in the area) , economic (employment), social (stopped the migration and creat a kind of stability) or institutional patterns.
 - **Venn Diagrams**: is the tool that helps me to learn about the importance of local groups and institutions to **WOMCS**. also can be useful for clarifying decision-making roles and identifying potential conflicts between different socio-economic groups. It is also helpful for identifying linkages between local institutions and co-operative society.
 - **Institutional Profiles**: is the tool help me to learn more about the nature of the **WOMCS**.
 - **Income & Expenditures Matrices**: this tool helps me to understand a very important aspect of Wad Omar farmers' livelihoods- sources of income and sources of expenditures. This tool can also reveal changes in expenditures in times of crisis.
 - **Pairwise Ranking matrix**: helps me to learn about the most important problems of different community members in Wad Omar village. It also allows for easy comparison of different people's priorities.

Forth: tools applications

All this tools has complete application in **WOMCS**, by Rapid Appraisal team consist of: (facilitator, record, RA tools experts and key informants from the Wad Omar area).

Beside applications SEGA tools,

- Analysis of secondary sources about the area,
- Key informants: strengthening my research knowledge, providing linkages and arranging meetings with the key stakeholders in **WOMCS**.
- Fields visits allowing me meet and discuss directly with the key stakeholders in **WOMCS**.
- Semi-structured interviews to key informants.

Fifth: problems and difficulties

There are no important problems and difficulties, because of research adopted by Ministry of Agriculture, animal resources and irrigation- Khartoum State. May be only the change time of the main visit, because of overlap of many others programs.

MAIN MAPPING OUTCOMES:

First: elements relation to WOMCS

- **Territory**

"Wad Omar" village, located in Khartoum State, Omdurman province, Western rural area about **84 Klm (52.2 miles)** far from Omdurman town. The nature of this area effected by desert climate zone, where temperature degrees increasing in Summer, decreasing in Winter. Rain fall is very rare and absent in some seasons. The village soil is very poor, with different types: Sand transported by wind, Clay in valleys and Rocky soil transported by water. Area vegetation, covered by *Acacia tortilis*, *Cupressus spp*,... ,other plants covering the water sites and appear in the Autumn. There are a tank for drinking water In addition to the village well used in the Improved irrigation network. "Hassaniya" tribes settling in the region, and the village population estimated in **2008** is **805**. The total area of project managing by **WOMCS** is: **30** feddan, the project consists of **30** families, one feddan to each one. Cultivation takes place through three systems: Summer, Winter and Autumn.

- **Agriculture related activity**

The agriculture related activities represented on livestock: goats, sheep and camels. While families (women) interested in chicken at home to take advantage of eggs and meat as additional sources of income. After the society established, farmers cultivated many crops which is suitable to there area condition, this crops strengthening there livelihoods situation by sale some of crops like Okra. But in general agriculture comes after grazing the main activity in the area.

- **Appropriate technologies**

Wad Omar farmers, whom work in agriculture in the area of co-operative society project, faced by the desertification and strong winds affected in the soil. Any efforts to cultivation is failure, untill the farmers applicated new idea originated from themselfe. Used the plastic wheels and puting seedlings inside it, when the plant growing up they added more wheels to stopped the strong winds, sand movement and protect plants. By this local technology the farmers able to cultivate trees in the desert area. The wheels appropriate to farmers because it is:

available, cheap, easily moved from one place to another and environment friendly.

- **Enabling social structures**

WOMCS, has many relationships and linkages inside and outside the area, some of them work in agricultural field another work in different fields. The importance to WOMCS is different, and different degrees overlap. Some of this closed to women and other to youth and third to government.

- **Sustainable livelihood outcomes**

The main sign in WOMCS activities is the sustainability inspite of their hard climate condition live. The main income source coming from livestock; sale poultry productions: meat, eggs, milk and from cultivation crops; sale Okra as cash crop. The live in village is very simple, for that their income sources is very limited and simple.

Second: the most significant issues drive my following analysis

The most significant issues that will drive my following analysis and mapping results/outcomes discussion during the reporting phase is:

- The degree of enhancement of Wad Omar livelihoods by using the local appropriate technology and ability cultivated crops.
- The describe of using appropriate technology against desertification.
- Focusing analysis on Wad Omar farmers society, identifying strengths, weaknesses, opportunities and threats.
- Comparing women/men income and expenditures sources in Wad Omar village.
- Important problems stand there, and ranking according to farmers priorities.

Annex: 3: Significant stories informative sheats:

• **TITLE OF THE SIG. STORY**

Conservation agriculture in Blue Nile area (Agadi).

PEASANTS LIVELIHOODS DESCRIPTION

Most farmers rely on rain water directly for drinking and agriculture, and housed in buildings made of straw and mud and a few affordable green bricks. Most of them depend on Millet as the main staple. Farmers drinking water reservoirs and creeks. Most of them are illiterate and few of them received secondary or tertiary education.

PEASANTS ORGANIZATIONS

"El-rwad" Association, with about 38 farmers and the "El-raedat" associated of 50 women farmers in the region.

AGRICULTURAL ACTIVITY:

Agriculture, practiced by about 80%, and the rest of the farmers were working pastoral activities.

APPROPRIATE TECHNOLOGIES

Monitoring crop in different growth stages for early identification of cases of abnormal growth of the crop for diagnosis and find out why and early treatment - estimating the production, by made maps production. By used technical: GIS-GPS.

ENABLING SOCIAL STRUCTURES AND MECHANISMS

Arab Authority for Agricultural Investment and Development, Arab Sudanese Blue Nile Agricultural company, Sudanese Agricultural Bank and the Government of Sudan.

MAIN IMPACTS

Reduce the cost of agricultural and increasing revenue from agricultural production and improve living standards for farmers, the availability of health services, education and communication, to maintain the fertility of the soil and reduce evaporation from the soil surface and agricultural pest control.

• **TITLE OF THE SIG. STORY**

Rural development project in "Bara, Um Rawaba" provinces-North Kordofan State.

PEASANTS LIVELIHOODS DESCRIPTION

Project area " Bara, Um Rawaba" include : 10 administrative units, an area 40,000 square kilometers, the population Beneficiaries 820,000 people, can be classified as follows: 11% urban populations, 5% nomads and 84% rural.

PEASANTS ORGANIZATIONS

Funds villages; villages committees and Schools farmers.

AGRICULTURAL ACTIVITY

Capacity-building in the areas of: planning and implementing activities and projects, nutrition, maternal and child health, literacy and adult education, first aid, home nursing, health assistant, rural women, integrated pest management, reforestation, pasture and forest reserves, water harvesting.

APPROPRIATE TECHNOLOGIES

Alternative energy (gas stove), promote the cultivation of Neem trees, water harvesting, agro-service centers to provide technology packages.

ENABLING SOCIAL STRUCTURES AND MECHANISMS

International Fund for Agricultural Development, the Government of Sudan, Ministry of Education, Ministry of Health , Ministry of Agriculture - the state of North Kordofan, Sudanese Red Crescent Society, National Forest corporation, Sudanese Agricultural Bank, Agricultural Research corporation- western Sudan, voluntary organizations and institutions of national and foreign.

MAIN IMPACTS

Improve the economic situation and living conditions of families through funding of individual and collective and increase the income of families, building local capacity in the protection of natural resources, easy access to various services through the project.

• TITLE OF THE SIG. STORY

Food security and environmental protection program in "Wad Omar" area – Omdurman province

PEASANTS LIVELIHOODS DESCRIPTION

Population in the region 805 people, in total area of 30 feddan, employed in agriculture, grazing and breeding of goats, sheep and camels, families interested in raising municipal chickens benefit of eggs and chicken meat and sell it as a source of income, there are wells in the region, and there are some services such as: health center, school and shop. Rainfall is scarce.

PEASANTS ORGANIZATIONS

"Wad Omar" Society cooperative multi-purpose, and includes two women among its membership.

AGRICULTURAL ACTIVITY

Agriculture, grazing, breeding goats and sheep, camels and municipal chicken.

APPROPRIATE TECHNOLOGIES

Install the sand soil by planting trees, using plastic wheels and seedlings inside it.

ENABLING SOCIAL STRUCTURES AND MECHANISMS

Desertification Department , Special Program for food security - Ministry of Agriculture and Natural Resources and Irrigation - Khartoum State.

MAIN IMPACTS

Increase in family income, the stability of farmers, protects the soil from desertification.

Annex:4 : WOMCS Board:

NO.	NAME	POSITION
1	Ali Mohammed Ahmed Omar (El-mehaina)	Chairman
2	Suleiman Omar El-hory	Member
3	Salah Omar Ahmed	Member
4	Hamad El-seed Ahmed El-hory	Member
5	Mustafa Ali Mohammed	Member
6	Fatima Ali Suleiman	Member
7	Bacheta Adam El-hory	Member
8	Ahmed Ali Amara	Member

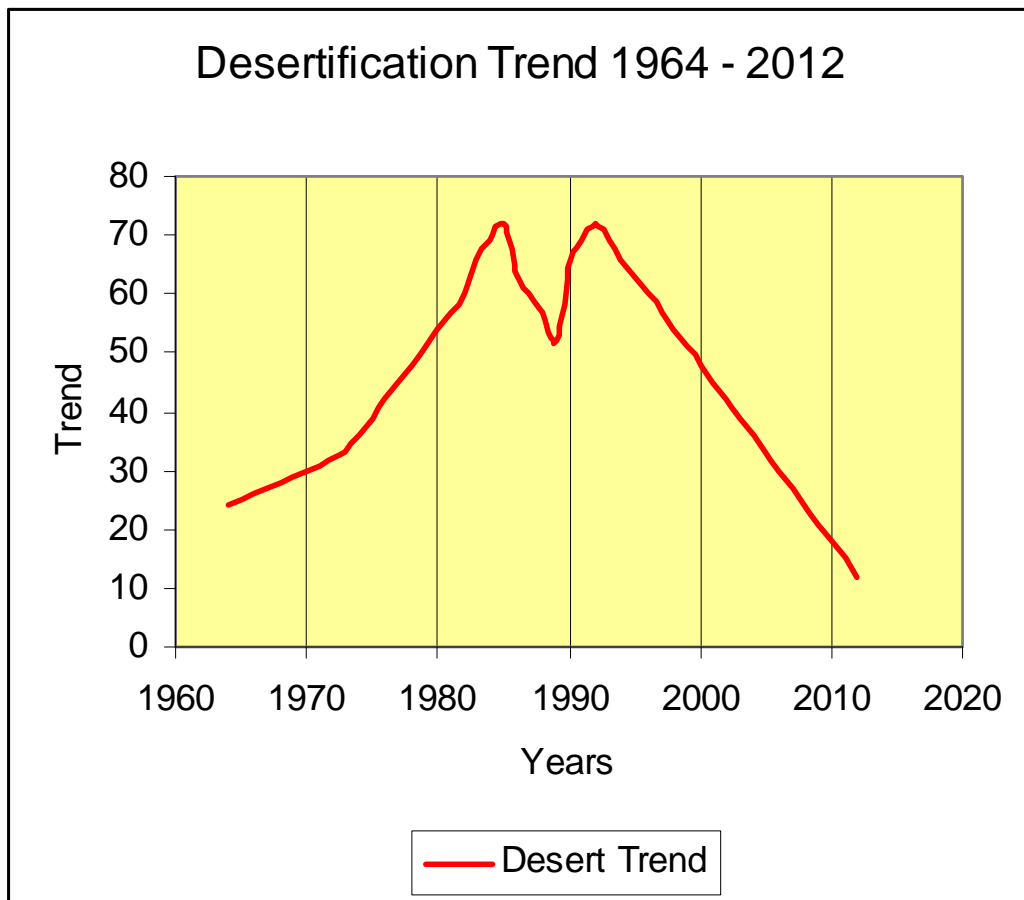
Annex: 5: Institutional Profile of WOMCS – SUDAN- APRIL 5, 2010:

GROUP	FOUNDATION AND GOALS	MANAGEMENT	ACHIEVEMENTS	NEEDS
WOMCS	<ul style="list-style-type: none"> • <u>Establishment</u>: 2005 (registered Date: 10.01.2007, No: 580). • <u>Goals</u>: <ol style="list-style-type: none"> 1. The beginning of collective agriculture. 2. Make services available for humans and animals. 3. Stability of the men in the village and create employment opportunities for them. 4. Desertification resistance by sand movement fixations (using wheels). 5. Protect agriculture products from animal entry and cause damages. 6. Make irrigation water available from the well in the area. 7. Food crops production especially "Okra". 8. Production forages for animals. 9. Fixation of co-operative concept. 	<ul style="list-style-type: none"> • <u>WOMCS management board</u>: <ul style="list-style-type: none"> - Consist of: chairman, Secretary, treasurer and memberships. - Society president and board membership are chosen by election. • <u>WOMCS membership</u>: <ul style="list-style-type: none"> - Open to those who live in Wad Omar village. -Membership fees: 50 SDG (16.6 €) membership, 05 SDG (1.7 €) entry (IWCC). -Women can be members in Executive Committee, represented by two in management board. - Consist of 80 families. • <u>Meetings</u>: hold for important matters, Decisions making by participation of members. 	<ul style="list-style-type: none"> • Availability of agricultural labor. • Participate on build village dispensary. • Participate on build village school and preparing education requirement. • Participate on sand movement fixation: sowing seedling and using plastic wheels. • Social stability in the village. 	<ul style="list-style-type: none"> • <u>Agricultural Services</u>: <ul style="list-style-type: none"> - Certified seeds for Abu Sabeen, Okra, Watermelon , Onion and Potatoes. - Fuels for agricultural machines. - Agricultural machines (plough). - Irrigation network maintenance . • Increase agricultural area. • Insert breeding poultry. • Provide veterinary services. • Increase water sources from one well. • Fence to protect agriculture from animals. • Place of prayer.

Annex: 6: WOMCS Strengths, Weaknesses, Opportunities and Threats Analysis:

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • The absence of conflicts, and there is a consensus of opinion. • The village enjoys stability and security. • Strength of social ties. 	<ul style="list-style-type: none"> • Pastoral society roaming. • Wide spread illiteracy. • Narrow view of the future. • Lack of endogenous sources of income. • Poor participation in the capital of the society by not pay contributions.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • Expansion of rain-fed agriculture in the "Wadi Elmugadam". • The possible expansion of existing agricultural area. • Utilize the waters of the Valley "Bagora", to improve the irrigation water supply network. • Opportunities to use low-cost electricity, in the operation of wells rather than gasoline. • Use of electricity in the operation of laboratory services of the health center. • Establish a center for the development of rural women provides services in "education, food processing, energy alternatives, training and pastoral farm." 	<ul style="list-style-type: none"> • Ownership of the land area (non registered). While the Society, pastoral protected and forest are registered.

Annex: 7: Trend Line WOMCS – SUDAN – APRIL 5, 2010: Desertification:

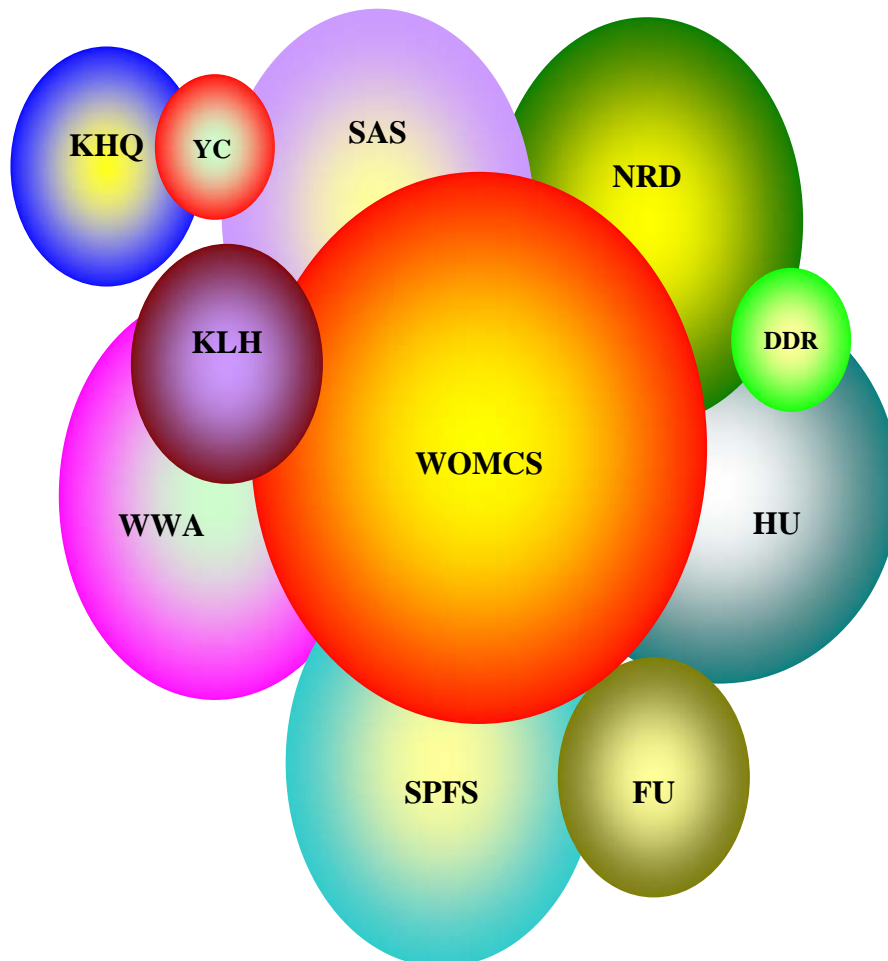


Observation:

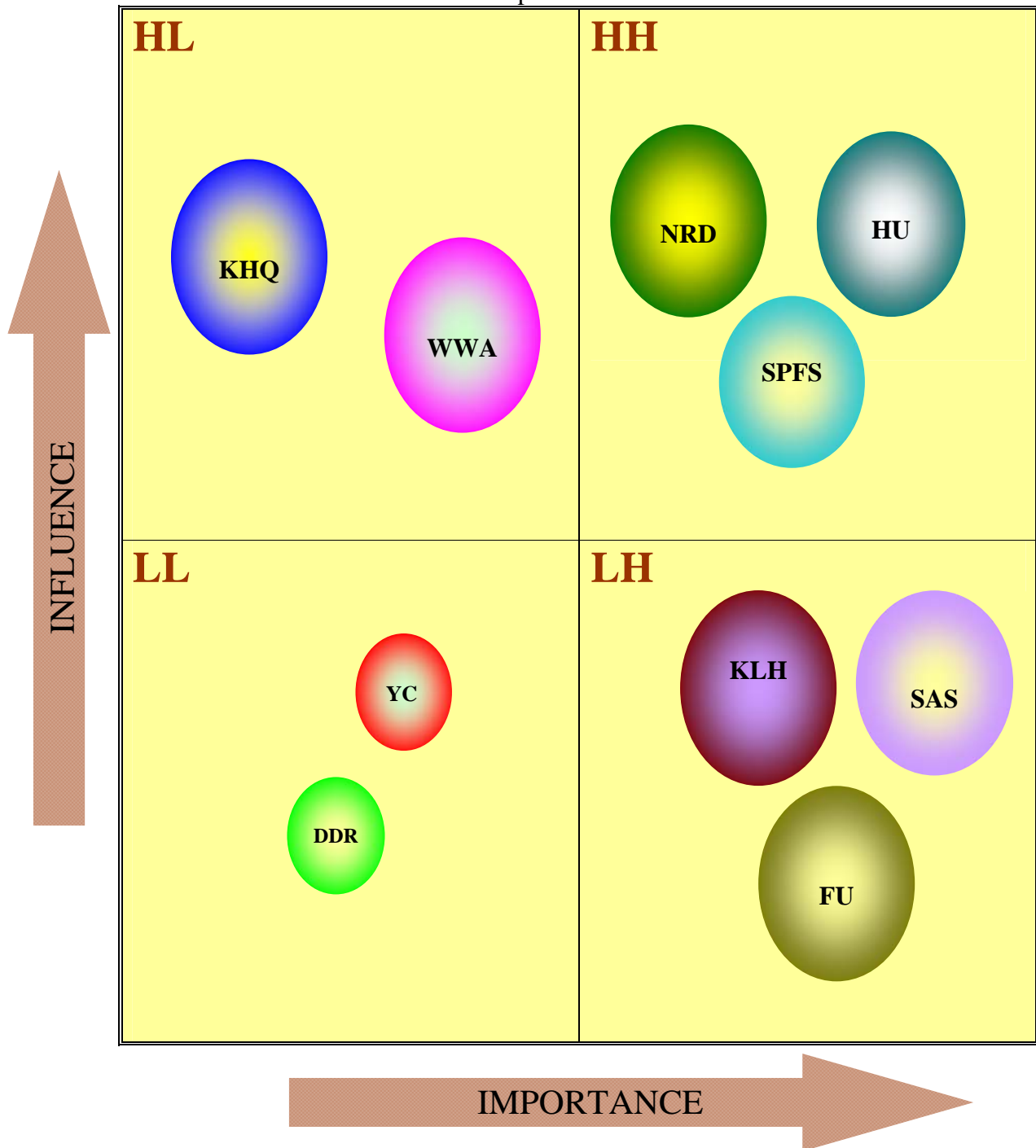
- Before **1970**: good vegetation covered.
- **1973**: Decrease Rainfall Rate.
- **1983 – 1985**: Drought.
- **1986 – 1989**: Improvement in the vegetation.
- **1989 – 1992**: Intensification of dust storms.
- After **2009**: Improvement in the vegetation.

Annex: 8: Venn Diagrams WOMCS – SUDAN – APRIL 5, 2010:
Institutions with linkages with WOMCS:

- Wad Omar Multi-purpose Co-operative Society [WOMCS].
- Soag Agricultural Society [SAS].
- Wad Omar Herders Union [HU].
- Union of Khartoum State Farmers [FU].
- Special Program for Food Security – Khartoum State [SPFS].
- Natural Resources Department – Khartoum State [NRD].
- Youth Club [YC].
- Association of working women - Khartoum State [WWA].
- "Khalwa" for teaching Holy Quran [KHQ].
- Disarmament and Deployment Reintegration [DDR].
- Khartoum locality (health) [KLH].



Annex: 9: WOMCS Stakeholders Importance and Influence Matrix:



Annex: 10: WOMCS Income and Expenditures Matrices (%), SUDAN- APRIL 5, 2010:

SOURCES OF INCOME (%):			
SOURCE	MEN	WOMEN	
• Livestock.	65		
• Agriculture.	17.5		
• Entrepreneur.	17.5		
• Poultry.			70
• Collecting firewood.			30
SOURCES OF EXPENDITURES (%):			
• Livestock Breeding.	16		
• Preparing of Agriculture.	20		
• Cost of livelihood.	20		
• Education (School fees).	6		
• Remedy.	10		
• Occasions.	4		
• Transportation.	6		
• Trade.	12		
• Saving.	6		
• Perfume.			6
• Sugar.		36	
• Soap.		28	
• Occasions.		20	
• Transportation.		10	
• Saving.		0	

Annex: 11: Pair wise Ranking Matrix WOMCS – SUDAN- APRIL 5, 2010:

a. MEN Group:

- A: Primary Education.
- B: Religious Education.
- C: Agricultural areas Limited.
- D: Agricultural Pests (Rats).
- E: Primary Health Care.
- F: Irrigation Network.

PROBLEMS	A	B	C	D	E	F	SCORE	RANKING
A		A	A	A	E	F	3	3
B			C	B	E	F	1	5
C				C	E	F	2	4
D					E	F	0	6
E						F	4	2
F							5	1

Pair wise Ranking Matrix WOMCS – SUDAN- APRIL 5, 2010:

b. WOMEN Group:

- A: Nutrition.
- B: Gas.
- C: Fencing.
- D: Lack of Forage.
- E: Education (illiteracy, religious).
- F: Marketing.

PROBLEMS	A	B	C	D	E	F	SCORE	RANKING
A		A	C	D	E	F	1	5
B			C	D	E	F	0	6
C				C	C	C	5	1
D					E	D	3	3
E						E	4	2
F							2	4

Annex: 12: WOMCS Registration Certificate:



Annex: 13: Photos from research phases activities:



WOMCS Women participants



WOMCS Men participants



With Mr. Ahmed Osman Hussein



Sheikh: El-Mehaina, Mr. Salah Suliman



WOMCS Women different ages participate

Annex 14: WOMCS informative sheet:

"Wad Omar" Multi-purpose Cooperative Society in Omdurman western rural community, central Sudan

Ammar Hassan Basir Sudan

"Wad Omar" village located in Western rural of Omdurman, "Umbada" locality, "El-ameer" administrative unit, central Sudan. Bounded by: (i) "Mehaila" village from North; (ii) "Omdurman-Northern State" Highway Street from West; (iii) South bounded by "Soag" and "Ageeb" villages; and (iv) "Wad El-hory" village from East. Area located in **52.2 Miles** North West of Omdurman. The village population estimated in **2008** by **805** inhabitants.

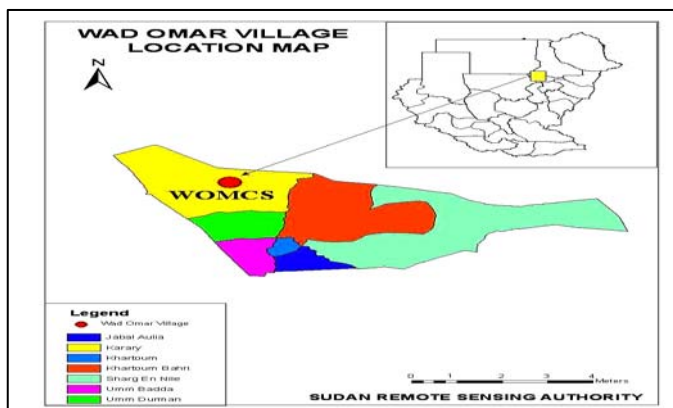


Fig. 1: "Wad Omar" village map location

"Wad Omar" Multi-purpose Co-operative Society **WOMCS**, is a **formal local group for resource management**, registered under Khartoum State Cooperative Law **1995**. The establishment idea of the society comes from the settlement in the village to lead the local community on changing from pastoral community to semi-stability agro-pastoral one. **The main role of society** is helping their members to improved livelihoods situation through: (i) diversifying income activities; and (ii) make a full utilization of local resources, which depends on dominant climate condition situation. The society improving the agricultural activities (represent **18%** from Income), making treatments (**composing**) for the soil components to be suitable to agricultural process. These treatments applying in **6.5 Ha** the current cultivated area managing by **WOMCS**.



Fig. 2: Agricultural fields



Fig.3: "Wad Omar" village farmers



Fig. 4: Types of soil

The area lies in desert climate zone, where temperature increasing in summer, decreasing in winter. Rain fall is very rare and absent in some seasons, but there are an other sources of water (seasonal valleys and wells). The village soil is dissected ridges and colluviums; and the topography is undulating with gravel on soil surface. **There are different types of soil:** (i) Sand transported by wind; (ii) Clay in valleys; and Rocky soil transported by water.

Area covered by *Acacia tortillas*, *Cypresses spp* and

other plants dominant the water sites and appears in the autumn. **There are many different suitable crops sowing later in the area:** (i) Onion; (ii) Tomatoes; (iii) Corn; and (iv) Watermelon. According to the desert climate zone, Wad Omar village grazing livestock as the main activities (represent 65% from income) such as: (i) goats; (ii) sheep; and (iii) camels. While families interested in poultry breeding.

WOMCS has specific goals planning to be implement in the village: (i) The beginning of collective agriculture; (ii) Make services available for humans and animals; (iii) Desertification resistance by sand movement fixations; (iv) Make irrigation water available from the well in the area; (v) Food crops production especially "Okra"; (vi) Production of forages for animals; and (vii) Fixation of co-operative concept.

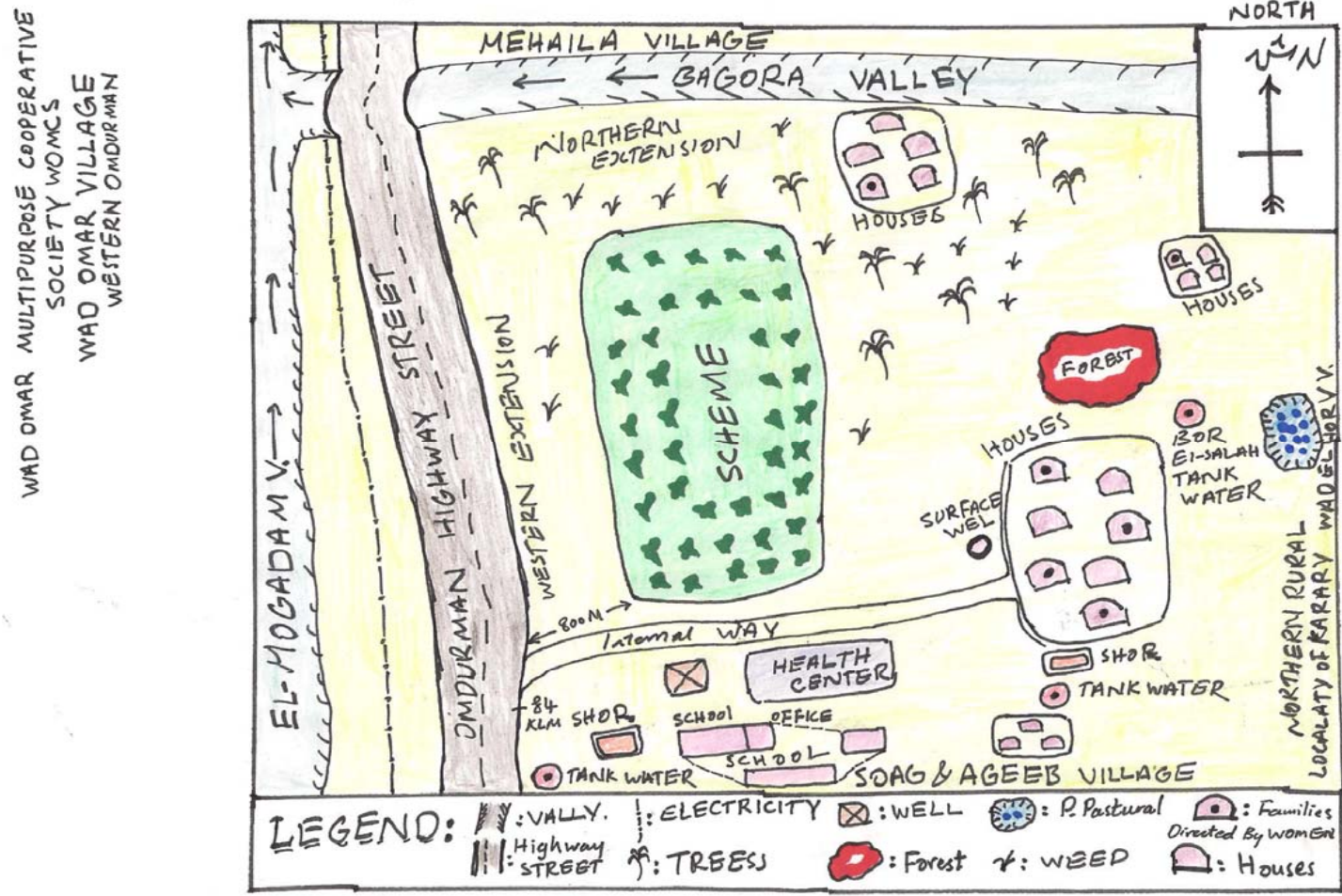


Fig. 5: Agricultural product

The **important achievements are:** (i) Make agricultural labor available; (ii) Participate building village dispensary; (iii) Participate building village school and preparing education requirement;

(iv) Participate on sand movement fixation using: sowing seedling; and plastic wheels; and (v) achieved social stability in the village. These achievements led to the diversification of economic activities and drive to improve income and standard of living condition in the village. **Society also provided the necessary services in the area such as:** (i) Pure drinking water; (ii) education; and (iii) primary health care. The society represents a good example of cooperative societies working to serve their members and provide the necessary services to them. The society must evolution its services and working to increase the beneficiaries; and work to address the weaknesses and take advantage of the opportunities available to it in the future.

Annex: 15: Wad Omar Village Resource Map



Annex: 16: State Ministry of Agriculture, Animal Resources and Irrigation Staff:

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