

**Capacity Development Project for the Provision of Services for Basic Human Needs (CD-BHN)
in Kassala, the Republic of Sudan
(Preparation Phase)**

**Workshop
for the water distribution network
and
the role of SWC for rural water supply
at Kassala State Water Corporation**

Program (Draft)

1. Introduction:

On 28 of February 2011 a workshop was held for the role of SWC on the rural water supply. The participants of the workshop were mainly of JICA/CD-BHN staff of water sector and SWC engineers. Whereas the workshop schedule were as follows below:

2. Date & Time: 11:00 – 14:00, Monday, 28 February 2011

3. Venue: SWC Central Office

4. Participants: All engineer staff of SWC of Central Office, Chief Engineer of East Office

No.	Name	Position	Organization
1	Mr. Hashim Mohamed Abd Allateef	Acting Director	SWC Central Office
2	Mr. Abd Elgadir Ohaji	Water Coop Survey Engineer	SWC Central Office
3	Mr. Isam Eldin Khogali	Survey Engineer	SWC Central Office
4	Ms. Muhaj Balla	Geological Engineer	SWC Central Office
5	Ms. Safa Ibrahim Elhaj	Hydro geological Engineer	SWC Central Office
6	Mr. Mutaz Hassan	Geological Engineer	SWC Central Office
7	Mr. Abdulsalam Hassan	SWC Electric Technician	SWC Central Office
8	Ms. Fatima Mahmoud	WES Project Manager	WES
9	Mr. Abubakar Mustafa Ali	WES Engineer	WES
10	Mr. Anas Hammed Abdelkhier	WES Engineer	WES
11	Mr. Yousief Mohamed Ali	Chief Engineer, Engineering & Operation Department	SWC East Kassala Office
12	Mr. Kiyofumi Tanaka	JICA	CD-BHN Project
13	Mr. Sshichijo Kan	JICA	CD-BHN Project

5. Observers: Mr. Kiyofumi Tanaka, Leader, JICA Team

6. Facilitator: Mr. Kan Shichijo, Expert, JICA Team

7. Interpreter: Mr. Anis Ismael Adem, Assistant Engineer, JICA Team

8. Objectives of the Workshop:

- (1) Identify the roles in updating the inventory of the water distribution network in Kassala Town using GIS between the Central Office and other offices (East and West Offices) in Kassala Town.
- (2) Discuss the role of SWC for rural water supply facilities based on the division of works set by State Government.
- (3) Make an organization chart for the maintenance team members for rural water supply facilities.
- (4) Elect the equipment manager.

Time Schedule:

Time	Session	Facilitator
11:00 – 11:10	1. Introduction to the Workshop	Mr. Shichijo
11:10 – 11:40	2. Reviewing of the annual work plan for Kassala Town	Mr. Hashim
11:40 – 12:00	3. Presentation on GIS database in Kassala	Mr. Abd Elgadir Ohaji
12:00 – 12:30	4. Discussion on SWC's roles in upgrading the inventory of the distribution network using GIS	Mr. Shichijo
12:30 – 13:00	5. Discussion on SWC's role in improving rural water supply	Mr. Shichijo
13:00 – 13:45	6. Selection of the team members and planning of activities in rural areas	Mr. Hashim
13:45 – 14:00	7. Conclusion and closing	Mr. Hashim

9. Results of the workshop

The results of the workshop is mainly based the demarcation of the responsibilities which should be taken on the sectors of investigation, planning, renovation, construction, rehabilitation and operation and maintenance according to the role of SWC on the rural water supply. Below is the table of the role of SWC on the rural water supply.

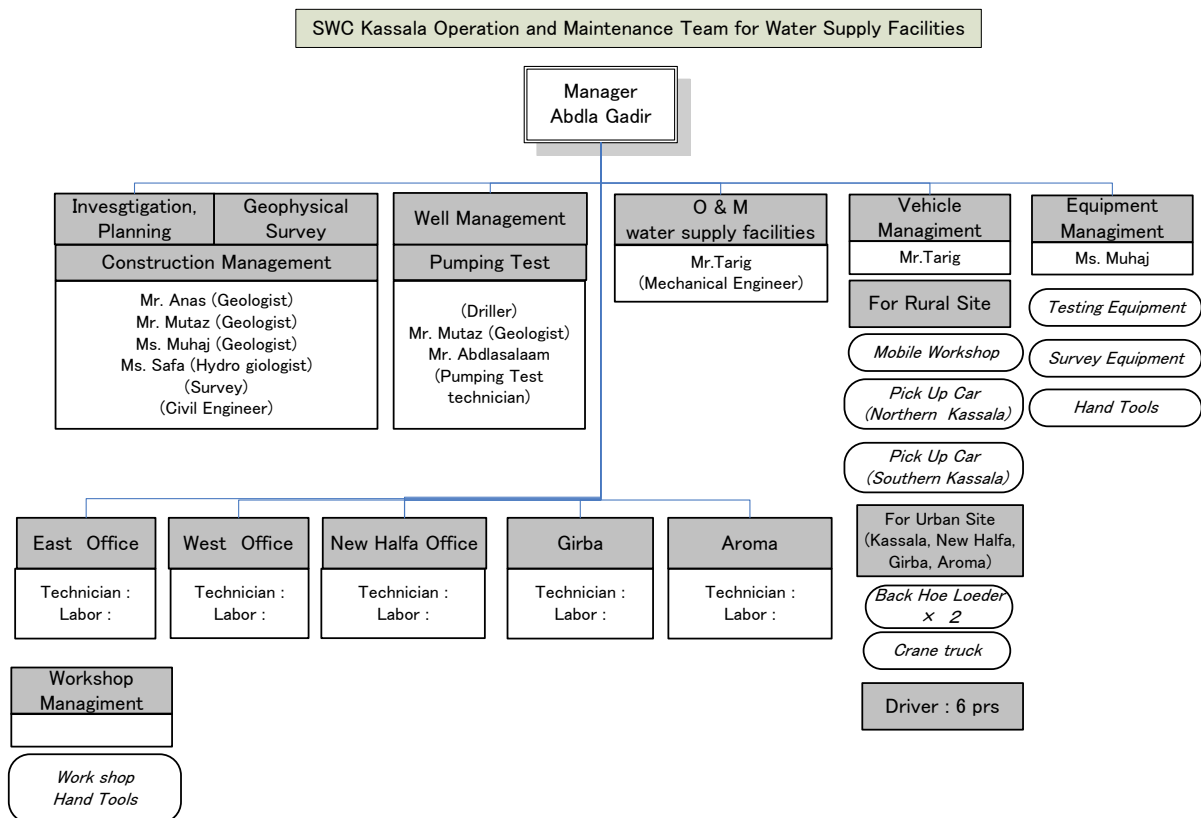
Table: Roles of Stakeholders in Tasks for Rural Water Supply Facilities

Category	Task	Responsibility
Investigation, Survey	Inventory survey (bore holes, water supply facilities, social conditions)	SWC
	Pumping test, surveys, making of GIS maps	SWC
	Geological surveys	Public sector
Planning	Waterworks plans	SWC
	Water distribution plans	SWC
	Planning each facility (hydrological calculation, structural calculation, quantity survey)	SWC
Construction Management	Supervising of construction, planning	SWC
	Quality control	SWC
	Quality check	SWC
Administration and Management	Administration	Community
	Operation	Community
	Operating Record	Community
	Water tariff collection	Community
	Periodic check, replacement of the spear parts	Public sector
	Monitoring	SWC, WES
Rehabilitation,	Small scale spare	Community

Category	Task	Responsibility
Renovation	Rehabilitation of bore holes by air lift tools	SWC
	Renovation of each water supply facilities (elevation tank, public fountain, feed pipe network)	SWC

According to the workshop agreement between the SWC staff and the JICA team, a team of maintenance of the mobile workshop is constructed and Mr. Abdulgadir Ohaj is going to be the director of the Rural Water Supply and the rest of rural water supply staff will be selected by Mr. Abdulgadir Ohaj.

The flow chart below gives a detail explanation of the agreed rural SWC staff which is selected by Mr. Abdulgadir Ohaj.



<Conference minutes>

(1) Pipe network construction plan and GIS updating system in Kassal town.

- (Mr.Hashim) 68km of PVC pipes will be installed in the eastern side of Kassala. There are different sizes of SPC in SWC (3inch,4inch ,6inch....etc)
- (Mr. Yousief) The change of pipe from now till 2015
- (Mr.Abdu algder)For the Western Area will be applied to the same study in the eastern Area
- The central offices of SWC have chosen Mr. Abdulgadir Ohaj to be in charge engineer of installing the GIS system.
- (Mr.Hashim)Mr. Abdu algder is based on the training of engineers in how to use the GPS device

(2) Discuss the role of SWC for rural water supply facilities based on the division of works set by State Government.

- (Mr.Hashim) The state Government approved that the local components is prepared for the JICA-CDBHN project with the agreement between the JICA-CDBHN and the state government.

(3) Make an organization chart for the maintenance team members for rural water supply facilities.

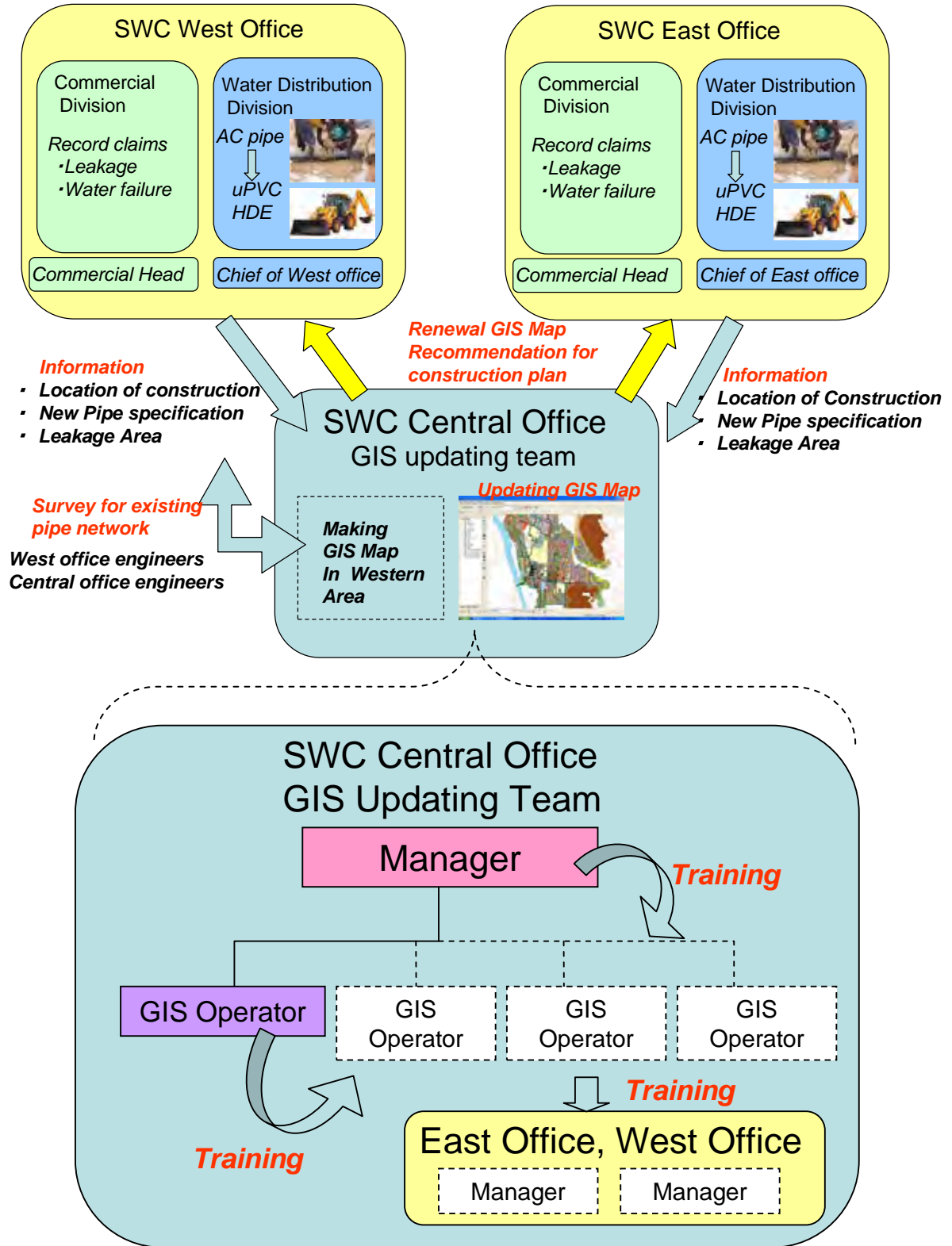
Elect the equipment manager

- The SWC have also chosen Mr. Abdulgadir Ohaj to be a head of the rural SWC and to teach the operators of the water yard by the agreement from the local community.

(4) Local Component

- (Mr.Hashim)Daily Incentive for field work will paid by SWC
- (Mr.Hashim)The cost of operating and maintenance will paid by SWC
- (Mr.Hashim)Fuel cost will paid by SWC
- On 08/03/2011 the state governments have approved the construction of the training center in the eastern office.
- The state government has agreed to let the SWC to work in the rural area.

GIS updating system for pipe network in Kassala Town (Draft)



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Seminar on :

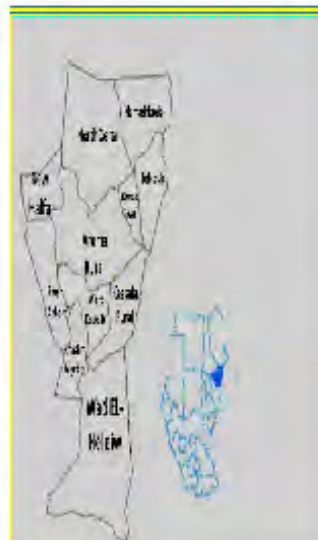
**Assessment of Drinking Water Supply Network
and Its Sources for Eastern Part of Kassala City**

Building and Updating GIS(Geographical Information System)

Abd Elgadir Ohaj Mohammed Tahir

Background about Kassala State

- Location: Located in eastern part of the Sudan, bounded by Lat. 17.17° – 14.86° and Long. 34.09° – 37.55°
- The state divided into eleven localities (mahalias)





State Population

- Based on 5th Sudan census population 2008, Kassala State population estimated by **1,789,806** persons, rural population representing **59%** whereas urban population is **34%** with some minor nomads population representing **7%**.
- Study area population about **174,414** persons.



State Socioeconomic

- Due to non availability of life supporting activities Kassala state is one of the poor densely populated state.
- The agriculture and animals rearing constitute the occupations of the state population.
- Most of the study area population governmental officials.
- Trading and other activities.

State Climate

- **Kassala State** lies in the arid and semi arid region.
- **Rainfall** within the state varies, in the southern parts starts in May – June, while in the northern parts in June – July and usually ends in October. Rainfall increase from around 150mm/y in the north to more than 300mm/y in south.
- **Evaporation** about 12mm/y (piche)
- **Wind** direction and speed From north to east in dry season and from south to west in rainy season, with speed 6.5m/h
- **Daily mean min. temp. 23c and daily mean max. temp.37c**
- **Humidity** about 36%, may increase in rainy season

Background About Study Area

- Location of study area
- Lat. 15.42° – 15.50°
- Long. 36.37° – 36.40°
- Kassala city is the capital of Kassala State.



Water Services Coverage in Study Area

- Boreholes are the main source for drinking water.
- The total number of boreholes for drinking water are **(37)** thirty seven.
- Total yield per day about **20522** m³.
- The water supply network almost covered all the area.
- More than 90% of population have house connection, less than 10% have public water points (kiosk).



Continued

- Average consumption for house connection **49** LCB.
- Average consumption for people obtaining water from public water point **23** LCB.
- The boreholes water that collected in the main water treatment plant are treated by chlorine gas, while that water from boreholes directly feeding the network are not chlorinated.



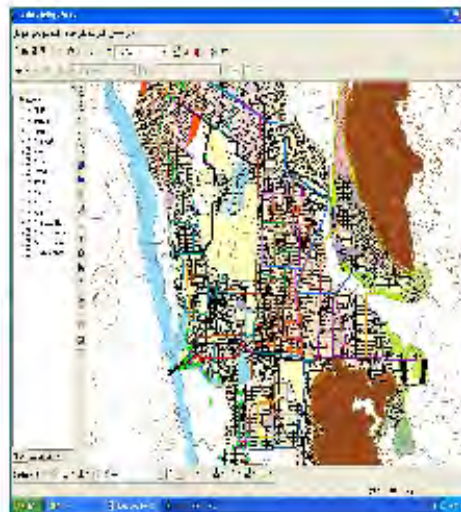
Problems

- The existing drinking water supply network and its components are not represented or located on map.
- The existing water supply network consists of Asbestos Cement pipes (AC) without knowledge their lengths and exact locations and sizes.
- Peripheral residential areas of the city have a lack of water supply.



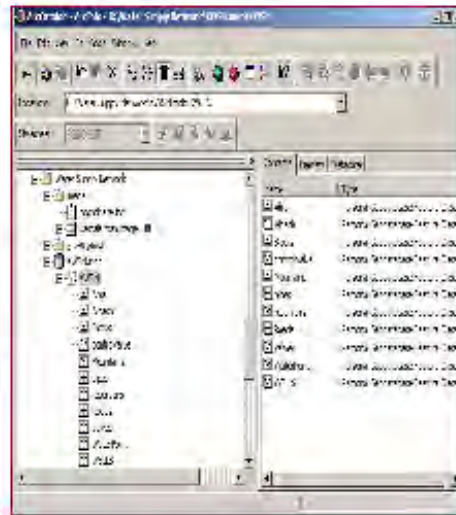
Objectives

- Production of digital map for the study area including the existing water supply network with all components.
- Design and building database for the existing water supply network with all components.
- To assess the existing drinking water network and its components in term of equity and adequacy of distribution main and sub-main pipelines.



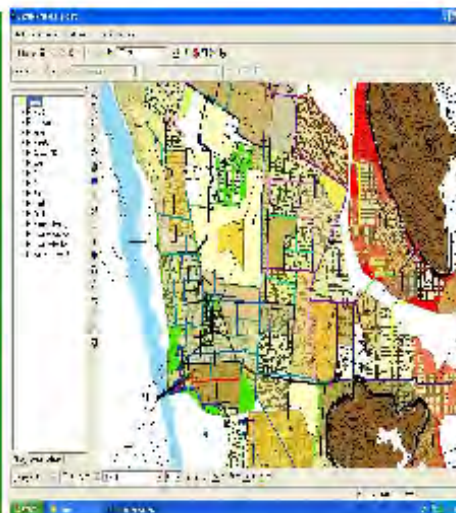
Procedures

- Data collection from (K.D.W.C., census office and field survey)
- Design and building database in (ArcCatalog)
- Editing, digitizing and presenting in (ArcMap)



Results

- Production digital map
- Building database
- The total length of the existing network **148km**, from which **82km** or **56%** AC pipe and the rest is either UPVC or steel pipe
- Losses estimated by **35%**.



Recommendation

- Building a Geographical Information System (GIS) for Kassala Town.
- Updating GIS System
- Following the scientific procedures in the design and implementation of drinking water networks.
- Capacity building on software of Geographic Information System (GIS).









電子データ付録 水－1
カッサラ州地方給水施設
現地調査写真集









表一調査訪問リスト

郡	集落 No.	集落名	戸数 (2008)	人口 (2008)	調査日
Rural Kassala	1	Wad Sharifai	3,792	21,289	2010/11/23
	2	Gulsa	1,374	7,714	2010/11/24
	3	Awad	600	3,368	2010/11/25
	4	Tashotiai	458	2,571	2010/11/27
Rural Aroma	5	Aroma	3,416	17,926	2010/11/28
	6	Tindilai	196	1,029	2010/11/30
	7	Digin	357	1,874	2010/11/30
	8	Mecali	925	4,855	2010/11/30
	9	Gammam	520	2,729	2010/11/30
	10	Abdhabib	103	541	2010/12/1
New Halfa	11	New Halfa	11,498	58,114	2010/12/2
	12	No.4	430	2,174	2010/12/2
	13	No.9	207	1,046	2010/12/2
North Delta	14	Wagger	2,823	21,279	2010/12/6
	15	Assalam Alaicum	120	905	2010/12/6
	16	Timntai	502	3,784	2010/12/6
	17	Oleb	827	6,233	2010/12/6
Girba	18	Sarroba Kassala	279	1,445	2010/12/7
	19	Banad	61	316	2010/12/7
	20	Khor el Laban	704	3,645	2010/12/7
	21	Sarroteyai	257	1,331	2010/12/8
	22	Suweil Gantara	57	295	2010/12/8
	23	Suweil Bahar	120	621	2010/12/8
	24	Koraj	195	1,009	2010/12/8
Wadelhelew	25	Wadelhelew	3,621	15,564	2010/1/25





1. パイロットサイト候補地

集落 No.25 : Wadelhelew Locality- Wadelhelew

	
写真-1.1.1 給水タンク (稼働中)	写真-1.1.2 井戸(使用不可)
	
写真-1.1.3 井戸 (稼働中)、往復動ポンプ	写真-1.1.4 ウォーターヤード No.3(停止中)
	
写真-1.1.5 井戸 No.3 (破棄)	写真-1.1.6 井戸 No.4 (破棄)
	
写真-1.1.7 水汲み場	写真-1.1.8 水汲み場 (0.5SDG/1 バレル)

	
<p>写真-1.1.9 川で取水された生活用水</p>	<p>写真-1.1.10 川で取水された水</p>
	
<p>写真-1.1.11 給水タンク（補修の必要あり）</p>	<p>写真-1.1.12 発電機（故障）</p>
	
<p>写真-1.1.13 ウォーターヤード No.6</p>	<p>写真-1.1.14 発電機（停止中、中国製）</p>
	
<p>写真-1.1.15 村内の状況 1</p>	<p>写真-1.1.16 村内の状況 2</p>

1.2. 集落 No.16 : Girba Locality- Banad

	
写真-1.2.1 給水タンク (27m ³)	写真-1.2.2 井戸管理用施設
	
写真-1.2.3 ディーゼルエンジン	写真-1.2.4 ディーゼルポンプ
	
写真-1.2.5 公共水栓	

2. その他調査結果

2.1. 集落 No.1 : Rural Kassala Locality- Wad Sharifai



写真-2.1.1 井戸 (w-1)



写真-2.1.2 ポンプ用エンジン



写真-2.1.3 レシプロポンプ



写真-2.1.4 公共水栓-1



写真-2.1.5 公共水栓-2



写真-2.1.6 ウォーターヤード

2.2. 集落 No.2 : Rural Kassala Locality- Glusa

	
写真-2.2.1 未使用の井戸 (w-1)	写真-2.2.2 井戸 (w-2)
	
写真-2.2.3 ディーゼルポンプ	写真-2.2.4 ポンプ用エンジン
	
写真-2.2.5 給水タンク、公共水栓	写真-2.2.6 Glusa 集落
	
写真-2.2.7 集落内モスク	写真-2.2.8 老朽化した小学校

2.3. 集落 No.3 : Rural Kassala Locality- Awad

A close-up photograph of a black, cylindrical underwater pump assembly with a handle on top, mounted on a vertical pipe.	A green diesel engine with a white fuel tank, mounted on a metal frame, used to power a pump.
写真-2.3.1 水中ポンプ (w-1)	写真-2.3.2 ポンプ用エンジン
An electrical control panel with various wires and components, housed in a metal enclosure.	A public water tap structure with a metal railing, where several people are gathered to collect water.
写真-2.3.3 制御版	写真-2.3.4 公共水栓
A large, square, yellow water storage tank mounted on a metal tower structure, with a public tap at the base.	A close-up view of a leaking base made of FRP (Fiberglass Reinforced Plastic) supporting a water tank.
写真-2.3.5 給水タンク、公共水栓	写真-2.3.6 漏水する底版 (FRP)
A well (w-2) with a hand-operated pump mechanism on the ground, where a person is using it to draw water.	A black diesel engine used to power a pump, situated outdoors near a well.
写真-2.3.7 井戸(w-2) レシプロポンプ	写真-2.3.8 ポンプ用エンジン



写真-2.3.9 スペアパーツ



写真-2.3.10 エンジンオイル、燃料



写真-2.3.11 給水タンク(コンクリート製)



写真-2.3.12 家畜用水のみ場(有料)



写真-2.3.13 w-1 井戸所有者 Mr.Abdla 氏
(カッサラ市内在住)

2.4. 集落 No.4 : Rural Kassala Locality- Tashotyai

	
写真-2.4.1 Tashotyai 井戸	写真-2.4.2 レシプロポンプ
	
写真-2.4.3 給水タンク (43m ³)	写真-2.4.4 漏水箇所 (給水タンクー公共水栓間)
	
写真-2.4.5 公共水栓	写真-2.4.6 小学校内給水タンク
	
写真-2.4.7 小学校内共同水栓	写真-2.4.8 Tashotyai 南部集落

2.5. 集落 No.5 : Rural Aroma Locality- Aroma



写真-2.5.1 SWC Aroma 事務所



写真-2.5.2 市街地交換用 PVC パイプ

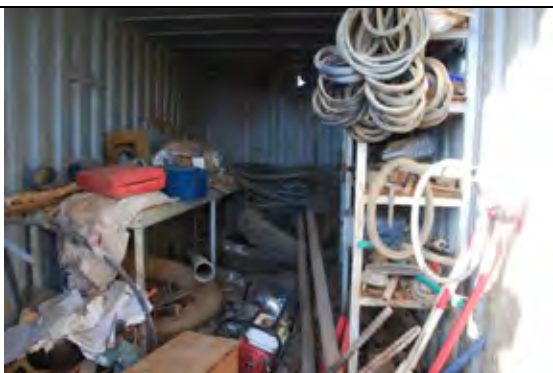


写真-2.5.3 Aroma 事務所 コンテナ



写真-2.5.4 Aroma 事務所内ワークショップ



写真-2.5.5 給水タンク 4 基 (147m³×2、50m³、24m³)



写真-2.5.6 揚水用ポンプ (13.4kw)

2.6. 集落 No.6 : Rural Aroma Locality- Tindilai

	
<p>写真-2.6.1 給水タンク 2基 (98m³、30m³)</p>	<p>写真-2.6.2 貯水槽 (110m³)</p>
	
<p>写真-2.6.3 井戸管理用施設</p>	<p>写真-2.6.4 ポンプ用エンジン</p>
	
<p>写真-2.6.5 ディーゼルポンプ</p>	<p>写真-2.6.6 公共水栓-1</p>
	
<p>写真-2.6.7 公共水栓-2</p>	<p>写真-2.6.8 Tindilai 中心地</p>

2.7. 集落 No.7 : Rural Aroma Locality- Digin

	
<p>写真-2.7.1 旧給水タンク (18m³×2)</p>	<p>写真-2.7.2 共同水栓</p>
	
<p>写真-2.7.3 共同水栓 (水量は少ない)</p>	<p>写真-2.7.4 パイプから直接水を汲んでいる</p>
	
<p>写真-2.7.5 溜池にパイプから水を垂れ流している。</p>	<p>写真-2.7.6 貯水槽 (現在は使用されていない)</p>
	
<p>写真-2.7.7 送水用パイプ</p>	<p>写真-2.7.8 送水管から一部住民が無許可で分岐する。</p>

2.8. 集落 No.8 : Rural Aroma Locality- Mecali

	
<p>写真-2.8.1 給水タンク (27m³、30m³)</p>	<p>写真-2.8.2 給水タンク 1 (30m³)</p>
	
<p>写真-2.8.3 共同水栓</p>	<p>写真-2.8.4 ハフィール (現在は使用されていない。)</p>
	
<p>写真-2.8.5 ハフィールの井戸</p>	<p>写真-2.8.6 近郊に設置された井戸 (100m以上)</p>
	
<p>写真-2.8.7 中国製発電機</p>	<p>写真-2.8.8 発電機</p>

2.9. 集落 No.9 : Rural Aroma Locality- Gammam

	
写真-2.9.1 給水タンク (50m ³ 、50m ³)	写真-2.9.2 給水タンク (27m ³ 、40m ³)
	
写真-2.9.3 旧送水施設内	写真-9.4 ジェネレーター 2台
	
写真-9.5 ジェネレーター (13.2kw)	写真-9.6 WILSON 製
	
写真-9.7 井戸ポンプ用ディーゼルエンジン	写真-9.8 ディーゼルポンプ

2.10. 集落 No.10 : Rural Aroma Locality- Abdhabib

	
写真-2.10.1 Abdhabib 集落	写真-2.10.2 給水タンク (36m ³)
	
写真-2.10.3 共同水栓 2 箇所	写真-2.10.4 発電機
	
写真-2.10.5 放棄されたバッテリー	写真-2.10.6 水中ポンプ制御版
	
写真-2.10.7 井戸	写真-2.10.8 井戸管理用施設

2.11. 集落 No.11 : New Halfa Locality- New Halfa

	
<p>写真-2.11.1 SWC ニューハルファ事務所</p>	<p>写真-2.11.2 スペアパーツ等資材保管施設</p>
	
<p>写真-2.11.3 都市給水用浄水場施設</p>	<p>写真-2.11.4 着水井</p>
	
<p>写真-2.11.5 急速ろ過池 (4基)</p>	<p>写真-2.11.6 送水ポンプ設備</p>
	
<p>写真-2.11.7 浄水場内水質検査室</p>	<p>写真-2.11.8 浄水後の水質</p>

2.12. 集落 No.12 : New Halfa Locality- No.4 village

	
<p>写真-2.12.1 給水タンクとろ過施設</p>	<p>写真-2.12.2 用水路から取水する。</p>
	
<p>写真-2.12.3 ろ過施設</p>	<p>写真-2.12.4 ポンプ用エンジン</p>
	
<p>写真-2.12.5 透明度は高く、濁度は高くない。</p>	<p>写真-2.12.6 ニューハルファ地区の用水路</p>
	
<p>写真-2.12.7 隣接する集落 No.7 での建設中フィルター</p>	<p>写真-2.12.8 建設中フィルター</p>

2.13. 集落 No.14 : Noth Delta Locality - Wagga








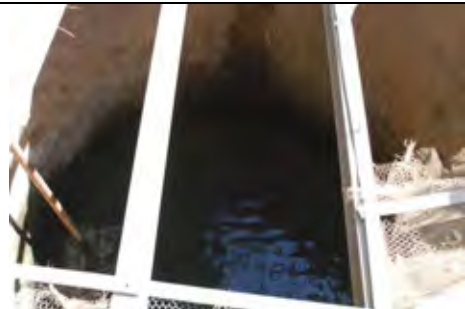
	
<p>写真-2.13.1 郡が管理する手汲み井戸 (W-1)</p>	<p>写真-2.13.2 深度 14m、SWL.-3.8m</p>
	
<p>写真-2.13.3 プライベート井戸</p>	<p>写真-2.13.4 家畜用溜池</p>
	
<p>写真-2.13.5 ディーゼルエンジン</p>	<p>写真-2.13.6 公共井戸 (W-2)、 深度-5.7m、SWL.-4.6m</p>
	
<p>写真-2.13.7 ポンプ (貯水槽→タンク)</p>	<p>写真-2.13.8 渇水期の為、水位は低い</p>



写真-2.13.9 民間手堀り井戸



写真-2.13.10 手堀り井戸



写真-2.13.11 公共井戸-3
深度-7.3m、SWL.-6.4m



写真-2.13.12 エンジンポンプ



写真-2.13.13 給水タンク (50m³、54m³)











写真-2.13.14 井戸管理用施設、貯水槽

2.14. 集落 No.15 : Rural North Delta Locality- Assalam Alaicum

	
<p>写真-2.14.1 旧井戸</p>	<p>写真-2.14.2 井戸は枯れている。</p>
	
<p>写真-2.14.3 赤新月社が出資し、建設された。</p>	<p>写真-2.14.4 ソーラーパネル</p>
	
<p>写真-2.14.5 バラ線により保護される。</p>	<p>写真-2.14.6 井戸は蓋等で保護されていない。</p>

2.15. 集落 No.17 : North Delta Locality – Oleb

	
<p>写真-2.15.1 旧給水タンク (18m³×2基)</p>	<p>写真-2.15.2 建設年：1960年代</p>
	
<p>写真-2.15.3 手掘井戸</p>	<p>写真-2.15.4 地下水は濁っている</p>
	
<p>写真-2.15.5 公共井戸 (深度-14m、SWL. -13.4m)</p>	<p>写真-2.15.6 ポンプは設置されていない。 水の値段は4SDG/バレル</p>
	
<p>写真-2.15.7 水量は少なく、濁度は高い。</p>	<p>写真-2.15.8 水を各戸までロバで運搬する</p>

2.16. 集落 No.18 : Girba Locality- Sarroba Kassala

	
<p>写真-2.16.1 給水タンク (36.7m³)</p>	<p>写真-2.16.2 井戸管理用施設</p>
	
<p>写真-2.16.3 ポンプ用ディーゼルエンジン</p>	<p>写真-2.16.4 屋根が損壊している</p>
	
<p>写真-2.16.5 公共水栓</p>	<p>写真-2.16.6 公共水栓 (使用不可)</p>
	
<p>写真-2.16.7 Sarroba Kassala 集落</p>	<p>写真-2.16.8 ポンプが作動しない場合、Atbara 川水源を飲料水用として使用している。</p>







2.17. 集落 No.20 : Girba Locality- Khor el Laban

	
写真-2.17.1 給水タンク (27m ³)	写真-2.17.2 Khor el Laban 集落
	
写真-2.17.3 新規井戸 (配水管未整備)	写真-2.17.4 公共水栓
	
写真-2.17.5 エンジニアのガレージ	写真-2.17.6 修理中のディーゼルエンジン
	
写真-2.17.6 ディーゼルエンジン用ポンプ	写真-2.17.8 劣化した揚水管

2.18. 集落 No.21 : Girba Locality- Sarroteyai

	
写真-2.18.1 給水タンク (27m ³)	写真-2.18.2 公共水栓
	
写真-2.18.3 井戸管理用施設	写真-2.18.4 屋根が損壊する管理用施設
	
写真-2.18.5 ディーゼルエンジン	写真-2.18.6 ディーゼルポンプ
	
写真-2.18.7 インド製ディーゼルエンジン	写真-2.18.8 地下水に濁度は認められない。

2.19. 集落 No.22 : Girba Locality - Suweil Gantara

	
<p>写真-2.19.1 Suweil Gantara 集落</p>	<p>写真-2.19.2 Atbara 川の用水路から導水する</p>
	
<p>写真-2.19.3 飲料水、家畜用の溜池</p>	<p>写真-2.19.4 赤新月社による調査を示す立看板 (物理探査のみで未開発である。)</p>
	
<p>写真-2.19.5 濁度が高い飲料水</p>	<p>写真-2.19.6 一般細菌検出テスト結果</p>

2.20. 集落 No.23 : Girba Locality - Suweil Bahar

	
<p>写真-2.20.1 隣接する Suweil Bahar 集落内のハンドポンプ</p>	<p>写真-2.20.2 井戸から取水した地下水。濁度は認められない。</p>

2.21. 集落 No.24 : Girba Locality- Koraj



写真-2.21.1 給水タンク (27m³)



写真-2.21.2 公共水栓 (各戸給水も行っている)



写真-2.21.3 井戸管理用施設



写真-2.21.4 ポンプ用ディーゼルエンジン



写真-2.21.5 ポーランド製ディーゼルエンジン



写真-2.21.6 エンジンポンプ



写真-2.21.7 井戸から取水した地下水。濁度は認められない。



写真-2.21.8 スペアパーツ類

“Capacity Development Project for Provision of the Services for Basic Human Needs in Kassala”
<Agriculture and livelihood improvement component>

Action Plan & pilot site	Priority	Major issues	Possible activities (Suggestion from JICA Experts)	Remarks by State Ministry of Agriculture, Forestry and Irrigation, Kassala	Extension workers/ office	Other donors
<Horticultural zone> Kassala H-1: Establishment of comprehensive technical package to increase productivity of horticultural crops	1	<ul style="list-style-type: none"> ◇ To increase yield ◇ To reduce production cost ◇ To introduce new cash crops ◇ To diversify cropping patterns ◇ To identify suitable varieties 	<ul style="list-style-type: none"> ● Improvement of production techniques of vegetable seedlings e.g. onion, tomato ● Introduction of new crop rotation pattern, such as leguminous crops and banana. ● Promotion of cash crops such as alfalfa and banana: Banana should be targeted for export → quality of export standard is required 	<ul style="list-style-type: none"> ● Onion is most important cash crop in horticulture sector Kassala, and improvement of production techniques of onion, tomato would increase productivity and reduce production cost. Many farmers would come back to horticultural sector if this intervention succeeds. ● When introducing new crops, 1) consumer interest, 2) marketability, 3) effect of the new crops to soil/environment should be considered. Applied research should carried out before extension to farmers. 	Crop – 5 Rural - 9	No donors supporting in this area
		<ul style="list-style-type: none"> ◇ To raise awareness of wholesalers about proper handling of goods about farmers about proper post-harvesting techniques. 	<ul style="list-style-type: none"> ● Training on packing, grading, raising awareness, cooperative shipping, how to cope with pest problem are necessary. ● Value adding should be directed to export quality. 		Crop – 5 Rural - 9	No donors supporting in this area
< Traditional Rain-fed > Rural Aroma (Eastern side of Atbara River) T-2: Dissemination of appropriate water harvesting techniques	2	<ul style="list-style-type: none"> ◇ To improve water harvesting techniques 	<ul style="list-style-type: none"> ● In addition to the improved water harvesting techniques currently disseminated by TTEA, to conduct land survey to determine appropriate height of dikes so that amount of collected water and penetrated water to be balanced (in order to reduce water loss). 	<ul style="list-style-type: none"> ● At present, 5-6 water harvesting techniques are available, but they are just slight improvement on farmers’ traditional knowledge. Therefore, optimum method of water harvesting has not yet identified. There are still large needs for improved water harvesting techniques. ● To increase cropping areas, traditional rain fed sector is the most effective. ● Majority of vulnerable people are engaged in traditional rain-fed sector. ● Cost for construction of dikes is: 0.3 – 0.5 SDG per 1m. 	1 extension office at Swage (Eastern bank of Atbara River) Crop – 1 Rural - 0	Practical Action, ERDB, ACORD, SRC. German Agro Action, GOAL. Plan sudan
< Flood irrigation > Rural Aroma F-2:	3	<ul style="list-style-type: none"> ◇ To increase yield of selected crops by introducing proper techniques (e.g. diversifying crop 	<ul style="list-style-type: none"> ● To introduce improved techniques for sorghum production. ● To introduce organic cotton and sunflower as new cash 	<ul style="list-style-type: none"> ● Gash flood irrigation area is quite rich in soil nutrients and has high potential of high productivity (20 sacs of sorghum is potential, while at present it harvests only 8 sacs per feddan). 	Crop – 1+3 Rural – 3+1	IFAD ACORD

Action Plan & pilot site	Priority	Major issues	Possible activities (Suggestion from JICA Experts)	Remarks by State Ministry of Agriculture, Forestry and Irrigation, Kassala	Extension workers/ office	Other donors
Establishment of comprehensive technical package to increase productivity of several crops		patterns, introduction of new cash crops) ✧ Currently sorghum is focused for food security, but there's no support to cash crop production.	crop. The production could be organized by each Mesga and marketing shall be done as a group.	<ul style="list-style-type: none"> Farmers are irritate and not educated, so they are not aware of their poverty situation. There is need for their capacity development. IFAD project has been focusing on hard infrastructure development and could not cover human capacity development. WUA are established but not functioning. As a model of farmers organization, Gash farmers should be empowered. 		
< Mechanized Rain-fed > Wadel Helew M-2: Dissemination of appropriate water harvesting techniques	4	✧ To improve water harvesting techniques	<ul style="list-style-type: none"> To cultivate land when cumulative rainfall amount reaches 100mm. Small-holder farmers shall be organized in groups and renting agricultural machinery as a group. Intermediate agricultural technologies and agricultural machinery shall be introduced to empower the small-holder farmers. 	<ul style="list-style-type: none"> Most of farmers in mechanized rain-fed area are large farmers who have approximately 1,000 feddan. On the other hand, there are small-holder farmers whose land ranges from 5 – 50 feddan, and they are very poor. They cannot use agricultural machinery until large farmer finishe, and this delays their agricultural practices, making their agricultural not profitable. They also work as casual labors at large farmers' fields. These two localities accommodate most of the refugee population in the State. 	2 extension offices will be constructed in Wadel Helew locality along the border with Gadaref State, within 4 months from now using the budget of Agricultural Revival Programme. Crop – 2 Rural - 0	Plan Sudan in Girba, IFAD in Nahr Atbara are supporting traditional rain-fed farmers. As for mechanized rain-fed sector, UNHCR/ACO RD are supporting refugees who has agricultural land.

電子データ付録 農-2 農業・生計向上分野パイロット活動の積算と実施スケジュール

1. Development of Horticultural Extension towards Profitable Agriculture

「儲かる農業に向けた園芸農業普及活動の増進」

I. Horticulture Zone			JFY 2011					JFY2012					JFY 2013				
	Item	Sub-item	Unit Cost	Q'ty	Unit	Days/ time	Total (SDG)	Unit Cost	Q'ty	Unit	Days/ time	Total (SDG)	Unit Cost	Q'ty	Unit	Days/ time	Total (SDG)
1	Supplementary Survey (Baseline)	RA	60	3	person	10	1800	-	-	-	-	-	-	-	-	-	-
	(Mid-term Eva)	RA	-	-	-	-	-	60	3	person	10	1800	-	-	-	-	-
	(Final Eva)	RA	-	-	-	-	-	-	-	-	-	-	60	3	person	10	1800
		Stationaries	100	1	set	4	400	100	1	set	4	400	100	1	set	4	400
2	Training	Trainer (Internal)	100	11	person	4	4400	100	5	person	4	2000					
		Trainer (External)	200	6	person	4	4800	200	6	person	4	4800					
		Training	12	220	person	4	10560	12	100	person	4	4800					
3	Model Extension Activities	Training	12	880	person	4	42240	12	400	person	4	19200					
		Shading (Rent)	50	11	set	4	2200	50	16	set	4	3200	50	5	set	4	1000
4	Other Extension Activities (Media)	Radio Broadcast	50	10	set	2	1000	50	10	set	2	1000	50	10	set	2	1000
		Video Making	300	5	set	2	3000	300	5	set	2	3000	300	5	set	2	3000
		Video (DVD)	51	100	set	4	2000	5	100	set	4	2000	51	100	set	4	2000
		Leaflets	5	100	set	4	2000	5	10	set	4	200	5	10	set	4	200
		Posters	20	20	set	4	1600	20	20	set	4	1600	20	20	set	4	1600
5	Study Tour	Transportation	100	4	set	1	400	100	4	set	1	400	100	4	set	1	400
6	Workshop for Marketing Activities	Training	12	50	set	2	1200	12	50	set	2	1200	12	50	set	2	1200
7	Monitoring Form		100	10	person	4	4000	100	10	person	4	4000	100	10	person	4	4000
8	Overall Tools for the Pilot Activities	Chemical Sprayer	100	3	set	4	1200										
		Pruning Scissor	35	30	set	1	1050										
9	Onion Production at the Demonstration Farm																
	1) Seed		420	0.6	feddan	2	504	420	0.6	feddan	4	1008	420	0.6	feddan	4	1008
	2) Urea (Fertilizer)		150	0.6	feddan	2	180	150	0.6	feddan	4	360	150	0.6	feddan	4	360
	3) Foliar Fertilizer (NPK) ①		15	0.6	feddan	2	18	15	0.6	feddan	4	36	15	0.6	feddan	4	36
	4) Foliar Fertilizer (NPK) ②		15	0.6	feddan	2	18	15	0.6	feddan	4	36	15	0.6	feddan	4	36
	5) Herbicide		45	0.6	feddan	2	54	45	0.6	feddan	4	108	45	0.6	feddan	4	108
	6) Fungicide		70	0.6	feddan	2	84	70	0.6	feddan	4	168	70	0.6	feddan	4	168
	7) Pesticide (Insecticide)		180	0.6	feddan	2	216	180	0.6	feddan	4	432	180	0.6	feddan	4	432
	8) Seedling Tray (84 Cells)		14000	0.2	feddan	4	11200	14000	0.2	feddan	2	5600	14000	0.2	feddan	4	11200
	9) Vermiculite		280	0.2	feddan	4	224	280	0.2	feddan	4	224	-	-	-	-	-
	10) Peat Moss		280	0.2	feddan	4	224	280	0.2	feddan	4	224	-	-	-	-	-
	11) Cow Pea (Banker Plants)		30	0.4	feddan	4	48	30	0.4	feddan	4	48	-	-	-	-	-
	12) Millet (Banker Plants)		20	0.4	feddan	4	32	20	0.4	feddan	4	32	-	-	-	-	-
10	Off-Season Tomato Production at the Demonstration Farm																
	1) Seed		375	0.4	feddan	4	600	375	0.4	feddan	4	600	-	-	-	-	-
	2) Urea (Fertilizer)		75	0.4	feddan	4	120	75	0.4	feddan	4	120	-	-	-	-	-
	3) Foliar Fertilizer (NPK) ①		15	0.4	feddan	4	24	15	0.4	feddan	4	24	-	-	-	-	-
	4) Foliar Fertilizer (NPK) ②		15	0.4	feddan	4	24	15	0.4	feddan	4	24	-	-	-	-	-
	5) Fungicide		70	0.4	feddan	4	112	70	0.4	feddan	4	112	-	-	-	-	-
	6) Pesticide		219	0.4	feddan	4	350	219	0.4	feddan	4	350	-	-	-	-	-
	7) Seedling Tray (84 cells)		14000	0.2	feddan	4	11200	14000	0.2	feddan	4	11200	-	-	-	-	-
	8) Vermiculite		280	0.2	feddan	4	224	280	0.2	feddan	4	224	-	-	-	-	-
	9) Peat Moss		280	0.2	feddan	4	224	280	0.2	feddan	4	224	-	-	-	-	-
	10) Cow Pea (Banker Plants)		30	0.4	feddan	4	48	30	0.4	feddan	4	48	-	-	-	-	-
	11) Millet (Banker Plants)		20	0.4	feddan	4	32	20	0.4	feddan	4	32	-	-	-	-	-
11	Potato Production at the Demonstration Farm																
	1) Completed Tubers		2340	0.6	feddan	2	2808	2340	0.6	feddan	4	5616	-	-	-	-	-
	2) Urea (Fertilizer)		150	0.6	feddan	2	180	150	0.6	feddan	4	360	-	-	-	-	-
	3) Other Fertilizer		280	0.6	feddan	2	336	280	0.6	feddan	4	672	-	-	-	-	-
	4) Pesticide		300	0.6	feddan	2	360	300	0.6	feddan	4	720	-	-	-	-	-
	5) Herbicide		70	0.6	feddan	2	84	70	0.6	feddan	4	168	-	-	-	-	-
12	Okura Production at the Demonstration Farm																
	1) Seed		140	0.4	feddan	2	112	140	0.4	feddan	2	112	-	-	-	-	-
	2) Urea (Fertilizer)		75	0.4	feddan	2	60	75	0.4	feddan	2	60	-	-	-	-	-
	3) Other Fertilizer		50	0.4	feddan	2	40	50	0.4	feddan	2	40	-	-	-	-	-
	3) Herbicide		45	0.4	feddan	2	36	45	0.4	feddan	2	36	-	-	-	-	-
	4) Fungicide		35	0.4	feddan	2	28	35	0.4	feddan	2	28	-	-	-	-	-
	5) Pesticide		45	0.4	feddan	2	36	45	0.4	feddan	2	36	-	-	-	-	-
13	Alfalfa Production at the Demonstration Farm																
	1) Seed		-	-	-	-	-	850	0.4	feddan	4	1360	-	-	-	-	-
	2) Urea (Fertilizer)		-	-	-	-	-	35	0.4	feddan	4	56	-	-	-	-	-
	3) Foliar Fertilizer (NPK) ①		-	-	-	-	-	30	0.4	feddan	4	48	-	-	-	-	-
	4) Foliar Fertilizer (NPK) ②		-	-	-	-	-	50	0.4	feddan	4	80	-	-	-	-	-
	5) Pesticides ①		-	-	-	-	-	13	0.4	feddan	4	21	-	-	-	-	-
	6) Pesticides ②		-	-	-	-	-	46	0.4	feddan	4	74	-	-	-	-	-
14	Advanced Training on Grafting of Citrus																
	1) Seedlings of Grapefruits Trees		-	-	-	-	-	10	200	seedlin	4	8000	-	-	-	-	-
	2) Seedlings of Orange Trees		-	-	-	-	-	10	200	seedlin	4	8000	-	-	-	-	-
	3) Rootstock (Sour Orange)		-	-	-	-	-	10	200	seedlin	4	8000	-	-	-	-	-
15	Mango Production																
	1) Seedlings of Mango Trees		-	-	-	-	-	12	200	seedlin	4	9600	-	-	-	-	-
16	Banana Production																
	1) Sucker of Banana		-	-	-	-	-	5	200	sucker	4	4000	-	-	-	-	-
Total							113,690				117,921						29,948
															Grand Total	261,559	

Activities	2011												2012												2013											
	JFY 2011												JFY 2012												JFY 2013											
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
I. Horticulture Zone																																				
1. Supplementary Survey (Baseline)																																				
(Mid-term Evaluation)																																				
(Final Evaluation)																																				
2. Coordination among Related Administration																																				
3. Implementation of Workshop to Detect Promising Crop																																				
4. Procurement of Equipments/External Specialist																																				
5. Conclusion of a Contract with Farmers																																				
6. Workshop for Marketing Activities																																				
7. Preparation and Operation of Demonstration Farm																																				
7.1 Land Preparation																																				
7.2 Seeding Okra																																				
7.3 Seeding Onion																																				
7.4 Seeding Tomato (Off-season)																																				
7.5 Seeding Alfalfa with Citrus or Banana																																				
7.6 Planting Tubers of Potato																																				
7.7 Transplanting Onion																																				
7.8 Transplanting Tomato (Off-Season)																																				
7.9 Harvesting Okra																																				
7.10 Harvesting Onion																																				
7.11 Harvesting Tomato (Off-Season)																																				
7.12 Harvesting Potato																																				
7.13 Harvesting Alfalfa																																				
8. Training on Technologies of Onion Cultivation																																				
8.1 Improved Seedling Management & Transplanting																																				
8.2 Comparison of Basin Irrigation and Furrow Irrigation																																				
8.3 Crop Management (IPM, Weeding, etc.)																																				
8.4 Harvesting & Postharvest treatment																																				
9. Training of Technologies of Tomato Cultivation																																				
9.1 Improved Seedling Management and Transplanting																																				
9.2 Crop Management (IPM, Weeding, Fertilizer etc.)																																				
10. Training of Technologies of Potato Cultivation																																				
10.1 Preparation and Planting of Tubers																																				
10.2 Crop Management (IPM, Weeding, Fertilizer etc.)																																				
10.3 Harvesting & Postharvest Treatment																																				
11. Training on Technologies of Okra Cultivation																																				
11.1 Crop Management (IPM, Weeding, Fertilizer etc.)																																				
11.2 Extraction of Seeds																																				
12. Training on Technologies on Alfalfa Cultivation																																				
12.1 Comparison of Cutting Heights																																				
12.2 Crop Management (IPM, Weeding, Fertilizer etc.)																																				
13. Training on Technologies of Grafting Fruit Trees																																				
12.1 Grafting technologies for Citrus																																				
12.2 Grafting technologies for Mango																																				
14. Training on Banana Preventing Nematode Infection																																				
13.1 Sterarization of Sucker																																				
13.2 Crop Management (Land Use, Deep Planting of Sucker in Depth)																																				
15. Conducting Model Extension Activities (OJT)																																				
15.1 Model Extension Activities on Onion (OJT)																																				
15.2 Model Extension Activities on Tomato (OJT)																																				
15.3 Model Extension Activities on Potato (OJT)																																				
15.4 Model Extension Activities on Okra (OJT)																																				
15.5 Model Extension Activities on Alfalfa (OJT)																																				
15.6 Model Extension Activities on Citrus and Mango (OJT)																																				
15.7 Model Extension Activities on Banana (OJT)																																				
16. Implementation and Monitoring of Demonstration Farm																																				
15.1 Demonstration Farm in North Sawagi and Sabir																																				
15.2 Demonstration Farm in Takroof/Wad el Sharifai																																				

2. Revival of Cash Crop Production in Gash

「ガッシュ川洪水灌漑地区における換金作物の再活性化」

2. Flood Irrigation Zone			JFY 2011					JFY2012					JFY 2013				
Item	Sub-item		Unit	Q'ty	Unit	Days/ time	Total (SDG)	Unit	Q'ty	Unit	Days/ time	Total (SDG)	Unit	Q'ty	Unit	Days/ time	Total (SDG)
			Cost					Cost					Cost				
1	Supplementary Survey (Baseline)	RA	60	3	person	10	1800	-	-	-	-	-	-	-	-	-	-
	(Mid-term Eva)	RA	-	-	-	-	-	60	3	person	10	1800	-	-	-	-	-
	(Final Eva)	RA	-	-	-	-	-	-	-	-	-	-	60	3	person	10	1800
2	Monitoring Form	Stationaries	100	3	set	1	300	100	3	set	1	300	100	3	set	1	300
		Stationaries	100	10	person	3	3000	100	10	person	3	3000	100	10	person	3	3000
3	FFS to Faciliate Cotton Production	Training	12	180	set	3	6480										
4	Workshop for Facillitaton	Training	12	90	set	1	1080										
	Workshop for Marketing Activities	Training						12	90	set	1	1080					
	Workshop for Concluding Activities	Training											12	90	set	1	1080
5	Training	Trainer (Internal)						100	5	person	3	1500	100	5	person	3	1500
		Trainer (External)											200	2	person	3	1200
		Training											12	100	person	3	3600
6	Model Extension Activities	Training						12	300	person	3	10800					
		Shading (Rent/day)							50	3	set	3	450	50	3	set	3
7	Other Extension Activities (Media)	Radio Broadcas	50	3	set	3	450	50	5	set	3	750	50	5	set	3	750
		Video Making	300	3	set	3	2700	300	5	set	3	4500	300	5	set	3	4500
		Video (DVD)	5	100		3	1500	5	5	set	1000	25000	5	5	set	1000	25000
		Leaflets	5	100		3	1500	5	5	set	100	2500	5	10	set	100	5000
8	Study Tour	Posters	20	20		3	1200	20	20	set	3	1200	20	20	set	3	1200
		Transportation							100	3	set	1	300	100	3	set	1
9	Monitoring Form		100	10	person	4	4000	100	10	person	4	4000	100	10	person	4	4000
Total			24,010					61,980					50,980				
																Grand Total	136,970

	2011												2012												2013												2014		
	JFY 2011												JFY 2012												JFY 2013														
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar			
2. Flood irrigation Zone																																							
1. Supplementary Survey (Baseline)																																							
(Mid-term Evaluation)																																							
(Final Evaluation)																																							
2. Confirmation of Coordination																																							
3. Workshop on Promising Crop and Market Needs																																							
4. Procurement of Equipments/External Specialist																																							
6. FFS to Raise Awareness of the Farmers																																							
7. Workshop among Stakeholders including WUAs																																							
8. Monitoring of Cotton Cultivation and Marketing																																							
9. Discussion and Coordination with WUA																																							
10. Selection of the Demonstration Sites																																							
11. Final Determination of the Demonstration Activities																																							
12. Training technologies of cotton cultivation and marketing																																							
12.1 Crop Management (Land Preparation, Planting, IPM, Weeding etc.)																																							
12.2 Harvesting and Post Harvesting																																							
12.3 Marketing and Institution																																							
12.4 Environmental Education (Eradication of Harmful Weeds etc.)																																							
13. Conducting Model Extension Activities (OJT)																																							
13.1 Model Extension Activities on Crop Management (Land preparation, Planing, IPM, etc.)																																							
13.2 Model Extension Activities on Harvesting and Post Harvesting																																							
13.3 Model Extension Activities on Marketing and Institution																																							
13.4 Environmental Education (Eradication of Harmful Weeds etc.)																																							
14. Implementation and Monitoring of Demonstration Activities																																							
15. Evaluation																																							
16. Seminar																																							

3. Promotion of Water Harvesting Technology

「ウォーター・ハーベスティングの技術改良の推進」

3. Traditional Rain-fed Zone			JFY 2011					JFY2012					JFY 2013					
Item	Sub-item	Unit	Q'ty	Unit	Days/	Total	Unit	Q'ty	Unit	Days/	Total	Unit	Q'ty	Unit	Days/	Total		
			Cost	time	(SDG)	Cost		time	(SDG)	Cost	time		(SDG)	Cost	time	(SDG)		
1	Supplementary Survey (Baseline) RA	60	2	person	10	1,200	-	-	-	-	-	-	-	-	-	-		
	(Mid-term Evaluation RA	-	-	-	-	-	60	2	person	10	1,200	-	-	-	-	-		
	(Final Evaluation) RA	-	-	-	-	-	-	-	-	-	-	60	2	person	10	1,200		
	Stationaries	100	2	set	1	200	100	2	set	1	200	100	2	set	1	200		
2	Monitoring Form	100	5	person	2	1,000	100	5	person	2	1,000	100	5	person	2	1,000		
3	FFS to Water Harvesting						12	60	set	2	1,440							
4	Overall Tools for the Pilot Activities																	
	Water Hose Balance	100	10	set	1	1,000												
	Measuring Tape (100m)	30	10	set	1	300												
5	Training						100	25	person	2	5,000							
	Trainer (Internal)																	
	Trainer (External)						200	25	person	2	10,000							
	Training						12	100	person	2	2,400							
6	Model Extension Activities						12	180	person	2	4,320	12	180	person	2	4,320		
	Shading (Rent/day)						50	3	set	2	300	50	3	set	2	300		
7	Other Extension Activities (Media Radio Broadcast)	50	10	set	2	1000	50	10	set	1	500	50	10	set	1	500		
	Video Making	300	5	set	2	3000	300	5	set	1	1,500	300	5	set	1	1,500		
	Video (DVD)	5	100	set	4	2000	5	100	set	3	1,500	5	100	set	3	1,500		
	Leaflets	5	100	set	4	2000	5	100	set	3	1,500	5	100	set	3	1,500		
	Posters	20	20	set	4	1600	20	20	set	3	1,200	20	20	set	3	1,200		
8	Study Tour						100	1	set	2	200	100	1	set	2	200		
9	Workshop & Seminar						12	60	set	1	720	12	60	set	1	720		
Total			13,300					32,980					14,140					
															Grand Total		60,420	

	2011												2012												2013											
	JFY 2011												JFY 2012												JFY 2013											
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
3. Traditional Rain-fed Zone																																				
1. Procurement of Equipment																																				
2. Supplementary Survey (Baseline)																																				
(Mid-term evaluation)																																				
(Final evaluation)																																				
2. Confirmation of Coordination among MoAFI																																				
3. Monitoring and problem finding																																				
4. Selection of the Demonstration Sites																																				
5. Final Determination of the Demonstration Activities																																				
6. Procurement of External Specialist																																				
7. FFS to Raise Awareness of the Farmers																																				
8. Training Technologies of Improved Terrace Construction																																				
8.1 The Methods to Construct Improved Terraces																																				
8.2 The methods to Use Water Balance Leveling Tools																																				
8.3 Environmental Education (Eradication of Harmful Weeds etc.)																																				
9. Training on Technologies on Improved Crop Production																																				
9.1 Introduction of New Crops and Varieties																																				
9.2 Crop Management (Land Preparation, Sowing, Weeding, Harvesting etc.)																																				
10. Conducting Model Extension Activities (OJT)																																				
10.1 Model Extension Activities on Improved Terrace Construction																																				
10.2 Model Extension Activities on Crop Management (Land Preparation, Planing, IPM, etc.)																																				
10.3 Model Extension Activities on Environmental Education (Eradication of Harmful Weeds etc.)																																				
11. Study Tour																																				
12. Implementation and Monitoring of Demonstration Activities																																				
13. Evaluation																																				
14. Workshop & Seminar																																				

4. Introduction of Mechanized Agriculture with Small-scale Farmers

「小農のための機械化農業の導入」

4. Mechanized Rain-fed Zone			JFY 2011					JFY2012					JFY 2013				
Item	Sub-item	Unit	Q'ty	Unit	Days/	Total	Unit	Q'ty	Unit	Days/	Total	Unit	Q'ty	Unit	Days/	Total	
			Cost	time	(SDG)	Cost	time	(SDG)	Cost	time	(SDG)	Cost	time	(SDG)			
1	Supplementary Survey	RA	60	2 person	10	1200	-	-	-	-	-	-	-	-	-	-	
	(Mid-Term Eva)	RA	-	-	-	-	60	2 person	10	1200	-	-	-	-	-	-	
	(Final Eva)	RA	-	-	-	-	-	-	-	-	-	60	2 person	10	1200	-	
2	Monitoring Form	Stationaries	100	2 set	11	200	100	2 set	11	200	100	2 set	11	200			
		Stationaries	100	2 person	2	400	100	2 person	2	400	100	2 person	2	400			
3	Overall Tools for the Pilot Activities																
	Water Hose Balance		100	10 set	1	1,000											
	Measuring Tape (100m)		30	10 set	1	300											
4	Training	Trainer (Int)	100	15 person	1	1500	100	15 person	1	1500							
		Trainer (Ext)	200	15 person	1	3000	200	15 person	1	3000							
		Training	12	60 person	2	1440	12	60 person	2	1440							
5	Model Extension Activities	Training	12	400 person			12	700 person	2	16800	12	700 person	2	16800			
		Shading	50	3 set	2	300	50	3 set	2	300	50	3 set	2	300			
6	Other Extension Activities (Mech)	Radio	50	10 set	2	1000	50	2 set	3	300	50	2 set	3	300			
		Video Making	300	5 set	2	3000	300	5 set	3	4500	300	5 set	3	4500			
		Video (DVD)	5	100 set	4	2000	5	5 set	1000	25000	5	5 set	1000	25000			
		Leaflets	5	100 set	4	2000	20	5 set	100	10000	20	10 set	100	20000			
		Posters	20	20 set	4	1600											
7	Study Tour	Trans.				100	1 set	2	200	100	1 set	2	200				
8	Workshop & Seminar	Training	12	400 set	11	4800	12	400 set	11	4800	12	400 set	11	4800			
Total			23,740					69,640					73,700				
															Grand Total		167,080

	2011												2012												2013											
	JFY 2011												JFY 2012												JFY 2013											
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
4. Mechanized Rain-fed Zone																																				
1. Supplementary Survey (Baseline)																																				
(Mid-term Evaluation)																																				
(Final Evaluation)																																				
2. Confirmation of Coordination among MoAFI																																				
3. Confirmation of the Demonstration Sites																																				
4. Final determination of the demonstration activities																																				
5. Procurement of Equipment/External Specialists																																				
6. Training on Improved Crop Production																																				
6.1 Introduction of Machineries																																				
6.2 Introduction of New Varieties																																				
6.3 Crop management)																																				
7. Training on Improved Terrace Construction																																				
7.1 Introduction of Machineries																																				
7.2 The Methods to Construct Improved Terraces																																				
8. Conducting Model Extension Activities (OJT)																																				
8.1 Model Extension Activities on Machineries																																				
8.1 Model Extension Activities on Introducing New Varieties																																				
8.2 Model Extension Activities on Crop Management																																				
8.3 Model Extension Activities on Construction of Improved Terraces																																				
9. Study Tour																																				
10. Implementation and Monitoring of Demonstration Activities																																				
11. Evaluation																																				
12. Workshop/ Seminar																																				

5. Livelihood Development with Community Initiatives

「コミュニティ・イニシアチブ生計向上」

5. Livelihood Dev. with Community Initiatives		JFY 2011					JFY2012					JFY 2013					
Item	Sub-item	Unit Cost	Q'ty	Unit	time/ite	Total (SDG)	Unit Cost	Q'ty	Unit	Days/ time	Total (SDG)	Unit Cost	Q'ty	Unit	Days/ time	Total (SDG)	
Overall																	
1	Updating Materials	Stationaries	100	1	set	1	100	100	1	set	2	200	100	1	set	2	200
		Media	300	5	set	2	3,000	300	5	set	1	1,500	300	5	set	1	1,500
		Poster	20	20	sheets	3	1,200	20	20	sheets	3	1,200	20	10	sheets	1	200
		Leaflet	5	50	sheets	3	750	5	50	sheets	3	750	5	16	sheets	1	80
		Training	15	30	person	2	900	15	30	person	2	900	15	30	person	2	900
2	Study Tour	Rental Car	200	1	car	3	600										
	Planning/ Feasibility	Stationaries	200	1	set	1	200										
		Training	15	30	person	1	450										
	ToT (KVTC)	Participants	40	10	person	14	5,600										
		Stationaries	200	1	set	1	200										
	Info.Collect. on Animal Skin	Expert Fee	200	1	person	5	1,000										
		Experiment	500	1	set	1	500										
	ToT (Women Reps.)							100	12	person	14	16,800					
	Final Workshop												15	50	person	6	4,500
3	Core Skill for Rural Dev.	Training	15	30	person	4	1,800	15	30	person	2	900					
Mechanized Rainfed Zone (2 sites)																	
1	Guidance to villages	Training	15	30	person	2	900										
2	Organization of groups	Group formation	15	30	person	2	900										
3	Participatory Planning	ERI Contract	41,000	1	person	1	41,000										
		RA	60	5	person	6	1,800										
		Training	15	30	person	10	4,500										
		Stationaries	100	1	set	2	200										
5	Target Beneficiary Survey	RA	60	3	person	10	1,800										
		Stationaries	100	1	set	2	200										
7	Awareness on Health	MoH officers	200	2	person	2	800										
		Meeting	15	30	person	2	900										
		Stationaries	100	1	set	2	200										
8	Solar Ene Mob. Charger	ERI officers	200	2	person	3	1,200										
		Training	15	30	person	2	900										
		Stationaries	100	1	set	2	200										
9	Intro. Gas operation & ICS	FNC officers	200	2	person	2	800										
		Training	15	16	person	2	480										
		ICS	30	10	units	2	600										
10	Home Garden	Horti. Dept	200	2	person	4	1,600										
		Training	15	30	person	10	4,500										
		Seed	200	1	set	2	400										
		Implements(e.g. weeder)	200	1	set	2	400										
		Fence (Labor tec)	400	1	set	2	800										
		Renting Tractors	160	1	set	2	320										
		Fertilizers etc.	500	1	set	2	1,000										
10	Cloth Making	Others (e.g Threads)	500	1	set	2	1,000										
		Table& Chair	60	6	set	2	720										
		Training	15	30	person	5	2,250										
10	Handicraft	Materials(soksok,etc)	2,400	1	set	2	4,800										
		Training	15	30	person	5	2,250										
11	Food Processing	Material (spoon,etc)	2,000	1	set	2	4,000										
		Ingredients	1,000	1	set	2	2,000										
		Training	15	30	person	2	900										
11	M & E	Training						15	30	person	6	2,700	15	30	person	4	1,800
Horticulture Zone (1 site)																	
1	Detailed Planning on Training	Initial Meeting	15	30	person	1	450										
2	Organization of Beneficiary Group	Group formation	15	30	person	1	450										
3	Baseline	RA	60	3	person	5	900										
		Stationaries	100	1	set	1	100										
4	Participatory Planning	RA	60	2	person	5	600										
		Stationaries	100	1	set	1	100										
5	Cloth making	Material (e.g Threads)	5,000	1	set	1	5,000										
		Table and Chairs	60	6	set	1	360										
		Training	15	30	person	5	2,250										
		Set of Cloth(F)	80	37	set	1	2,960										
		Set of Cloth(M)	270	20	set	1	5,400										

5. Livelihood Dev. with Community Initiatives			JFY 2011					JFY2012					JFY 2013				
Item	Sub-item	Unit	Q'ty	Unit	time/s ite	Total (SDG)	Unit	Q'ty	Unit	Days/ time	Total (SDG)	Unit	Q'ty	Unit	Days/ time	Total (SDG)	
																	Cost
6	Handicraft/ Animal Skin Processing	Material (Karaz etc)	20	100	set	1	2,000										
		Training	15	30	person	5	2,250										
	Food Processing	Raw Material	2,000	1	set	1	2,000										
		Ani Skin Expert	2,500	1	person	1	2,500										
		Materials (cup, etc)	3,000	1	set	1	3,000										
		Ingredients	2,000	1	set	1	2,000										
	Business Training	Training	15	30	person	5	2,250										
		Envrionement Lecture	15	30	person	2	900										
	M & E	Training	15	50	person	1	750										
		Seedling/Seeds	500	1	set	1	500										
							15	30	person	3	1,350	15	30	person	2	900	
Flood Irrigated Zone (2 sites)																	
1	Guidance and orientation to villages	Training	15	30	person	2	900										
2	Organization of beneficiary groups	Training	15	30	person	2	900										
3	Participatory Planning	RA	60	5	person	6	1,800										
		Stationaries	200	1	set	2	400										
5	Target Beneficiary Baseline Survey	RA	60	3	person	10	1,800										
		Stationaries	100	1	set	2	200										
7	Awareness raizing on Health	Meeting	15	30	person	2	900										
		Stationaries	100	1	set	2	200										
8	Home Garden	Meeting (WUA)						10	20	person	2	400					
		Training						15	30	person	2	900					
		Seed						200	1	set	2	400					
		Implements(weeder, etc.)						200	1	set	2	400					
		Fence (Labor&Materials)						400	1	set	2	800					
		Renting Tractors						160	1	set	2	320					
		Fertilizers etc.						500	1	set	2	1,000					
		Others (e.g Threads)						500	1	set	2	1,000					
		Table& Chair						60	6	set	2	720					
		Training						15	30	person	2	900					
Cloth Making	Materials(soksok, etc.)						2,400	1	set	2	4,800						
	Training						10	30	person	5	1,500						
Food Processing	Training						15	30	person	2	900						
	Cooking Material (cup, spoon,etc)						2,000	1	set	2	4,000						
Business Training	Ingredients						1,000	1	set	2	2,000						
	Training						15	30	person	2	900						
M & E	Training						15	30	person	2	900						
	Training						15	30	person	1	450	15	30	person	2	900	
Traditional Rainfed Zone (1 site)																	
1	Guidance to villages	Training					15	30	person	1	450						
2	Organizing benefi. group	Selection & Group formation					15	30	person	1	450						
3	Participatory Planning	RA					60	5	person	6	1,800						
		Stationaries					200	1	set	1	200						
5	Target Beneficiary Survey	RA					60	3	person	5	900						
		Stationaries					100	1	set	1	100						
7	Awareness on women	Meeting					10	50	person	1	500						
		Stationaries					100	1	set	1	100						
8	Awareness on Health	Meeting					15	30	person	2	900						
		Stationaries					100	1	set	2	200						
9	Home Garden	Training					15	30	person	5	2,250						
		Seed						200	1	set	1	200					
		Implements(weeder, etc.)						200	1	set	1	200					
		Fence (Labor&Mate)						400	1	set	1	400					
		Renting Tractors						160	1	set	1	160					
		Fertilizers etc.						500	1	set	1	500					
		Others (e.g Threads)						500	1	set	1	500					
		Table& Chair						60	6	set	1	360					
		Training						15	30	person	5	2,250					
		Handicraft	Materials						2,500	1	set	1	2,500				
Training							15	30	person	5	2,250						
Food Processing	Material (cup,etc)						2,000	1	set	1	2,000						
	Ingredients						1,000	1	set	1	1,000						
M & E	Training						15	30	person	5	2,250						
	Training											15	30	person	3	1,350	
Total			144,440					71,010					12,330				
														Grand Total		227,780	

電子データ付録 農－3
カッサラ州農業・生計向上
現地写真集

	
<p>写真-1 カッサラの市場</p>	<p>写真-2 ポンプ灌漑施設（園芸地帯）</p>
	
<p>写真-3 圃場管理（園芸地帯）</p>	<p>写真-4 タマネギの収穫（園芸地帯）</p>
	
<p>写真-5 女性グループへのインタビュー</p>	<p>写真-6 女性グループによる手工芸品</p>
	
<p>写真-7 灌漑水路（洪水灌漑地帯）</p>	<p>写真-8 ソルガム（洪水灌漑地帯）</p>



写真-9 コットン集荷



写真-10 コットン加工工場



写真-11 普及センター（伝統的天水地帯）



写真-12 播種の実演（伝統的天水地帯）



写真-13 ソルガム収穫後（機械化天水地帯）



写真-14 トラクターの実演（普及局）



写真-15 機械実習（普及局）



写真-16 育苗実習（園芸局）



KASSALA STATE
MINISTRY OF HEALTH
REPRODUCTIVEHEALTH DEPARTMENT

Site –observation Tour from Kassala to Sinnar



Prepared by :

Dr .Ali Adam Mohamed

Kassala/RH-Coordinator

Introduction

Kassala State is located in the eastern borders of Sudan close to Eritrea. The capital is Kassala town, which was previously the capital of the region of Eastern Sudan (composed of what is now Kassala, Gedarif and the Red Sea states). Its strategic location makes it an important trading centre. The population of Kassala state is estimated at 1789809, In Kassala state, more than half of the populations live in rural areas .largely depending on pastoral farming .The state is also characterized by the significant presence of internally displaced people (IDPs) due to economic hardships, droughts and conflict in the region and refugees from Eritrea.

The state has been experiencing underdevelopment and chronic poverty. People, especially in rural areas, are constantly suffering from food insecurity due to inadequate crop harvest. Of central concern are the nutritional levels. Supporting the most vulnerable by providing access to health care particularly for women and children may improve the situation. Currently the Global Acute Malnutrition rate is beyond the emergency threshold of 15%, standing at 18% in Kassala state. It is the highest rate in the whole of Northern Sudan and is second only to the extreme rates of Southern Sudan. The under-five mortality rate is 0.61 per 10,000 per day for Kassala (emergency threshold is 2/10,000/day. Moreover, it is compounded by high maternal mortality ratio(1414 per 100,000 live births).

The state Government and JICA has decided to cooperate through the Capacity Development Project For the Provision of services for Basic Human Needs (CD-BHN) in Kassala .The project period is proposed as 3years from May 2011-April 2014.The project Design Matrix(PDM) finalized with overall Goal of “ peoples access to quality government services to ensure basic human needs is improved in Kassala state”. In addition to that, the project purpose is“ quality of Kassala state Government s services provision for water supply ,Agriculture and ,Livelihood ,Maternal and Child Health and Vocational Training is improved”.

Reproductive Health department in Kassala state in collaboration with JICA experts in Maternal and child health have been discussing the priorities and suitable interventions to decrease this high maternal and neonatal mortality rates. Initially, the department with close follow up from the formal experts, conducts a short visit to the already implemented Mother Nile Project in Sinnar State .Aiming of learning and exchanging of experiences, field visits, meetings, demonstrations and others were carried out. But, the overall out come from this visit, is that Kassala state needs to strengthen its already existing systems which are basically of national origin and not to adopt MNP system.

Situational analysis :(Comparison between Kassala &Sinnar states)

	Kassala	Sinnar
POPULATION	1789809	1285058
LOCALITIES	11	7
WCBA	481165	308413
PREGNANCY	73339	43691
MMR	1414	320
NMR	31	-
Hospital providing CEmOC	3	7
Hospital providing BEmOC	10	19
Obstetricians	11	11
Pediatricians	8	5
AHV	61	27
HV	19	23
NMW	23	40
VMWs	508	651
% VMWs trained in in-service training	-% targeted	100%

Objectives of the Tour:

- 1-To exchange experiences in reproductive health.
- 2- To learn from, Mother Nile Project (MNP) successful interventions in Sinnar, and how they manage and allocate resources.
- 3-To transfer Sinnar model successes in supervision, in-service training and community mobilization to Kassala state.:

Sites to be visited:

- Reproductive health &MNP offices(in Singa).
 - Almo rafa health centre.
 - Alsabonabi village.
 - ToT-inservice training- steps (exhibition).
 - Sinnar MW school.
-

Interventions to be observed:

- MNP interventions.
- Facility based supervision model.
- Community mobilization experiences.
- TOT- in service training model.
- Midwifery school.

Key findings:**1- In supervision:**

Facility based supervision is applied .In which, Village midwives around the health centre distributed to the present supervisor (AHV or HV).Here, they should come regularly to the health centre (eg :twice per week). Consumables distributed to them regularly, with reporting of ANC, Delivery, and PNC cases to the supervisor. But there is no guarantee to continue such system, because VMWs are not recruited in the health system, no salaries neither incentive to them.

2-In –service training:

100% the state VMWs received in –service training.

2- Community awareness activities:

- Mother meeting.
- Health Campaigns
- Community health promoters
- Delivery plan (box) reservoir
- IEC materials

4-Others:

40 candidates in Sinnar MW school with the new two years-curriculum. The school rehabilitated and the training supported by the project .

Findings : (Comparison between Kassala&Sinnar states)

Comparing item	Sinnar model	Kassala
Separate offices constructed by the project	Yes	No
Supervisory system	Available and active in all localities.	Available in all localities but active only in MDTF five localities.
Facility based supervision	active	Not active
Car for supervision	available	Not available
In service training	100% coverage	30% coverage
Mother meeting.	regular	Not regular
Community health promoters	available	Not available
Delivery plan (box)	Piloted	not
IEC materials	present	Needs more
JICA Project components	Mainly in-service training in all localities	<ol style="list-style-type: none"> 1- In-service training in tow localities for VMWs and Medical engineers. 2- Procurement of equipment for 5 hospitals 3- Support of supervision 4- Provision of low cost transport 5- Coordinate with other health partners in EMONC conduction.

Recommendations to improve the situation:

- 1- Provision of supervision car at least two to cover all localities.
- 2- Increase the number of AHVs by training at least one batch basic training to better improve ANC, delivery care and post natal care.
- 3- Provision of incentive for supervisors whether at facility or locality level.
- 4- Close coordination with other health partners particularly in in- service training and supervision.
- 5- Recruitment of VMWs.
- 6- State government should be committed to provide the local component.
- 7- After each in-service training VMWs should be provided by necessary needs.
- 8- After each supervision visit VMWs should be provided by some of the necessary consumables in order to reduce the cost per delivery.
- 9- Provision of low cost transport.

ANNEXES:

- Visitors' list

-Photos



Kassala- RH office members in Sinnar



Meeting sample, conducted with

MNP targeted communities



In-service training demonstratio