

CHAPTER 3

General Conditions of the Oases Area

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3.1 Natural Conditions

3.1.1 Meteorology

Meteorologically there are three seasons in the Study area: Rainy season with high temperature (July - October), Dry season with low temperature (November - March) and Dry season with high temperature (April - June). Annual mean rainfall is 75.0 mm at Atar station in Adrar region and 118.1 mm at Tidjikja station in Tagant region for the last 40 years. About 80 - 84% of the annual rainfall concentrates during the rainy season. Distribution of annual rainfall is irregular with random occurrence of rainy and drought years; the range of fluctuation is quite large. Single drought and rainy years have appeared roughly every other year since 1990.

Mean annual temperature is 28.4 °C, and the highest monthly temperature of 34.9 °C is recorded in July in Atar and 34.8 °C is recorded in June in Tidjikja, respectively. The difference between maximum and minimum monthly temperature is 24.4 °C in Atar and 22.3 °C in Tidjikja. Monthly mean wind velocity is more than 3 m/sec at both stations. The dominant wind direction is from north to west in Atar and from north to east in Tidjikja

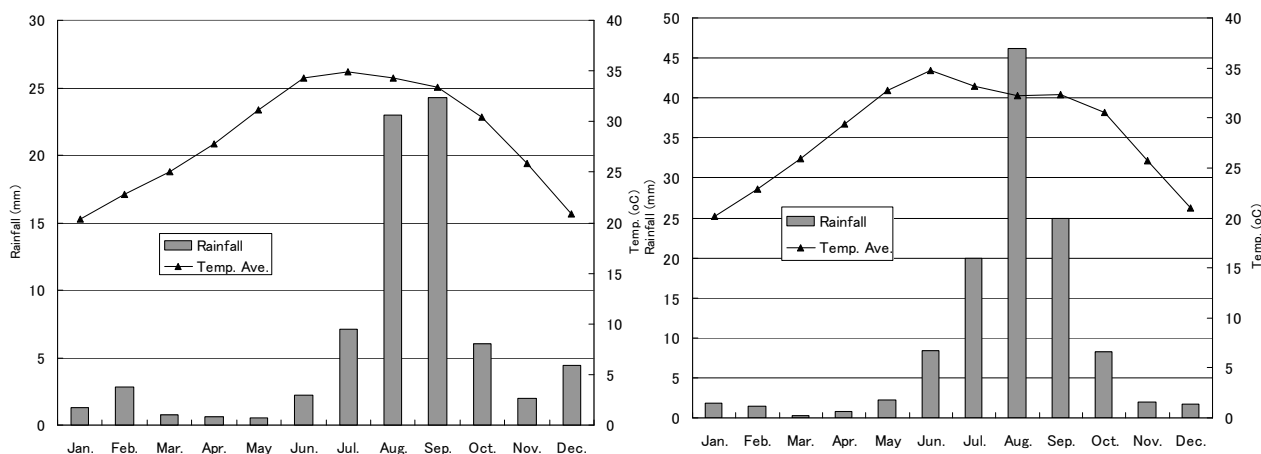


Figure 3.1.1 Monthly Rainfall and Monthly Mean Temperature (Atar and Tidjikja)

3.1.2 Geography

The topography of the Study area is divided into: plateau/waved hills, alluvial fan, flood plain, sand dunes and wadis. The most important geographical unit from the hydrological point of view is wadis. The principal wadis extend along lineaments,

which have close relation with the distribution of oases.

3.1.3 Vegetation

In the Study area, there is little woody plant, and the dominant vegetation is gramineous grass, which is called *Stipagrostis pungens*.

3.1.4 Hydrogeology

Most popular groundwater is located along wadis. Rare and intensive rainfalls recharge the shallow aquifer through percolation. This type of groundwater is under slight confinement. Groundwater under sand dune is recharged through percolation into sand dune without evaporation along ancient river courses. Fissure water consists of two types of groundwater: one is stored within fractures, joints and schistositities, and the other is stored within permeable zones along regional faults and shear zones. This groundwater plays an important role in the water supply for the urban area.

3.2 Socio-Economic Conditions

3.2.1 Administrative Division

The administrative division of the study area consists of: 2 regions, 7 departments (Moughataa) and 21 cities (Commune); each city comprises of several oases. It exists of 57 oases for Adrar and 60 oases for Tagant, a total of 117 oases are recognized in the study area. Out of these 117 oases, associations (AGPO) have been formed at 23 oases in Adrar region and in 18 oases in Tagant region.

3.2.2 Population

Table 3.2.1 shows the population of the study area from national census executed in 1988 and 2000. The population in the study area is approximately 78,000 in 2000 accounting for 3% of the total national population. The population decreased at a rate of 4.2% per annum during the period from 1988 to 2000. Main causes of this population decrease are migration to urban area for job hunting and high infant mortality rate.

Table 3.2.1 Population in the Study Area (Unit : people)

	1988	2000	Average Increased Rate (% / year)
Aoujeft	16 217	12 396	-2,4
Atar	35 313	31 638	-1,0
Chinguetti	6 327	3 350	-5,6
Ouadane	3 186	1 997	-4,2
Adrar	61 043	49 381	-1,9
Moudjeria	27 995	9 298	-9,5
Tichitt	3 117	1 310	-7,6
Tidjikja	33 796	17 718	-5,7
Tagant	64 908	28 326	-7,3
Total	125 951	78 336	-4,2

Source: National Office of the statistic national census 2000

3.2.3 Regional Economy

According to the final report of «The Study on the Oasis Zone Development», the Gross Regional Domestic Product (Hereinafter referred as GRDP) in Adrar and Tagant regions represented only 1.4% and 0.5% each of the national Gross Domestic Product (Hereinafter referred as GDP), which means that the two regions do not make much contributions to the national economy. Per-capita GRDP value was UM 47,713 (about 190 US\$) for Adrar region and UM 29,453 (about 117 US\$) for Tagant region, which are below the national average by 71% and 44%, respectively. Major economic activities in the regions are livestock raising and cultivation of date palms. In recent years, economic activities are diversified thanks to introduction of vegetable cultivation and handicrafts at many oases, which triggered organization of associations and cooperatives. Per capita annual income in Adrar (UM 38,926 about 155 US\$) is much higher than that in Tagant (UM 21,615; about 86 US\$). The average annual income levels of the two regions are far below the poverty line (UM 53,841 about 215 US\$). It is also revealed that the income of women-headed household is lower in both regions than that of men-headed household. The people in Adrar earn more money from vegetable (22%) and dates (20%), while the people in Tagant earn more from non-agricultural activities (48%) and from allowances (10%), which are sometimes sent from their relatives.

Table 3.2.2 Household Income

Head	Source of income (%)					Average Income UM/Capita
	Cereals	Dates	Vegetable	Livestock	Others	
Adrar						
Woman	7	42	39	3	9	36,719
Man	3	38	20	25	13	38,738
Average	4	38	22	24	13	38,296

Head	Source of income (%)					Average Income UM/Capita
	Cereals	Dates	Vegetable	Livestock	Others	
Tagant						
Woman	5	50	18	17	10	18,453
Man	5	45	8	35	7	22,475
Average	5	46	10	32	7	21,615

Source: Phase I study

Production of dates in the priority oases in the study area in 2000 were 7,173 tons in Adrar and 5,670 tons in Tagant. These quantities correspond to 36% and 28% of the national production respectively. Production amounts of vegetables in 2000 were 13,862 tons in Adrar and 50 tons in Tagant, which consist of about 21% of national production. Number of grazing sheep and goats accounts for 3.7% and that of camels accounts for 8.5% of national amount. Animal husbandry accounts for 65% of GDP in agriculture sector. It accounts for 43% of GRDP in Adrar and 75% of GRDP in Tagant, which implies animal husbandry in Adrar is not more important than national level, while that in Tagant is much more important than national level.

3.3 Gender Issues

3.3.1 Gender Mainstreaming

The movement of the Gender mainstreaming in Mauritania is relatively new thing. By creating the “Gender Follow-up Group (GSG)”¹ in 2002 whose members constitute the gender focal point in Mauritania, the Secretariat of State for the Feminine Condition (the present Ministry in charge of the feminine condition, children and family: MCPFEF) started to promote the gender mainstreaming approach in the sartorial programs, as well as in the development programs.

Until now, GSG realized several tasks, such as setting the gender indicators², promoting gender point of view in the Poverty Reduction Strategy Paper (PRSP 2005-2008), and analyzing the results of the studies on the households and farmers (EMEA³). In 2006, GSG elaborated the “National Strategy regarding Gender Issue⁴” which was developed from the national strategy on feminine promotion so far. This strategy aims to assure the equitable participation of men and women in the present national policy and the development programs by analyzing the context of their participation to the production and reproduction processes from the gender aspect.

¹ Founded with the assistance of the UNFPA and composed by the representatives of the organizations concerned (gender focal point), ONG and the international organizations (as an observer).

² Synthèse Indicateurs Genre en Mauritanie 2004, Groupe National de Suivi Genre (SECF)

³ Enquête auprès des Ménages et des Exploitants Agricoles 2004

⁴ National Strategy for Gender Mainstreaming

As indicated above, in spite of certain tangible results obtained by the GSG since its establishment, gender mainstreaming in the government departments is not always advanced.

3.3.2 Gender issues in the Oasis Society

Gender aspects in the oases society can be described as following points, 1) demographic situation surrounding women, 2) domestic works, 3) food security, 4) economic activities and use of incomes, 5) accesses to resources and production factors, 6) information, training, education and literacy, 7) organization in oasis society, and 8) women's participation in the decision-making process.

(1) Demographic Situation Surrounding the Women

According to the studies on demography and health in Mauritania (EDMS 2000-2001⁵), among 29% of all households are directed by women and this figure reaches 32% in the rural area. High rate of the households directed by women compared to the neighboring countries is one of the characteristics of the society in Mauritania⁶.

This phenomenon of the high rate of the women-headed households can often be seen in two regions of the study area and is regarded as a major social problem in these regions. Causes can be as following: i) an increase of men migrant of the rural areas towards the cities for economic reasons worsened by the effects of drought, and ii) high divorce rates in the Mauritania.

According to the Permanent Investigation on the Living conditions of Households (EPCV⁷), percentage of the poor households directed by men is falling while that directed by women is rising. Income level of women-headed household is low in general, and the impoverishment of those households is accentuated. In the oases areas, percentage of households directed by women is higher than that in urban areas, thus the phenomenon of poverty in women-headed households is one of the important factors to be considered towards the development of the oasis society.

(2) Domestic Work

In the oasis society, almost all housework related to the reproductive activities such as cooking, childcare, collecting the firewood for cooking, supply water, laundry, beating of cereals/grinding of the grains are responsible for women. Present study revealed

⁵ Enquête Domestique et de Santé Mauritanie 2000-2001, Office National de la Statistique

⁶ The highest divorce rate in the periphery countries is 20% in Senegal (in 1994/1995).

⁷ Enquête Permanente sur les Conditions de Vie des Ménages (EPCV) 2001

that time reserved for this work prevents women from devoting to the productive activities.

(3) Food Security

In oases societies in Adrar and Tagant regions, it is in general difficult to ensure food security because of the repeated droughts and the rainfall change in these years. In these areas, populations are supplied of corn, rice or beans from outside, because of lack of traditionally cultivated millet and sorghum or following change in their eating habits.

Traditionally, vegetable farming is devoted to women, and cultivation of palm trees to men, meanwhile cereal production is shared between men and women who undertake each role. In addition, women are in charge of the transformation of dates after harvest or the care of the smaller live-stock near their house. However, with the increasing number of men living in the urban area, the burdens of the women to ensure the food security are becoming increasingly important.

(4) Economic Activities and the Use of the Incomes

According to the studies on demography and health in Mauritania (EDMS 2000-2001), only 36% of women gain some income from their own activities and the 64% do not gain anything. As these figures show it, it is relatively difficult for the women to benefit from a viable cash economy, who tend to stagnate in self-sufficient economy.

The following table shows the sources of the domestic expenditure obtained during our study. It shows that they are the women who ensure the important expenditure such as the purchase of food, the health or the education of the children. Then, we can suppose that a reduction in their income can influence the health or the education of the children. Furthermore, the female-headed households which are obligated to ensure the expenditures normally reserved for men have an extreme difficulty to ensure the necessity of the households.

Tableau 3.3.1 Sharing the sources of domestic expenditures

Expenditures in cash	Men	Women
Purchase of cereal	○	
Food		○
Expenditure for health	△	○
Clothes	○	○
Education of children		○
Cooking material		○
Agricultural material	○	

Source : JICA study team

(5) Access to the Resources and the Production Factors

1) Access to land use

The use and the management of the land were fixed by the traditional costume and the Islamic law. Although the modern law authorizes the land possession by women, it is extremely limited for them to have a land. At the time of our study, women insisted much on the difficulty of having a land or access to the land, that situation represents a big limit to their productive activities. Furthermore, by not having land possession, the motivation of the women for protection or the management of the land cannot be stimulated. Accessing the services and information related to the management of the land or the agricultural advisory service becomes more difficult.

2) Access to credit

The system of existing credit in the zone of this study is ensured by the Mutual of Investment and Oasis Credit (MICO) installed by the Oasis Project. If the women would profit from the loans of the MICO, they use it through their groups such as the female cooperative. The Oasis Project phase II made efforts to open the door with the women by removing the system of a male guarantor required with the female customers or by giving the possibility of allocating loans with the groups. Despite these efforts, the recipients of the loans remain male and our study showed us that women were eager to access to the micro credit.

(6) Information, Training, Education, and Literacy

1) Information

The access to information is one of the essential factors towards self-development, the improvement of the living conditions or the social participation. According to the studies on demography and health in Mauritania (EDMS 2000-2001), the volume of information reaching towards the women is little compared to the men, and this gap is more remarkable in the rural area.

2) Education

The study on demography and health in Mauritania (EDSM 2000-2001) shows that 33% of women never profited from public education or that of *Mahadra* (Koranic school) contrary to 24% of men. The rate of the people who never received any education rises to 41% among women and 31% of men in the rural areas. This says that the rate of the people without education is more important in the rural areas than in the urban areas.

3) Know-how and information

In the oasis society, the occasions to reach know-how or formations are extremely limited for women. However, when an opportunity arises, the women take part in the training on know-how, in particular on the techniques of growing and conservation of vegetables, organization management, and on health and hygiene through their group activities such as the female cooperatives. According to our study in the four oases, the number of formations or training courses carried out for the women was very few. It was limited to drying of vegetables, pastry making or dyeing realized by the Oasis Project phase II.

4) Literacy

The rate of literacy increased considerably in Mauritania and varied from 39% in 1988 to 53% in 2000. In the same way, that of the women increased by 30% in 1988 to 45% in 2000. The rates of literacy in Tagant and in Adrar are respectively 48% and 65%, and those of the women in these two regions are respectively 43% and 64%.⁸ Therefore, the problem of illiteracy among women is an important topic to be solved in these areas.

(7) The Organizations in Oasis Society

Many female cooperatives undertake activities of vegetables farming, clothes sewing, selling of handicrafts products, and small trade. In the regions of Adrar and Tagant, there are respectively approximately 230 and 150 female cooperatives⁹ which are officially recorded. Since it is difficult for women to undertake individual economic activities, they often undertake activities of groups through their socio-economic organizations. These groupings are often a gathering of the members of the village, fraction or great family, and we observe sometimes political reflections of elements as it is the case in certain parts of Tagant. The capacities of management of these female cooperatives are not very high; we observe many problems in the regularity of meetings, the minutes of meetings, the collecting of membership fees, and the update of accounts books.

3.3.3 Participation of Women in the Decision-Making Process

In the oasis society, the participation of women in the decision-making process remains insufficient. One of the problems is the marginalization of women at the stages of

⁸ Source : Office Nationale de la Statistique (2000) et de RGPH(2000).

⁹ Source : interview from the SECF staff

planning, execution and evaluation of the development projects. They are moved aside from the decision-making process.

The activities of participative community development are centered on the AGPOs which are assisted by the PDDO in the zone of this study. On the level of the AGPO, the populations take an initiative to establish their development plan, and then the PDDO brings its support as organizational reinforcement or financing. Putting the importance on the participation of the women, the PDDO modified the internal rule of AGPO related to the representation of women in the office of execution up to 30%. However in spite of this effort, the majority of the members of these AGPO are men, the activities or the plans established are rather in favor of men. Thus, it is necessary to search a mechanism which allows the participation of the women in the decision-making process by making them register their groups in AGPOs and by ensuring a support to them.

3.4 Agriculture

3.4.1 Present Situation of Agricultural Production

(1) Crop Production

Agriculture in Mauritania has been conducted under semi-arid and arid climatic conditions. The cultivated area and production has been also depending on rainfall (see table3.4.1) year by year. Major crops are millet, sorghum and beans under flooding inundated areas, rice cultivated along Senegal River, and dates palm production in oases.

Table3.4.1 Crop Production and Cultivated Area in Mauritania

	Crop	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06
Cultivated Area (1,000 ha)	Millet, sorghum	194.6	174.1	174.3	82.9	166.4	136.0	170.7
	Rice	21.8	18.0	13.0	19.4	21.0	18.2	18.5
	Corn, wheat, barley	6.8	15.1	7.2	7.0	25.1	0.3	28.7
	Beans, vegetables	46.6	37.7	39.5	25.5	28.5	30.0	26.0
	Dates
Production (1,000 ton)	Millet, sorghum	101.2	88.7	57.7	26.9	83.8	20.2	97.8
	Rice	86.5	76.2	58.8	85.3	78.9	85.5	72.0
	Corn, wheat, barley	5.1	13.7	8.3	3.6	18.5	9.1	23.0
	Beans, vegetables	70.0	68.1	53.0	52.5	55.0	47.5	52.6
	Dates	20.0	18.0	22.0	22.0	22.0	20.0	8.0

Source: Ministry of Rural Development and Environment (MDRE).

1Crop season is from October through September.

Agricultures in Adrar and Tagant regions consist of 1) cultivations of dates palm in oasis areas and 2) cultivations of vegetables and cereal crops such as millets and nieve conducted on the inundated areas after occasional flooding. According to the report of USAID (Mauritania Livelihood Profile 2005), both states of Adrar and Tagant are defined as the area of “Mixed pastoralists with wadi cultivation and oases”. In this zone, livestock are most important products and vegetables and cereal crops in wadis and dates palms in oasis help to shape the economy.

Table 3.4.2 shows the land use in Adrar and Tagant summarized in the inventory survey of previous JICA study. In Adrar, the irrigated farming of dates palms and vegetables are commonly conducted. On the other hand, the dates palm cultivations and crop cultivations using inundated area are conducted widely in Tagant.

Table 3.4.2 Land Use in Adrar and Tagant

Region	Department	No of Oasis	Farmland (ha)	Dates palm (tree)	Irrigated Area (ha)	Area of Flood Cultivation (ha)
Adrar	Aoujeft	25	3,126	327,480	269	1,594
	Atar	23	2,648	223,650	582	2,196
	Chinguetti	6	680	31,500	35	500
	Ouadane	3	416	29,400	64	1,140
	Total	57	6,870	612,030	950	5,430
Tagant	Moudjeria	28	1,727	159,505	16	4,395
	Tichitt	1	85	25,029	-	-
	Tidjikja	31	1,667	179,638	28	6,750
	Total	60	3,479	364,172	44	11,145

Source: Previous JICA study

The agricultural productions in Adrar and Tagant have been strongly affected by various environmental conditions. In particular, following accidental natural hazards cannot be escaped. In this case, the agricultures in the areas have serious damages such as decreasing the productions and/or discontinuities of cultivation in some cases.

- The shortage of water resources by the annual fluctuation of rainfalls
- Invasion of clouds of migratory locust (insect damage, there are strong damages in 2005)
- Invasion of heat winds as the Harmattan (growing damage of crops)

(2) Traditional Farming Practices in Oasis Areas

Traditional farming practices of vegetable cultivations are compiled in following table. In Adrar and Tagant, the cultivations of dates palm and livestock raisings have been conducted in the main and the vegetable cultivations have not had long experiences.

Acquisitions of vegetables cultivation techniques have been basically conducted by hearing from neighboring residents and personal experiences.

Table3.4.3 Traditional Farming Practices of Vegetable Cultivation in Oases

	Adrar	Tagant
Vegetable Crops	Mainly carrot cultivation. Carrot productions in surrounding areas of Atar are for sales. Other vegetables such as tomatoes, onions, green pepper, mints and alfalfas are cultivated in the areas under dates palms. Vegetables except carrots and tomatoes are mainly for self-consumption.	Various vegetables such as carrots, tomatoes, sugar beets, cabbages, onions and mints are cultivated in narrow areas. Most vegetable products are for self-consumption.
Cultivation Practices	All cultivations are conducted on basin irrigation. Plot size is almost 4-6m ² . Following shaping ridges, operations such as animal dung, plowing, seeding and irrigation was carried out. Cultivations of onions are started simultaneously from 3 times (October, November and December) and harvested also in each time. Tomatoes are transplanted in some cases but other vegetables are basically planted directly.	All cultivations are conducted on basin irrigation. Plot size are small (1 –2 m ²). Following shaping ridges, operations such as animal dung, plowing, seeding and irrigation was carried out. Cultivations start basically from autumn but depend on farmer's decisions. Tomatoes are transplanted in some cases but other vegetables are basically planted directly.
Fertilization	Basically application of dried animal dung. Chemical fertilizers are sometime applied for carrots for sales.	Application of dried animal dung only.
Irrigation	Pumping irrigation from shallow wells. Water leads to farms by hosepipes or earth canals.	Water is taken manually or using with water withdrawal by balance from shallow wells. Water is irrigated by using buckets; watering cans are not widely used.
Treatments of diseases and insects	Chemical treatments for sale carrots in some cases. No treatments for other vegetables.	No chemical treatments, and almost no treatments for diseases and insects.
Harvesting	Carrots for sale: harvesting simultaneously. For other vegetables, harvesting from maturing products.	For all vegetables, harvesting from maturing products.

Source: JICA Study Team

For the agriculture conducted in oases, the duties of agricultural operations by men and women are basically classified. The main cultivations such as dates palm and crops operated in inundated areas are mainly operated by men. Also the carrot cultivations for sale in Adrar are operated by men. On the other hand, vegetable cultivations for self-consumption are mainly conducted by individual women and women's groups both in Adrar and Tagant. But men supports for the heavy duties such as plowing and taking water from wells. Seeding and weeding are operated by men and women both, while processing and marketing are mainly conducted by women.

(3) Livestock Raising

Livestock raisings have been traditionally conducted as main industry both in Adrar and Tagant. Characteristics of livestock raising are showed Table 3.4.4.

Livestocks have been raised for the means of the oasis residents. Therefore, livestock have been sold when they require the cash money and they are also sold when various festivals in oasis are celebrated. The milks and processing products have been used for sale and for self-consumption.

Table3.4.4 Number of Livestock in Adrar and Tagant

Region			Camel	Cattle	Sheep	Goat
Adrar	Number	Head	33,051	254	24,977	81,520
	Average number for household	Head/household	2.8	0.0	2.1	6.9
	Number of household for raising	(%)	96.5	15.8	86.0	98.2
Tagant	Number	Head	7,990	16,858	88,296	68,493
	Average number for household	Head/household	1.2	2.6	13.8	10.7
	Number of household for raising	(%)	92.7	78.2	90.9	92.7

Source: previous JICA study

3.4.2 Water Use

(1) General conditions

The land use in the oasis is classified into wadi, a date field, residential area and other use depending on elevation. The local rain gathers in the wadi, but the surface water is not seen after the rain in a short period. Rainfall is pooled at one time by weir constructed, and subsurface water is cultivated hereby, and the water is used for the cereal cultivation.

A water level is comparatively kept high by the weir and cultivation of cereals is enabled by the water supply from a ground water. Since the cultivated acreage by this system can be secured widely, it is effective in cultivation of cereals.

The date and vegetable are cultivated along the wadi. The well for using groundwater is constructed and the date is grown near the



Surface water of wadi is stored by weir. Cereal is cultivated according to water level in the wadi.

well. Vegetables are grown under the date tree using the well constructed for a date. Residences area is located on the higher places, and small livestock is bred near the house.

(2) Drawing water

Since there is little precipitation (the annual average about from 50 to 100mm), use of groundwater is indispensable to cultivation of crops in the study areas. The drawing system of groundwater is shown in the following table. Most of drawing manner is bucket of by man power in Tagant region and engine pump in Adrar region. Moreover, although there are few numbers, pump system by solar energy is also used.

Table 3.4.5 Drawing method

Drawing method	Components
Man power	The diameter of a well is in 1 to 2m and depth is shallow. Groundwater is drawn by man power using a rubber bucket and watered for a date field. Although running cost is cheap, watering area is limited that only some 20 dates per one well can be grown.
Draw well (Traditional well)	Although it is pumping by man power fundamentally, there is an advantage which can reduce a labor as compared with man power pumping with the above-mentioned bucket. In order to carry out by man power, irrigation are the same as man power pumping.
Engine pump	Even when groundwater is deep, the stable pump discharge can be always secured. It can supply water for about 50 to 70 dates per well. However, since operation and maintenance cost, such as fuel for a pump and spare part, is needed, it is a problem whether management smooth in the long run can be carried out. Although the engine pump has been popular in Atar, it has not been popular yet in the State of Tagant.
Solar pump	It can supply water for 70 to 120 dates in pumping by solar energy. A few number of the power generation for electric lights by solar energy is installed in the oasis. Construction costs and exchange of a spare part are a problem of management, although acquisition of equipments is possible.

A hand pump or twiddle pump, which corresponds in the middle of man power pumping and engine pump, is not seen.

There are several stores selling a hand pump in Nouakchott. Since there are service engineer in the shop, repairing is also possible, therefore maintenance is not so difficult. However, in two province of study area, there is no shop which sells hand pump and services maintenance work for hand pump. Therefore, repairing will be impossible once a machine breaks down.

(3) Water loss in the canal

The water pumped up by engine pumps are distributed by canal to fields. Because of the earth canal of sandy soil, a canal has much seepage loss, and its conveyance efficiency

is low. (Seepage loss is 10 to 50 % of amount of pumped up water by phase 1 Study)

(4) Suitable Amount of irrigation water

Irrigation plan can be appropriately drawn up by grasping the amount of moisture which is held in soil and used effectively by crops, and the amount of moisture consumed by crops per day.

Maximum amount of each irrigation

The amount of each irrigation, which can be held in soil, is the maximum maximum. Even if it supplies much water, it is not held at effective soil layer but becomes invalid irrigation water.

The amount of water actually used by crops (TRAM) is in the range between depletion of moisture content for optimum growth (about pF3.0) and field capacity (moisture holding capacity after 24-hour). Filed capacity is the amount of moisture held in a field, for convenience, can be express with moisture contents of 24 hours after supplied sufficient water.

Average of TRAM in study area is 19mm for vegetable and 48mm for date. On the other hand, the quantity on which the farmer is actually supplying water was about 60mm and about 100mm, respectively. Different amount suck as 41mm (60 to 19 mm) and a 52mm (100 to 48 mm) are presumed not to be used by crops, and 40% or more of irrigation water is for going lower part as seepage loss.

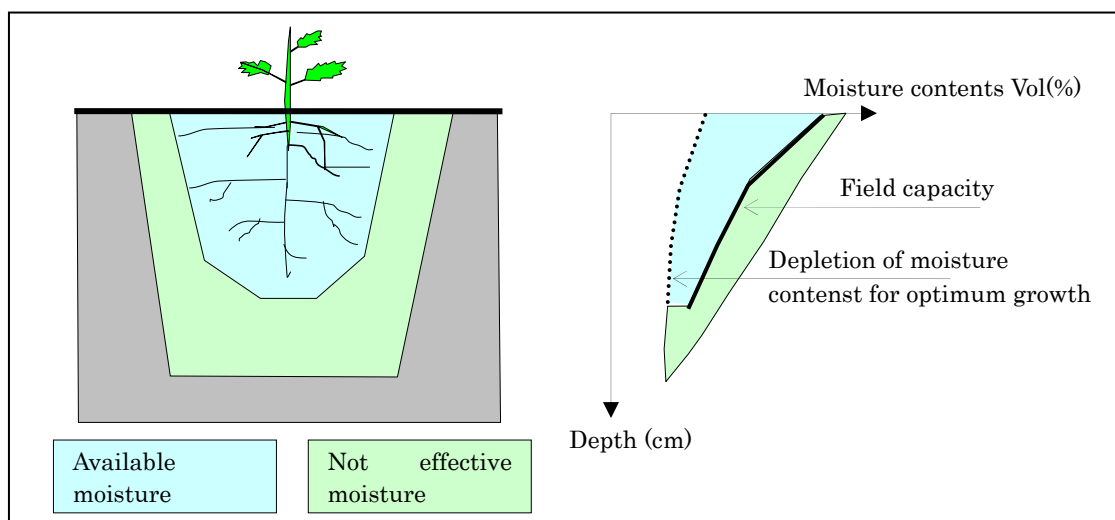


Fig3.4.1 Amount of each irrigation

Consumptive use

Based on the data of an Atar meteorological station and a Tidjikja meteorological station,

the evapo-transpiration computed by the Penman-Monteus method is shown in the following table.

Table 3.4.6 Evapo-transpiration Unit : mm/day

Region	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Adrar	6.6	7.6	9.1	10.1	10.9	11.8	10.9	10.1	9.4	8.4	6.9	6.2
Tagant	6.3	7.5	8.4	9.2	9.9	10.1	9.1	8.1	8.1	7.9	6.9	6.2

By multiplying the evapo-transpiration of an upper table by a crop coefficient, consumptive use by each crop can be obtained.

(5) Drip irrigation

Drip irrigation system is a very effective system to water saving. By phase 1 study, 23 (twenty three) number of drip irrigation systems were installed. Among this, the system installed in oasis is 21 sites shown in Table 3.4.7. It investigated by catching about a use situation, a problem, etc. of this system through field survey.

Most of the drip irrigation systems introduced in the vegetable cultivation area as shown in Table 3.4.7 are not used now. Operatively and functionality of the system are satisfied for the area where water are pumped up by man power. However, in the area which is using the engine pump, a problem is in operatively due to a small tank. It becomes full of water in the tank immediately after operation of engine pump. Therefore operation of an engine becomes complicated, and this system is hardly used.

As a problem of a system, the choke of a pipe, breakage of pipe and breakage of the connection between a drum and a pipe were raised in many areas. Especially a pipe is damaged, it is necessary to replace the breakage part. However the purchase of those is difficult except Nouakchott and it is almost the case which is neglected without being repaired.

Moreover, where pumping up water for cultivation by man power, the operatively and functionality of this system are good. However, oasis residents cannot pay initial investment easily. Since all materials cannot be obtained easily, spread of this system by oasis residents is not seen.

Operation of drum with hose pipe in the area where using engine pump becomes complicated as mentioned above. Therefore the system is not used at all. However, where pumping up and supplying water by man power, water saving and reduction of labors are achieved and this is an effective system. Moreover, generally this system uses the drum and hose pipe which can be obtained easily in rural area.

3.4.3 Distribution Network of Agriculture Products

The distributions and marketing of agricultural products are basically leaved to free activities on private companies. However, the prices of main foods such as rice, sugar and wheat are controlled by national import and exporting company named SONIMEX for food securities of the country. SONIMEX control the prices by releasing the foods saved in the government to markets when the prices of foods increase. The price stabilizations are also introduced for onion, potato, milk and dates during Ramadan periods.

The transportations of goods and human migrations in the study area have operated by taxis and tracks in the state capital areas of Atar and Tidjikja, and oases along mainline. However, the transportation of goods and human migrations in other remote oases are operated by private 4-wheel drive pickups and their frequencies are not regularly operated but depend on the requests of the residents. Therefore, the shipping of agricultural products from these areas is conducted using nonscheduled transportations or hiring private vehicles. The shipping is operated by individual producers. But the cooperative shipping by groups and/or associations do not exist and brokers and middlemen do also not exist. Frequencies of transportations are differing from Guetona season (harvesting period) and other season. In Adrar, the transportation frequency between Atar and oasis during Guetona season is about 10times/day but 1-2 times/day in other season.

3.4.4 Utilization of the Resources in the Oases Area

Survey for utilization practices of local resources was conducted in the oases in N'Titam area as a case study to identify the actual conditions of local resource utilization and the local resources necessary for crop productions.

(1) Current Condition of the Livestock Resources Utilization

Livestock raisings are major activities in oases. The present conditions of livestock raising in N'Titam area was surveyed by way of interviews from the residents. The result was summarized as follows.

Table3.4.8 Livestock Raising in N'Titam

Cattle	Raising methods, zootechnical ecology	Animals are released at the areas around oasis basically. Animals are taken back to oasis every day. Life duration (female): 28-30years, milk production: from 5 years after birth, males are sold out at 3 years old. Gestation time: 12 times/life, gestation in every 2 years Milk production: 3-4 liters at grass abundant season, 1-1.5 liters in other season
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	Feeding method	Different 2 types of feeding periods in grass abundant season (for 3 months) and less grass seasons												
		<table border="1"> <thead> <tr> <th></th> <th>Less grass season / Grazing season at inundated area</th> <th>Grass abundant season</th> </tr> </thead> <tbody> <tr> <td>Natural vegetation</td> <td colspan="2">Through the year</td> </tr> <tr> <td>Feeding materials (Concentrated feeds)</td> <td>3kg/head/day</td> <td>1kg/head/day</td> </tr> <tr> <td>Feeding materials (wheat)</td> <td>3kg/head/day</td> <td>1kg/head/day</td> </tr> </tbody> </table>		Less grass season / Grazing season at inundated area	Grass abundant season	Natural vegetation	Through the year		Feeding materials (Concentrated feeds)	3kg/head/day	1kg/head/day	Feeding materials (wheat)	3kg/head/day	1kg/head/day
			Less grass season / Grazing season at inundated area	Grass abundant season										
		Natural vegetation	Through the year											
		Feeding materials (Concentrated feeds)	3kg/head/day	1kg/head/day										
Feeding materials (wheat)	3kg/head/day	1kg/head/day												
Prices of feedstuff: wheat 125MU/kg, concentrated feeds 1700-2000MU/50kg														
Camel	Raising methods, zootechnical ecology	Grazing zone: max 6km from oasis, animals are taken back to oasis every day. Life duration (female): 30-31years, milk production: from 5 years after birth, males are sold out at 3-4 years old. Gestation time: 10 times/life, gestation in every 2 years Milk production: 3-4 liters at grass abundant season, 1-1.5 liters in other season												
	Feeding method	Same as cattle												
Sheep / goat	Raising methods, zootechnical ecology	Grazing zone: max 6km, animals are taken back to oasis every day. Life duration (female): 11-13years, males are sold out at 1-2 years old. Gestation time: 12 times/life, gestation in every year Milk production: 1.5 liters at grass abundant season, 0.5 liters in other season												
	Feeding method	Different in dry season and grass abundant season (3 month) Grass abundant season: feeding only natural grass, dry season: natural grass and wheat (2 tea cup/head/day)												

Source: JICA Study Team

(2) Resource Utilization in Oasis Agriculture

Main crop in oasis is date palm. Dates as products of date palm are utilized as foods. And surplus are sold out to outside of oasis or sold out in oasis at the season of Guetona. The leaves of date palm are mainly utilized as fodder for livestock. Timbers are sold as construction materials. For nutrition supply for date palm, livestock manures are applied at the rate of 25kg/tree/year.

(3) Resource Utilization in Flooding Inundated Area

Using inundated areas after rain, cereals such as sorghum and wheat, and beans (nieve) area cultivated. Cultivations are completely conducted depending on the natural conditions without any nutrient applications. Products are mainly sold and also consumed by them. The residues of crops are used as fodder for livestock.

(4) Resource Utilization in the areas around Oasis

The natural vegetations including grasses and trees occurring in oases, around wadi and surrounding areas of oases are used as fodders for livestock by grazing. The afforested and natural trees are used for timbers and charcoals with the permission.

The conditions of land use and livestock raising in the oasis of N'Titam are summarized as follows.

Table 3.4.9 Land Use and Livestock Raising in N'Titam

Cultivated area in inundated area		Crop Production				Livestock Raising			
2000	1995	Cultivated Area (ha)	Dates palm cultivation (2000)			Number of livestock			
(ha)	(ha)		Trees (Tree)	Production (Ton)	Yield (kg/tree)	Cattle (Head)	Camel (Head)	Sheep (Head)	Goat (Head)
540	340	215	28,700	527	18.4	140	20	640	160

Source: JICA Study Team

From understanding the present conditions of livestock raising, crop production and land use in the area, flow of the utilization of local resources in N'Titam oasis can be shown as following.

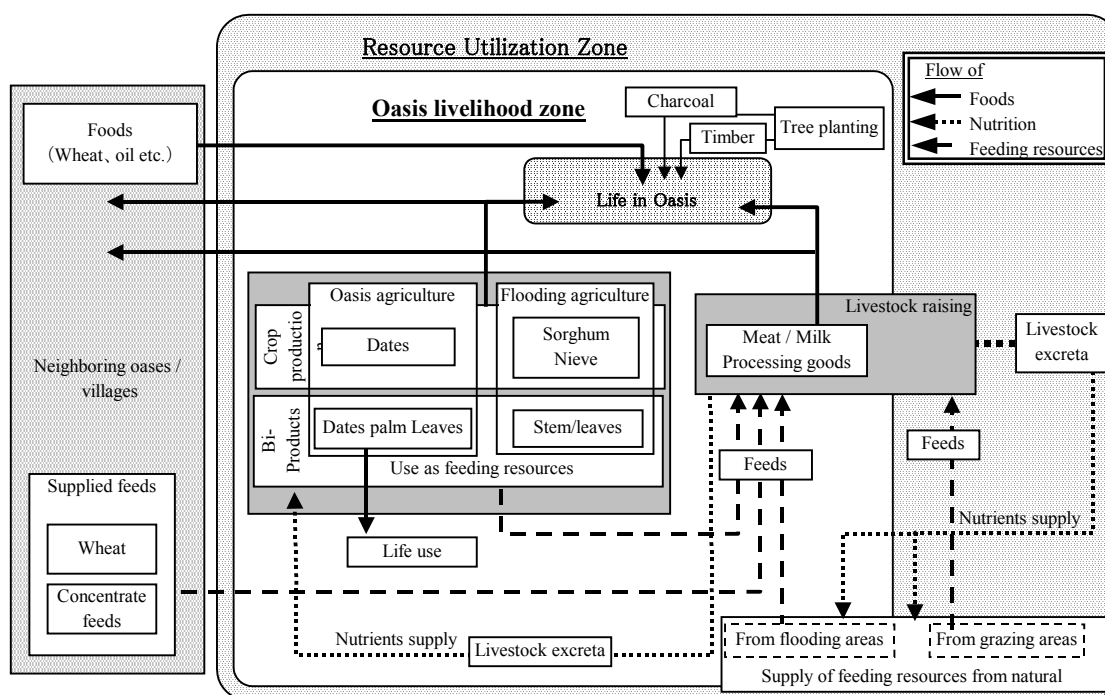


Figure3.4.2 Flow of Local Resource Utilization in N'Titam

Life of oasis residents consist of the utilizations of Oasis Livelihood Zone and Resource Utilization Zone. In Oasis Livelihood Zone, oasis residences have practiced daily activities such as crop productions and livestock raising and Resource Utilization Zone has operated as the areas for supplying fodder resources for livestock raising. For the livestock raising, the utilizations of bi-products and residues produced from cultivation

activities, and the natural resources from surrounding places as grazing areas are essential. Moreover, considering the cultivations of dates palm and flooding agriculture is main source for cash income for foods and feeds, it is obviously understood that various activities in oasis have been established by strong linkages of livestock raising and crop productions organically.

In oases located in remote areas, it is difficult to introduce the resources from outside in the viewpoint of economical conditions of residents and transporting conditions. Therefore, the oasis activities based on the effective utilization of local resources mentioned above are very important role to sustain local life and it is also important for the oasis developments and supports in considerations of recycled resource utilization.

3.4.5 Agricultural Extension and Farmers Supporting Activities

The extensions of cultivation techniques and supporting activities have been conducted by extension workers in the Agricultural Division of the Ministry of Agriculture and Livestock. The numbers of extension workers and assistant extension workers assigned in Adrar and Tagant are shown in following table.

Table 3.4.10 Activities and Number of Agricultural Extension Workers in Adrar and Tagant

State	Number	Office/ Number	Activities in agriculture
Adrar	2	Atar (Agriculture, 2)	Field experiments conducted by Agriculture Department, technical assistants for cultivation of date palms and vegetables based on the requests of oasis people. Activities have not conducted properly due to shortage of staff.
Tagant	4	Tidjikja (Agriculture, 2) N'Beika (Agriculture, 1) Moujeria (Agriculture, 1)	Extension workers are allocated at northern N'Beika, southern N'Beika, Nimlane and Tidjikja. They conduct technical assistants of cultivations at respective areas. Extension worker assigned at Nimlane is in Tidjikja, so there is no substantial activities.

Source: JICA Study Team

For the crop cultivations, the Agricultural Division and the National Center for Agricultural Research and Agricultural Development in the Ministry of Agriculture and Livestock published the cultivation manuals for the extension workers but the manuals for farmers are not prepared yet. The manuals also contain some explanations, which are difficult to apply in the conditions of oases. For example, the applications of chemicals and fertilizers are recommended but these products are difficult to find in oasis areas. Additionally, in many cases, the extension workers do not keep these manuals during their extension activities. Moreover, daily supports for whole area of

oases are difficult due to the lack of enough number of extension workers and poor equipments for transportation.

Trainings of extension workers are conducted in the training school of extension worker attached to the National Center for Agricultural Research and Agricultural Development (CNRADA) located at Kaedi City. From 1960 to 1989, the government dispatched technical trainers, trained students and then they are nominated as extension workers. The government, however, stopped to nominate trainees as extension worker after completion of training course, so the training of extension worker was suspended. At present, CNRADA conducts short training when the requests of NGOs and companies occur.

3.5 Health and Sanitation

3.5.1 Concepts

The target area is located in a Mauritania northern part, it is put on severe natural environment, and the access to the health and medical service is more difficult than others. The main diseases of Adrar region are “Respiratory diseases (25.2%)”, “Diarrhea (23.4%)”, and “Conjunctivitis (10.5%)”, and “Respiratory diseases (21.3%)”, “Malaria (15.2%)”, “Diarrhea (8.2%)”, and “Helminthes (6.9%)” are in Tagant region. There is a lot of conjunctivitis caused by the dust storm in comparatively dry area in Adrar region, and there are a lot of appearances of malaria in Tagant region there have more precipitation. The high frequency disease by the hearing investigation at the Oasis level is “Respiratory diseases”. Statistics shows that the infant mortality rate in Mauritania is 74/1,000 Birth (MSAS, 2001*) and the pregnancy mortality rate are 747/100,000 delivery (MSAS, 1994-2001*). Then the infant mortality rate of two regions is high level in this country such like 82/1,000birth (Adrar state) and 131/1,000birth (Tagant state).

3.5.2 Health Services

(1) Health matter of the population

Residents who live in oases located in Sahara desert is leading life while receiving the influence of various natural environment. For instance, in the desert area of Adrar state, the Rock Mountain lies in the south north, it calls “Back of the Mauritania”, the heat of Rock Mountain warmed in daytime keeps heating the temperature of the oasis after the sunset, and the resident can escape the intense heat only at predawn. Moreover, it is impossible to avoid the coexistence with the dust by the wind in the oasis enclosed by

the dune. The morbidity rate of the malaria after the rainy season is extremely high in Tagant state. Moreover, in the oasis where are surround by the vast water pool, it becomes a situation isolated from social service for several months.

According to the registry of the AA/ASC (Auxiliary midwife/Community health worker), the principal reason of visiting AA/ASC are “Headaches”, “Fever”, “Conjunctivitis”, “Anemia”, and “Parasite”. (Refer to the Figure 3.5.1 and 3.5.2).

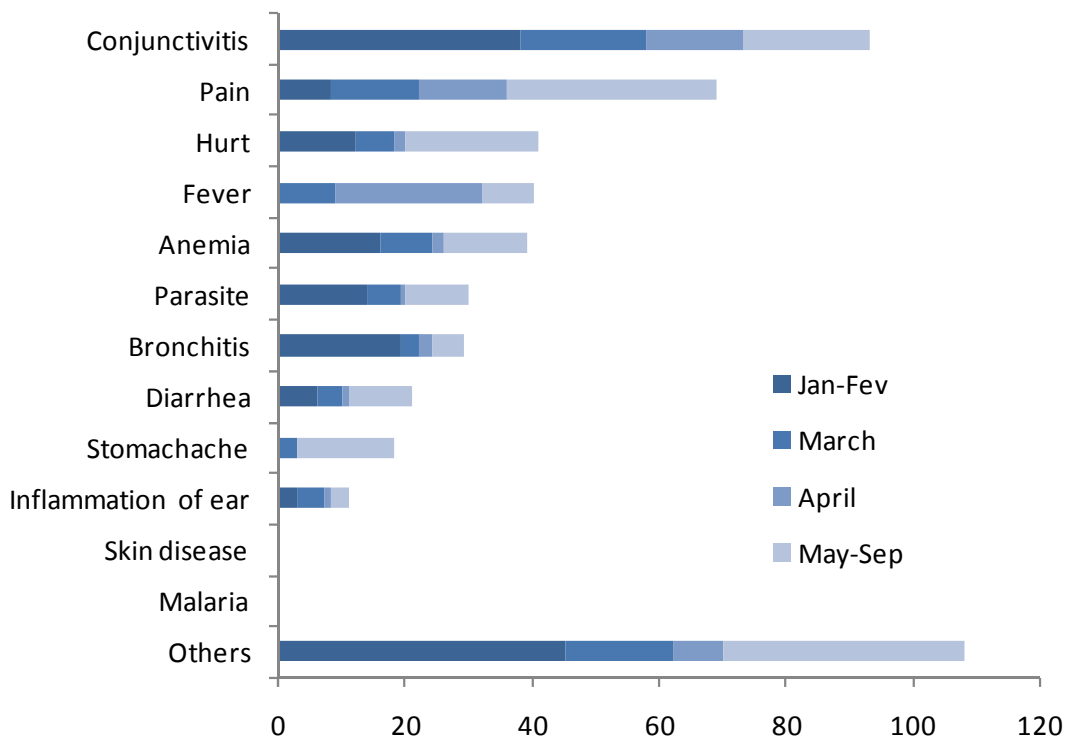


Figure 3.5.1 Treated Diseases by AA/ASC (January-September 2007/Adrar)

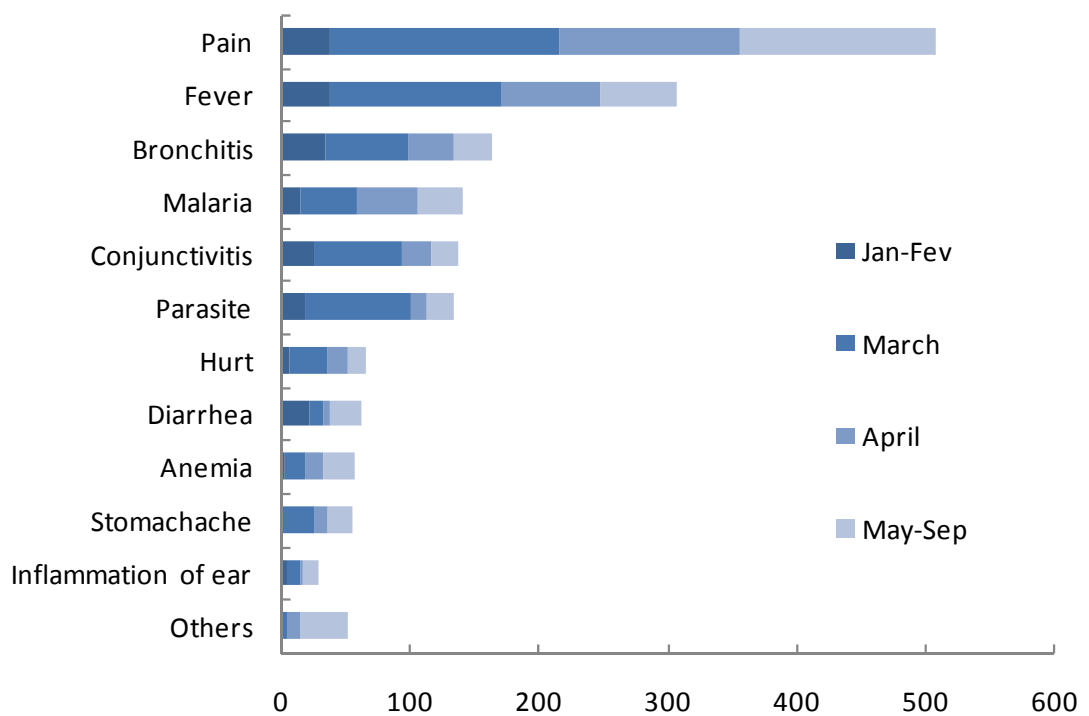


Figure 3.5.2 Treated Diseases by AA/ASC (January-September 2007/Tagant)

(2) Health service

According to the hearing research at the beginning of the study, the majority indicated that “medicine is not available”, “delivery support is not available”, “lack of health worker”, “lack of safe water”, and “difficulty to pay the travel expenses to get the health service” such like their main issue of health service. As showing in Table 3.5.1, only 15 oases (26.3%) have the Health post (HS) with the nurse as the retail institution of the health service system, and 22 oases (included the oases with the HP) have auxiliary midwife who trained in the Public health school. On the other hand, in Tagant state, only 13 oases (18.8%) have the HP in all of 69 oases (Refer to the Table 3.5.2), moreover auxiliary midwife is installed in only 17 oases (24.6%) (including the 3 auxiliary midwives trained by study team oasis with the HP).

3.5.3 Health knowledge of the population

We executed the hearing research at the beginning of the study about hygiene custom and measures against the disease in the oasis. As the treatment when they infected the disease, 44% of subject answered that they “get the modern treatment”, 40% “get the traditional treatment” and 16% take “no treatment”. Moreover, the subjects who get the treatment, 42% treat by health worker, 3% by traditional treater, and the other 38%

treat by oneself, their family and the neighbor. Ministry of Health is also anxious about the self-administering of the medicine (especially antibiotic) as one of the health matters in the regional action plan (2004-05)¹⁰.

About the installation of sanitary facilities in the oasis, about 30% of families have at the most in Adrar state, moreover, in case of Tagant state, there is no oasis have the latrine (Refer to Figure 3.5.3).

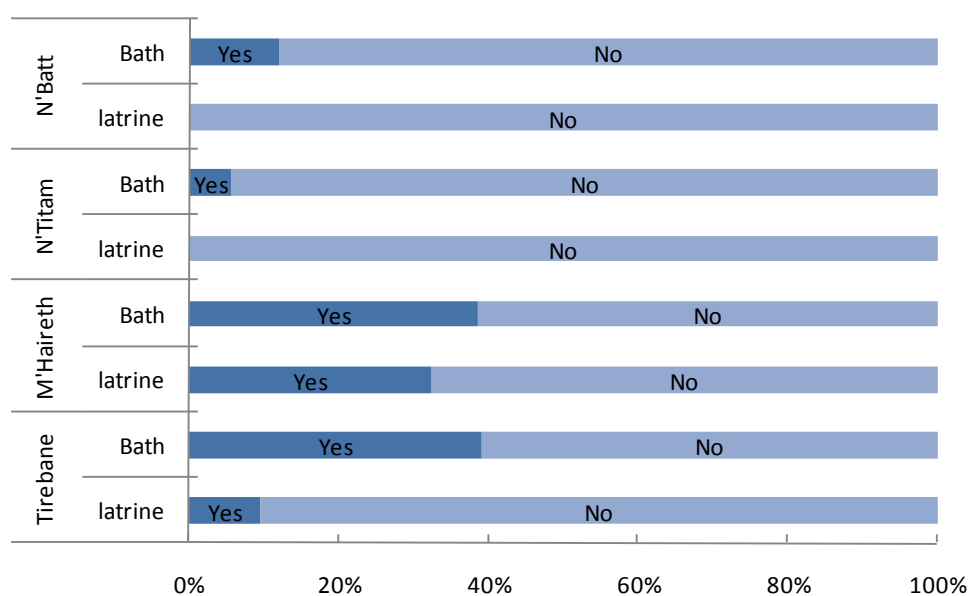


Figure 3.5.3 Installation of Hygiene Facilities



Step latrine



It is easy to flow out the excrement by rain water and to weather.

In oasis, water available is very limited so the main use of water is for the drinking, and

¹⁰ Planification in Tagant and Adrar region in 2004-2005, DRPSS.

next for the latrine and the body washing. Therefore, the frequency of the body washing other than hands and feet and the face will be done about once per 2-3 weeks to a month (It is fewer at the season of the low temperature dry season). However the children are most of the time wearing shorts exposing more their bodies to dirt since they are not used to wash by themselves until the age of 5 to 8 years.

3.5.4 Delivery Condition

The delivery conditions in the oases are extremely difficult according to the previous JICA study the mortality rate for children in Adrar region is 1.4 people and Tagant region 1.2 people. It is to mention that the unsuccessful deliveries are a major cause behind this reality (31% and 11% for Adrar and Tagant). According to our survey more than half of the women gave birth in their houses or under tents without any assistance, the minority of women that delivered in specialized center or health center in spite of the huge number of women that received assistance from traditional practices that are not medical staff.

Table 3.5.3 Existence of the Delivery Support and the Delivery Place

	Assisted delivery		delivery place			
	Available	NA	outside	house (tent)	Health center	Other facility
Tireban	31	34	19	43	4	1
%	47.7	52.3	30.2	18.7	28.6	25.0
M'Haireth	52	49	17	60	9	2
%	51.5	48.5	27.0	26.1	64.3	50.0
N'Titam	48	56	18	81	1	1
%	46.2	53.8	28.6	35.2	7.1	25.0
N'Batt	23	35	9	46	0	0
%	39.7	60.3	14.3	20.0	0.0	0.0
total %	47.0	53.0	20.3	74.0	4.5	1.3

3.5.5 Knowledge and Conciseness by the Population on the Nutrition

According to the previous JICA study, there is a low consumption of cereals in the regions (19% in Adrar and 36% in Tagant) and low frequency in eating vegetables. The percentage of families that eat vegetables from time to time is 36 percent and rare is 57 percent .in Adrar and Tagant. The study team made a survey on the number of meals and check the people's reaction on the nutrition.

The result of this survey shows that 80% of the families are taking two to three meals per day during the harvesting period which requires more physical labor. The percentage of the families taking three meals per day is a little bit higher in Tagant than Adrar. 80% of the 116 interviewed women said that they never gave a baby meal.

3.6 Income Generating Activities

3.6.1 Situation surrounding the Women and Income Generating Activities

In the oasis society, we can observe a tendency of increase in the women headed households, which is caused by the emigration of the men towards the urban zone and the divorce which is accompanied by the impoverishment of these households. In this context, the productive activities of the women become an importance source of income; the stimulation of their income-generating activities will generate a deep impact on the improvement of the living conditions and on the reduction of poverty in this area.

The principal income-generating activities in the area are: the vegetable farming, the handicraft, the dried vegetables, and small trades. According to our study on the oasis, the vegetable farming is the most popular activities among women. Here it mentions the activities except the domain of the agriculture.

(1) Productive activities

The main productions of women in oasis are: vegetables, dried vegetables, leather, small items made from leafs of palm trees, tents, cushions, cover of kettle, accessories, henna, and breads. However, products qualities and quantities are limited.

Table 3.6.1 Current Situation and Causes of the Productive Activities

Category	Current situation	Cause
Type of products	<ul style="list-style-type: none"> • Many women and organizations manufacture similar products. 	<ul style="list-style-type: none"> • Occasions to see or learn from new concept are limited.
Quality of products	<ul style="list-style-type: none"> • Even if there are no problems for domestic consumption, it is difficult to maintain quality for marketing. • Women sometimes have a high technique; however their talent is not well exploited. 	<ul style="list-style-type: none"> • Difficult to acquire the good material. • The occasions of training to improve the technique are rare. • They do not know how to take advantage of people who have a high level of technique.
Production method	<ul style="list-style-type: none"> • There are common activities of the group or cooperative, but individual work is more frequent. • The women who have a high level of technique sometimes teach others. 	<ul style="list-style-type: none"> • Lack of planning as an organization, it is difficult to carry out a regular activity. • Transferring the know-how to others are ad-hoc basis, it is difficult to reach an overall improvement for all members.

Category	Current situation	Cause
Provisioning of material	<ul style="list-style-type: none"> The material available on the local area is used. 	<ul style="list-style-type: none"> Lack of finance to purchase the material. Provisioning material is difficult because of bad access to the area.
Stock of products	<ul style="list-style-type: none"> The situation of storage is bad, the material are often dusty. 	<ul style="list-style-type: none"> Lack of knowledge of material storage.

(2) Marketing

Majority of women participate in the female group or cooperative to carry out the income-generating activities. Some female cooperatives work together to sell their products in a common way; however the system of marketing is not well established

Table 3.6.2 Current Situation and Causes of Marketing

Category	Current situation	Cause
Marketing method	<ul style="list-style-type: none"> Marketing only inside the oasis. There are cases where the female cooperatives sell the products together, but it is not systematic. 	<ul style="list-style-type: none"> The method of marketing is not systematized. The marketing activity is not planned. The volume of production and the products being varied little, as well as the level for marketing is not sufficient to sell. It is difficult to sell the products apart from the oasis, because of inexistent method of conservation and transformation techniques.
Marketing network	<ul style="list-style-type: none"> Groups that have a marketing chain are rare. The target customers are not clear. 	<ul style="list-style-type: none"> It is difficult to ensure the means of transport of products because of the difficulty of access. The women do not have the occasion to acquire knowledge on marketing.

(3) Management

In the majority of the cases, the income-generating activities are undertaken by female groups or female cooperatives. Even if we observe some cases of joint coordination committees or inter-cooperatives in the same oasis, the capacity of their organizational management remains low.

Table 3.6.3 Current Situation and Causes of Female Cooperatives' Management

Category	Current situation	Cause
Management planning	<ul style="list-style-type: none"> Production and marketing activities are not annually planned. 	<ul style="list-style-type: none"> There is no occasion to acquire knowledge on management.
Finance	<ul style="list-style-type: none"> There are many women who do not benefit from the system of micro-credit due to fear of repayment. Few female co-operatives benefit from the MICO. 	<ul style="list-style-type: none"> Many women do not know the system of MICO's credit and its utility.
Accounting	<ul style="list-style-type: none"> Some groups record their transactions but it is not well done. 	<ul style="list-style-type: none"> There is no occasion to acquire knowledge of accounting.

Category	Current situation	Cause
Joint coordination committees or inter-cooperatives	<ul style="list-style-type: none"> • In some cases, we observe the collaboration between the groups inside the oasis, the occasions of information exchanges with other groups or co-operatives between oases are rare. • Each co-operative carry out its own activities, and seldom collaborate. 	<ul style="list-style-type: none"> • There is limited occasion of collaborations, interactions, and exchanges of information; women do not understand these merits. • There is no occasion to understand the utility of team work between the cooperatives.

(4) Training

For the populations, the occasions of receiving the training are very limited, especially for women. In this study area, in spite of the existence of some women who profited from the training organized by the Oasis Project phase II, the targeted number of beneficiaries and the training duration were limited and insufficient. Not having the occasion to learn from new information, the fields of activities of women remain limited despite of their high motivation.



Small shop managed by female cooperative



Preparation of breads



Baskets made by women

3.6.2 Concerned Administration and Organizations

(1) MCPFEF

In the MCPFEF, the Direction of the “Management of Female Action” supervises the activities of female promotion, and develops policies and programs related to female activities, and supports for the productive activities of women. The Division of “Support to the Female Production” is in charge of the income-generating activities.

The mission of this Division of support to the Female Production consists of 1) improvement of the capacity of the productive activities of women, 2) training of women on adapted techniques and, 3) improvement of living conditions of women by developing income-generating activities. Although this division is in charge of i) the

training on the productive activities of women, ii) the advice and the coordination of all the female organizations, iii) the promotion to the micro-enterprise, and iv) the development of the micro-credit for women, the division does not have much occasion to undertake its own activities due to insufficient budget. Its principal activities are consequently implemented according to the programs financed by Donors.

Even if the staffs in charge of the female activities are assigned to Regional Coordination Office, the activities remain limited because of their capacity.

(2) Vocational Training Center for Female Promotion

Located under the technical supervision of the MCPFEF, the Vocational Training Center for Female Promotion is an establishment which has a certain degree of independence, including the budget of operation. Its objective is to promote the income-generating activities for the women who did not profit from chances of schooling, especially focusing on the women which gave up their secondary studies or on those which could not reach the secondary school. Monthly fees of enrolment at the center are required, and the majority of the pupils of the center are women of middle class. In the study area, although there is a center in Adrar and one in Tagant, these centers have difficulties on management due to inadequate staff and insufficient equipment.

(3) Ministry of Agriculture and Livestock (MAE)

Technical extension / expansion on the level of the oases are mainly carried out by the Extension Worker (AVB) assigned to the Regional office of the MAE. The majority of these agents received a training of approximately 3 years. They learned various techniques such as the organization, literacy, vegetables farming, transformation and drying of vegetables, maintenance of motorized pumps, and communication technique.

The Division of Support to the Socio-professional Organizations is in charge of the additional formation with the AVB, as well as the research/planning related to income-generating activities. The Division carries out the technical orientation on the agricultural and livestock products, and the distribution of a technical guide with the AVB as well. However, its operational budget is limited and the activities on the field are carried out when funds are available.

(4) Ministry of Trade, Craft Industry and Tourism

The Direction of Craft Industry has a role of the promotion and the supervision of the sector of the craft industry. The Division supports the registrations of handicraft

organizations, and supervises and assists NGOs and organizations. The Direction also has problems to support regional organizations and to undertake its own activities, due to an insufficiency of budget and inexistence of regional office.

Considering that the handicraft is one of the major income-generating activities of women, collaboration with the Direction is essential for the improvement of the techniques of craft industry, as well as for the study of marketing system. Thus, collaboration, including the improvement of the capacity of this Direction is important.

(5) Sustainable Development Program of Oasis (PDDO)

The preceding phase of the PDDO (Oasis Project phase II) carried out an extension / expansion of the techniques and a training of local animators by a stay of Moroccan couples concerning vegetable farming, sewing, dyeing, cooking, and bakery. Although this method of extension / expansion was highly appreciated since it was adapted to the local needs and level, some question was raised as well related to cost-benefit aspect due to the mobilization of an international NGO. According to our study in the field, some problems for the sustainability of these activities were revealed such as the difficulty of provisioning of ingredient for bakery and cooking, even if the population highly appreciates this initiative.

(6) Mauritanian Weaving Cooperative (MATIS)

Created in 1994 under the supervision of the SECF and the Ministry of Trade, Craft industry, and Tourism, the MATIS is an association which undertakes activities of production of carpets, dyeing of fabrics etc. Its member's age varies from 17 to 70 years old and they undertake the activities of training on the techniques of manufacture/repair/marketing of the carpets. Its goal is to improve the incomes of women, focusing especially on the independence of the divorced women or who did not have the chance to have an education. 1) The cooperatives members (original founders) profit from the free support of the MATIS at all levels: formation, material, recycling, transport, and marketing. All these activities are carried out by the MATIS. 2) The second group can profit from the same supports, however they must pay all these services. Marketing can be done through the channel of MATIS or the cooperative itself. 3) The 3rd group primarily brings its carpets to obtain trademark (work of completions and certification) and marketing is primarily done by the cooperative itself.

(7) Female Chamber of Trade and the Craft industry

The Chamber of trades and the female craft industry is ONG created in 1993 with

vocation to promote all arts and the handicraft trades of women. Any woman who has a manual aptitude can be member. The chamber has 100 cooperatives, 250 female groups with 15,000 women as registered members.

In Mauritania, there is a Federation of the craftsmen made up with 3 chambers: the chamber of profession, the female chamber of trade and the craft industry, and the chamber of craft art. Each chamber is managed by its own rules and regulations.

Chamber of trades and the female craft industry sells handicraft products made by the members through the center of craft industry which is an establishment of the Ministry of Trade, Craft industry, and Tourism. The women can freely entrust the sale of their products in this center while becoming member by paying 1000 UM of expenses for registration. If a product is sold, 90% are paid to the member and 10% are kept by the center for operating expenses. The points of sale are installed in Atar and Tidjikja, and the system of marketing is fixed by each organization.

(8) Office of Support for Small Handicraft Enterprises in Mauritania (BAPEM)

Become an NGO with the end of the GTZ project which took place during 1993-2001, the BAPEM has the role of bringing the support to the small handicraft enterprises through activities of planning and training, marketing, the creation of saving bank. The BAPEM is responsible for the training in the fields of dressmaking, soaps-making, sewing, weaving, dyeing, shaping of the metals, hairstyle, management, accounting, and the creation of the saving banks. The number of NGOs are very limited; therefore competencies and experiences in these fields are useful.

3.7 Oases Development

3.7.1 Programme for the Sustainable Development of Oases (PDDO)

This programme is implemented under the joint funding of IFAD, the Kuwaiti fund, the Global Environment Facility GEF and the Mauritanian government. Taking over from Project Oasis Phase II, which ended in 2003, the program began in February 2005 for a period of 8 years in the 5 Regions of Adrar, Tagant, Assaba, Hodh El Garbi and Hodh El Chargui. During the previous phase (Project Oasis Phase II), the strengthening of oases organizations by the creation of Oases Participatory Management Associations (AGPO) and the strengthening of the credit system through the creation of Mutual Investment and Oasis Credit (MICO) have been made a priority. As the case of the previous phase, the programme is managed by the Coordination Unit, which is established by the

Ministry of Agriculture and Livestock (MAE). Focused on the poor, especially women, the programme aims to create the basis for oasis development by the reduction of poverty so that the people themselves can take care of part of the preservation of the environment. To achieve these objectives, the programme includes the following components.

(1) Structuring oasis communities

This component is intended to develop the capacities of the population including those of women and youth to participate in the development process and in carrying out the activities of training and sensitization for the improvement of the management capacity of the AGPO(s) and existing MICO(s). It also seeks the creation of 60 new associations and the establishment of a Community Investment Fund (FIC).

(2) Development of sustainable production capacity of the oases

It is to try the diversification and improvement of agricultural production in order to develop the sustainable productive capacity of oasis agriculture. Specifically, it is improved cultivation techniques of phoeniculture, with the introduction of irrigation techniques, and measures to combat the enemies of the crops, improving techniques of harvesting and conservation, the improvement of the distribution network, training based on the needs of the people or a system of participatory research in the oases of reference. In addition, activities to combat sand encroachment, the installation of the committee for the preservation of the environment, training and sensitization or the study on livestock are planned.

(3) Credit System

The audit and the strengthening of existing MICO or creation of new MICO are planned in this component.

(4) Development of basic infrastructure

This component includes the following activities, the development of rural roads, development of weirs, construction of health facilities, education and drinking water, evaluation and maintenance of 60 basic facilities existing in the oases.

(5) Coordination / monitoring / evaluation

These activities are performed by the Programme Co-coordinating Unit (UCP), which is established under the supervision of the MAE. The UCP is headed by the Coordinator and the Regional Support Cells (CRA) which are installed at Atar in Adrar and at Tidjikja in Tagant with regard to the area targeted by this study.

These components will cover the areas of improved living conditions, agriculture, water resources development, environmental protection, organizational and institutional strengthening or income-generating activities. It must be noted that at the completion of the programme in 2012, all activities and management will be entrusted to the Unions of AGPO who are representatives of the oasis people.

3.7.2 Community Rural Development Project (PDRC)

Funded by the World Bank for the period from October 2004 to October 2010, the project operates in 10 regions; Adrar, Tagant, Assaba, Hodh El Garbi, Hodh El Chargui, Gorgol, Brakna, Trarza, and Guidimaka Inchiri. These include the Agricultural Services Project (PSA) which began in 1994 and the Project for the Rainy Area Natural Resources Management (PGRNP) which began in 1997 as first projects in the oasis area, which are also funded by the World Bank.

Aiming to strengthen the organizations and personnel of the MAE and the National Society for Rural Development (SONADER) through the strengthening of the organizations in charge of extension and research, the PSA could not meet the needs of the oasis area. The PDRC follows on the PGRNP, capitalizing its gains and extending its geographical reach and scope of intervention. The PGRNP has intervened in 66 municipalities and has set up 295 Community Development Associations (CDA). While the PGRNP focused solely on the villages, the PDRC add to that dimension direct assistance to 10 rural communes for pilot projects, support to agricultural services and rural micro-enterprises.

The PDRC consists of 3 major components.

(1) Capacity building

This component focuses on strengthening the capacity of ADC, which are the poles of the project. Specifically, it is; 1) to design and implement effective development plans for enhancing organizational capacity and management of village communities, and 2) to strengthen the technical capacity of service providers. This last component includes strengthening support to agriculture, which aims to strengthen the support structure of the MAE and the regional delegations that will bring their services.

(2) Investment Fund

This component is crucial to the success of the project since it provides the means for the implementation of villages and municipalities' development plans; supporting the villages development plans through the Village Investment Fund (FIV). The granting of

such funds requires input from the inhabitants in kind or money.

(3) Project management and monitoring and evaluation

These are all activities related to project management and requirements for evaluation and monitoring of results, products and resources used. This will be done mainly by the Central Coordination Unit (UCC) and the Regional Coordinating Units (URC). The UCC will undertake a communication strategy aimed at promoting activities awareness, approaches and results of the project by rural radio, national radio and communication tools (video and mobile TV).

3.7.3 Project for the Support of Health and Nutrition Sectors (PASN)

The PASN is a project funded by the World Bank, which amounts to about 10 million dollars (the International Development Association: IDA). The project is being implemented within 5 Regions (Hodh El Gharbi, Assaba, Gorgol, Brakna and Tagant) and 2 towns (Nouakchott and Nouadhibou) for the 3-year period from March 2007 to March 2010. Being divided into the 2 main components of health and nutrition, the implementing office of the nutrition component is installed within the MCPFEF. This project succeeds the activities of Nutricom Project which was executed between 1995 and 2005.

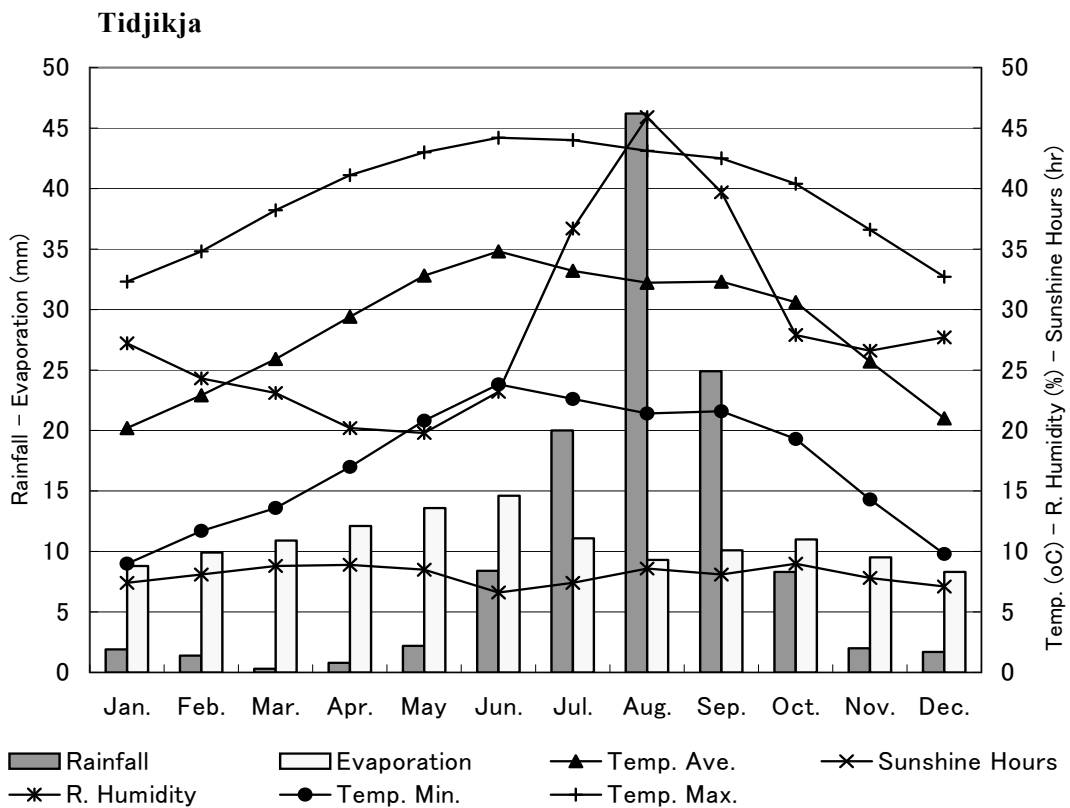
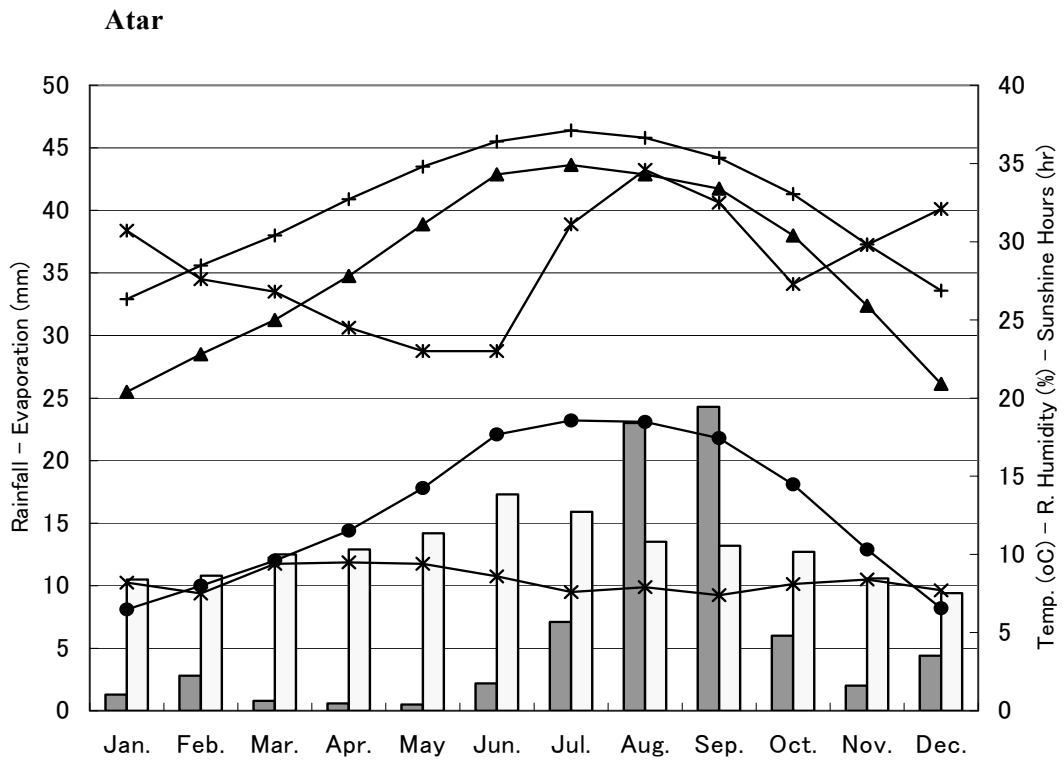
The prime objectives being to improve the health and nutrition as well as improving the health system, the target beneficiaries of this project are women and children. The project is being implemented in accordance with the National Health Policy and Social Action from 2005 to 2010 and the National Policy for the Development of Nutrition 2005-2010.

Managed under the mutual coordination of MCPFEF and MS, the nutrition and the health components are to be borne by the MCPFEF and MS. The main objectives are as follows.

- Improve access to basic health services in underserved areas.
- Ensure the equitable allocation of resources to underserved regions.
- Strengthen the management of the health sector in order to ensure greater efficiency)
- Strengthen and expand community-based communications to ensure better nutrition

The activities have just begun in Nouakchott and Nouadhibou at this time (November 2007). The activities in the Regions are being prepared; they should start in the Region of Tagant, which is the intervention area of this study from the year 2008.

The construction of the Community Nutrition Centres (CNC) in the oases of N'Batt and N'Titam, oases models of this study in Tagant, and the training of Community Nutrition Officers (ANC) for the AA / ASC trained in the context of the present study are also planned.



Source : ASECNA and SAM, Tableau Climatologique Mensuel

Fig. 3.1.2 Monthly Mean Meteorological Parameters in Atar and Tidjikja Station

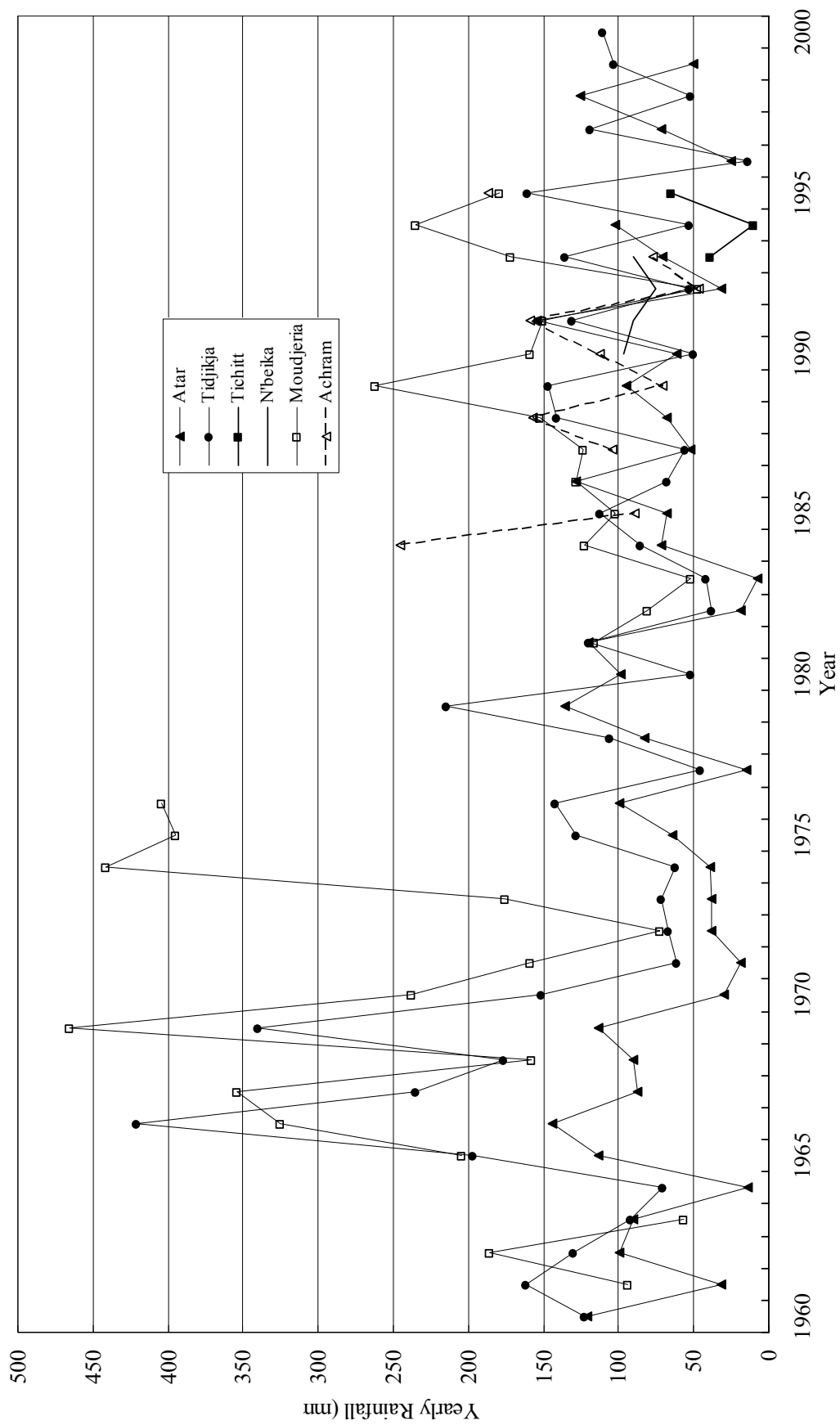


Fig. 3.1.3 Annual Rainfall Fluctuation in the Study Area

Table 3.4.7 Present Condition of Drip Irrigation System

Oasis	Present condition of usage	Problem	Remarks
Tawaz			
Mohaned Hassan	Field investigation is for one oasis	<ul style="list-style-type: none"> - Choked up pipe is not problem. Because it is easy to wash inside of the pipe. - The welding portion of the conection part of a drum and a pipe has been damaged. 	Vegetables
Yashin oud Baha			Fruits, Vegetables
Sidi oud Moctar			Fruits, Vegetables, dates
Mohamed Saem oud Habad	Using		Fruits, Vegetables, dates
Toungad			
Womens association	Not using	<ul style="list-style-type: none"> - The system itself is good and also yield of a tomato is increased. 	Fruits, Vegetables, dates
Cheikh Tidjane oud Ali	Not using	The following items are raised as a fault.	Vegetables
Kaza oud Mabroe	Not using	<ul style="list-style-type: none"> - The size of a system is very small. (about 5mx5m) 	Vegetables
Ahmed oud Sidi Mohamed	Not using	<ul style="list-style-type: none"> - Water tank is so small to operate. Therefore operation is so troublesome. 	Vegetables
Abeid oud Mabrouk	—		Vegetables
Mouhamed oud Samba	Not using	<ul style="list-style-type: none"> - It is easier to supply water not only for vegetable but also for date. 	Vegetables
Salam mint Louhrouf	—		Vegetables
Waled oud Amar Mowloud	Not using	<ul style="list-style-type: none"> - Operation is also troublesome for suppling water for date. 	Vegetables
Mouhamed oud Moctar oud Saghair	—	<ul style="list-style-type: none"> - Even if a pipe is damaged, it cannot be replaced the spare parts. Becase spare parts are not available around oasis except capital and there is not fund for purchase. 	Vegetables
Tenllaba			
Ahmed oud Chadda Voum Adzar	Field investigation is for one oasis	<ul style="list-style-type: none"> - It becomes reduction of labors horce and is a very good system. At the investigation time (September 30), although cultivation has not been started yet, vegetable cultivation is due to be started in mid-October. There is no problem in particular of this system by the present. 	Vegetables
Ely oud Abeid Tahahaity			Vegetables
Yeslem oud Mohamed	Using		Vegetables
Womens association			Vegetables
Mohamed Saleck oud Beichar			Fruits, Vegetables
Nimlane			
Womens association	Not using	<ul style="list-style-type: none"> - It was used for three years after introduction. - Although there were choked the pipe and breakage, it was used till last year. - However, since the hand pump was broken down, drawing water work make trouble and it does not use this system this year. 	Vegetables
Yenje oud MBarka	Not using	<ul style="list-style-type: none"> - It was used for two years after introduction, and it was very useful to the tomato. Since the pipe was damaged, it is not by use. It is necessary to purchase materials from Nouakchott, and acquisition of spare part is difficult for us 	Vegetables
Tidjikja			
Women's associations	Not using	<ul style="list-style-type: none"> - It is new from the current fiscal year, and A new project (by Spain NGO) is just started, and under preparation now. Therefore the system of phase 1 study is not used. 	Vegetables

CHAPTER 4
Development Issues

CHAPTER 4 Development Issues

4.1 Experiences of the previous JICA Study and Similar Projects

The previous JICA study was conducted with the directorate of Oasis Project in the then Ministry of Rural Development and Environment (current Ministry of Agriculture and Livestock). It has been demonstrated through this study that important issues to achieve the objective of rural development programs are support for women and empowerment of the women in the development of the oases environment¹. Thus, among the programs of rural development, the strengthening of women's organization of cooperatives; measures to increase incomes and improve living conditions mainly through vegetable gardening, poultry breeding or extension techniques; the project for the improvement of the health and hygiene conditions or the project for the improvement of the living environment of small remote oases have been proposed as activities to be addressed.

This study was begun with the aim of developing the Action Plan focused on supporting women in the oases on the basis of proposals or the above-mentioned priority projects. The development issues of the current study determined, on the basis of the study objectives and the issues remaining to be resolved by the previous JICA study, can be put in order as follows².

- (1) Under the previous JICA study, tangible results relating to cultivation techniques or livestock have been achieved in realizing the development of agricultural techniques in the model oases. However, this has not led to the review of the structure implementing the advisory service to other areas or organizations.
- (2) Even if the importance of support for the activities of women for the development of the oases area was stressed, the viewpoint relating to the training of women's organizations that require the support or the participation of women in development was insufficient.
- (3) Strengthening the capacity of MCPFEF, which is in charge of the gender aspect and the support for women through training of personnel, is necessary. This is a complementary issue that was added during the commencement of this study.

IFAD cites the importance of the participation of vulnerable groups as beneficiaries for the poverty reduction in the rural areas as the lesson learned by the development

¹ Chapter 9 Conclusions and recommendations of the final report of the previous JICA study

² Refer to page 4-8 for details

assistance in Mauritania. By creating institutional structures such as the AGPO or MICO in line with this lesson, the second phase of the Oasis Project has achieved some results. On the other hand, strengthening the capacity of women and women's organizations who are applying for the credit MICO or the improvement of access to information represent issues remaining to be resolved. Despite the fact that 80% of the populations engaged in agriculture in the oases are women, this second phase did not target women in agricultural extension³. These issues are the same as those of the previous JICA study. These themes from previous JICA study are taken into account in the approaches to support the women as the framework of the current study.

4.2 Development Issues for the Targeted Oases Area

Table 4.2.1 summarizes the development issues for the targeted oases that were obtained from the present study, based on the experiences and lessons learned from previous JICA study.

Table 4.2.1 Problems and Development Issues of the Targeted Oases in Two regions

Fields	Problems revealed by our investigations	Issues to be implemented
Agriculture	<ul style="list-style-type: none"> • We can not keep the agricultural products. • We can not ship the agricultural products. • There is no opportunity to learn new techniques. • The horticultural materials are in short supply. • The volume of harvest is low. • The pumping is time consuming. • There is lack of water for agriculture. • There is the problem of depletion of water. • The sand threatens life. 	<ul style="list-style-type: none"> • The implementation of the training to improve farming techniques. • Effective use of natural resources and achieving sustainable agriculture. • Access to information. • Access to horticultural materials.
Income	<ul style="list-style-type: none"> • We could not sell the products. • It is difficult to participate in productive activities. • There is no equipment or raw material for productive activities. • The products are somewhat varied and quantity is low. 	<ul style="list-style-type: none"> • Technical support for income-generating activities. • Strengthening existing organizations. • Marketing.
Health and hygiene	<ul style="list-style-type: none"> • The birth is not secure. • The spread of infectious diseases is easy. • There is no possibility of treatment of diseases. 	<ul style="list-style-type: none"> • The strengthening of the medical service by the point of view of prevention and treatment. • Strengthening support for childbirth.
Gender	<ul style="list-style-type: none"> • There are many households headed by women because of the emigration of men and divorce⁴ • Households headed by women are poor. • Women have no power of decision. 	<ul style="list-style-type: none"> • The creation of the environment that allows the participation of women in social and economic activities. • Strengthening the management /

³ Programme for Oases Sustainable Development (PDDO). Formulation Report : Working Document 2

⁴ According to our survey result, the women population represents 50-70% of the population of the supervised oases.

Fields	Problems revealed by our investigations	Issues to be implemented
	<ul style="list-style-type: none"> • Women can not participate in the projects. • The burden of the work of women is important. 	<ul style="list-style-type: none"> • support to women's organizations. • The participation of women in development.
Basic infrastructure	<ul style="list-style-type: none"> • Il est impossible d'acquérir l'eau hygiénique. • L'accès aux autres oasis ou au chef-lieu de la Wilaya est très difficile. • It is impossible to acquire hygienic water. • Access to other oases or the regional capital is very difficult. 	<ul style="list-style-type: none"> • Access to safe water. • Access to the means of transport.
Organization of inhabitants	<ul style="list-style-type: none"> • Opportunities to access information or knowledge are limited. • The organization is not working properly. • The literacy rate is low. 	<ul style="list-style-type: none"> • Strengthening the capacity of the inhabitants.
Administration for the Advisory services	<ul style="list-style-type: none"> • It lacks the budget and personnel of administrative organizations. • There is a lack of coordination among ministerial organizations related to development of oases. • Advisory activities to support women are inadequate. 	<ul style="list-style-type: none"> • Strengthening the administrative system in the development of oases. • The strengthening of extension system in the development of oases.

4.3 Development Problems

According to the analysis of the problems of the oases shown in Table 4.2.1 above, which was conducted on the basis of existing documents and the results of analysis made by the study team, development issues can be summarized in the following three points. 1) Support for women adapted to the oases area, 2) strengthening the administrative extension system and the alleviation of the problem of enclosure to support point 1), and 3) improving access. Furthermore, if one takes into account the two objectives upstream of the "Poverty Reduction Strategy" and the "National Strategy for the Advancement of Women," with regard to the support of women adapted to the oases area, the following 3 points are essential; 1) create the environment that allows the participation of women in socio-economic activities, 2) participation of women in development, and 3) support and enhancement of women's organizations (women's cooperatives). All these points are summarized in Table 4.3.1 below.

Table 4.3.1 Problems of Development and Orientation of the Support

Fields	Problems	Orientations of the support
I. Support for oases' women	1. Agriculture and Livestock (sustainable agricultural production)	1) Vegetable gardening 2) Poultry Breeding 3) Efficient use of resources
	2. Improving the health and hygiene	1) Acceleration of the activities of the local health 2) Training of auxiliary midwives 3) Improved nutrition
	3. Support for income-generating activities.	1) Technical support 2) Strengthening management organizations
	4. Strengthening the capacity of people	1) Strengthening organizations / women's cooperatives 2) Awareness for the sustainability of activities
II. Strengthening the administrative extension system	5. Strengthening the administrative extension system	1) Strengthening the capacity of MCPFEF 2) Strengthening the structure of extension system through training of staff and the coordination of the various actors
III. Improved access	6. Improving access to safe water	1) Development the facilities of drinking water
	7. Improving rural roads	1) Development of main roads 2) Rehabilitation of roads with participation of the inhabitants.

4.4 Gender and Livelihoods improvement in the Oases Society

If one try to solve development problems previously cited by the measures listed in Table 4.3.1, it is necessary to develop the support for women taking into account the circumstances surrounding the gender aspect in the oases society.

(1) Background

In the oases, the physical labor or productive activities are mainly done by men. On the other hand, as women do not have the social status or the power of decision-making, they did not deal with the economic activities in the society.

But many men from the oases are forced to leave for the city to make a living due to the modernization or desertification that have hampered the pasture or rain-fed cereals agriculture that supported their lives in the oases. In this context, the activities of pasture or growing field crops mainly carried out by men became reduced and burdened onto women, and the role of women in socio-economic activities became increasingly important. Hence, the participation of women in productive activities, the organization of women's groups, strengthening the management capacity or measures to women's participation in development processes have become problems that must be solved quickly.

While the role of women is becoming increasingly important in the oases, the traditional gender structure from traditional regulations, habits or culture remains (table 4.3.2). The dilemma of the oases society is the current lack of support for women in the development process; one must take action on the issue of gender and promote support for women.

Table 4.3.2 Change of Gender Rule and Current Situation of Women

Gender rule		Current situation of women
Before	Now	
<ul style="list-style-type: none"> ■ The pasturage and cereal culture mainly realized by men. ■ The men-headed households are the sources of income. ■ The women do not take part in the socio-economic activities. 	<ul style="list-style-type: none"> ■ The pasturage and cereal culture were reduced because of the desertification and modernization. ■ The increase in men migrants towards the urban area: <ul style="list-style-type: none"> ● Increase in women-headed household. ● The women are the sources of income. ● The necessity of women to participate in income-generating activities increase. ● Increase in the dependence to the vegetables farming and poultry farming ● Increase in women's role in food security. ● Women need more credits. ● Increase in the reproductive activities of women. 	<ul style="list-style-type: none"> ● The women suffer from lack of knowledge and capacity to take part in productive and economic activities in spite of the increase in women's role. ● The society is not ready to support new women's role. ● The formation and the support for women are more limited than those for men.

Source: JICA Study Team

(2) Livelihood improvement

In addition to change in the oasis society related to the gender rules, most of the oases are not connected to water, access, information and administrative services. It can be said that the activities of production and life are conducted in an integrated manner even in rural area. These activities of production and life contributed to the distribution of roles of men and women in the traditional context. However, the recent change in the relationship between sexes required women to perform the activities of production and life, who had not yet undertaken any productive activities so far.

If we look only at food production, women's contribution to production is not significant considering that agriculture and pastoral activities are limited by the lack of water. However, it will be possible for women to ensure food needed for everyday life if they apply techniques of cultivation or poultry breeding that can be implemented by them. In addition, it is possible to diversify the food or increase the volume of consumption as women are usually responsible for meal preparation at the household

level. By this view, it is thought that the improvement of the food situation can be tackled, which is based on the improvement of the nutritional situation mainly undertaken by women.

Regarding the life environment, it is possible to improve the current situation by complementing the services necessary for life in the oases area. As the inhabitants of isolated oases have difficulty to access a hospital or clinic, it is necessary to create a system to adjust the minimum medical service in these oases.

By acknowledging the existence of opportunities for productive activities for women through various technical training or support for women's cooperatives to raise consciousness, women living in the oases area can exploit the maximum potential in their family life or oases.

4.5 Necessity to satisfy the Needs of Women

Men and women have been asked to cite the problems that they have in daily lives, and differences between the sexes or the areas have been observed. The gender differences were clearly visible at N'Titam. The needs of men were rather of a professional or agricultural nature and those of women were practically linked to daily life (the problem of shortage). In addition, women have said that development projects have a tendency to prioritize the needs of men and that women are often overlooked or left side. Moreover, even if the women's organizations have sometimes received financial support from the development projects, that supports were never on organizational strengthening or management capacity building, which are the kind of support women are longing for. In this context, the fact that the needs of women could be the starting point for an integral development of oases, while getting the needs of men and women is recognised.

Table 4.5.1 Problems of Men and Women
(Example of N'Titam in Tagant and Tirabane in Adrar)

	N'Titam (Tagant)		Tirabane (Adrar)	
	Problems of men	Problems of women	Problemes of men	Problems of women
1	Lack of infrastructure or support related to health and hygiene.	Lack of infrastructure or support related to health and hygiene.	Girls can not go to college (lack of college)	There is no market
2	Lack of capital, equipment / material for the exploitation of the pond	Milling work of cereal too hard for lack of milling machines.	The post of health does not work at all.	The post of health does not work at all.
3	Lack of cereal bank	Lack of access to capital or the means	Due to the absence of access road, the oasis is enclosed.	There is no fence around the garden.
4	There is damage from wandering animals in the area of cultivation	Lack of meat	Lack of drinking water	There's no office for the women's co-operatives
5	Lack of opportunity for vocational training or literacy	Lack of means of pumping / drinking water	There is damage from wandering animals in the area of cultivation	Illiterate

Source: JICA Study Team

(2) Improving access of women to resources/information/training

Within the community, women's access to resources/information/training is limited compared to men, making it necessary to provide at the same time information or training opportunities relevant to the needs of women and establish a structure to enhance their access through some support measures. Accordingly, the support for women's organizations within the framework of the present study aims at the same time to improve access for women and provide a direct support to them. To do so, as the first step, one has to strengthen women's organizations and establish a network that connects them in order to enhance their capabilities and solicit their participation in the decision-making process later on.

4.6 Relationship between the Previous JICA Study and the Present Study

(1) Results and problems of the pilot projects of the previous JICA study

Table 4.6.1 shows results of investigation on the situation after the end of the pilot projects conducted as part of the previous JICA study.

Table 4.6.1 Results and Problems in Pilot Projects in Previous JICA study

Pilot projects of the former study	Results and problems of the pilot projects of the previous JICA study
1) Vegetable gardening by inhabitants farmers	<ul style="list-style-type: none"> • Effect of the ridge and shading being recognized, some farmers continue. • Despite understanding the effect of compost by the people no one is continued using it as unavailable materials (fish waste) were used. • Despite the recognition of the importance of preparation of nurseries, there has been no transfer of technology. • There is no group of women who continued drip irrigation. • Cultivation in summer season is not continued. • You can not see the effect of propagation inside the supervised oases. • The demand for the continuation of assistance to their activities from the survey team of the present study by the groups of women targeted under the old study is virtually non-existent. • The manuals developed by the previous study were not disseminated or used.
2) Growing of Water saving date Palms	<ul style="list-style-type: none"> • Water saving techniques proposed by the pilot project is not accepted by the people, this technique is not proposed as a priority project.
3) Increase in Pasture Production	<ul style="list-style-type: none"> • The continuation of poultry activity has been found only in a group. • We can not see the spread of activities in the oasis where the activities are continued. • Materials used for the construction of the cages come from outside the oasis. • The measures against heat were insufficient. • The measures against predators were insufficient. • The manuals developed by the previous study were not disseminated or used.
4) Improvement of Health Conditions and Public Hygiene	<ul style="list-style-type: none"> • You can not see any continuation of activities of the former JICA study. • The volume of activities in the oasis is extremely low; this aspect could not give the impacts. • There are some differences between the needs of people and activities of the pilot projects.

(2) Relationship between the pilot projects and the priority projects of the previous JICA study

Under the previous JICA study, 4 pilot projects, i.e., i) Vegetable cultivation by farmers, ii) Water saving cultivation of dates, iii) Improving livestock production and iv) Improving public health conditions were conducted. As a result, following 5 priority projects were proposed based on the experiences and lessons learned from pilot projects, i) Extension of vegetable cultivation technology, ii) improvement of public health conditions, iii) Enhancement of living circumstance at small and remote oases. iv) Rehabilitation and development of facilities of rural water supply and v) the Basic infrastructure development, which are the two projects of infrastructure development.

Table 4.6.2 Relationship between Pilot Projects and Priority Projects of the Previous JICA study

Pilot projects of the former study	Priority projects for the Master Plan
1) Vegetable cultivation by farmers	<p>1) Vegetable cultivation by farmers Implementing Agency: Oasis Project (PDDO), SECF (MCPFEF) Content: Popularize ridging techniques, shading or water saving irrigation introduced in the context of the pilot projects to the women's groups and so on. Popularize these techniques inside the main oases and then expand to nearby oasis.</p>

Pilot projects of the former study	Priority projects for the Master Plan
2) Growing of Water saving date Palms	The techniques proposed by the pilot projects were not accepted by local people, so that it was not proposed as priority projects.
3) Increase in Pasture Production Pastoral	The activities of this component are included in the project to improve the living conditions of small remote oases, which are one of the environment improvement projects of the master plan in small remote oases.
4) Improvement of public health conditions	1) Improvement of public health conditions Implementing Agency: Oasis Project (PDDO), SECF (MCPFEF) Content: Set in the main oases local centres equipped with consultation room to conduct itinerant guidance and education on hygiene by doctors or nurses.
	2) Enhancement of living circumstances at small and remote oases Implementing Agency: Oasis Project (PDDO) Content: Perform technical extension of vegetable gardening and poultry breeding, installing electric lighting, build wells for drinking water and build infrastructure for elementary school in small isolated oases.
	3) Rehabilitation and development of rural water supply system Implementing Agency: Local community or SNDE Content: Improve or develop infrastructure for drinking water in the oases with a drinking-water system and with a population of over 500 people.
	4) Basic infrastructure development Implementing Agency: Oasis Project (PDDO) Content: Provide basic infrastructure for roads, flood control and groundwater recharge for the aquifer of the capitals of department and for oases with a population of more than 1000 people.

(3) Suggestions from previous JICA study to the current study

- 1) Examine the possibility if agriculture and poultry techniques, whose effectiveness were confirmed at pilot projects in the previous JICA study, will be adapted to other districts or oases, and how to disseminate them inside or outside of oases.
- 2) As the capacity of the people was not sufficient for taking initiative of implementation, needs of the people should be reflected in the project and the project should be modified for improvement of public health and condition, and applied administrative methods, which were proposed in previous JICA study.
- 3) Consideration of income-generating activities and the method of forming groups of women within the framework of "strengthening the capacity of women and women's organizations", which were not dealt with by the previous JICA study.
- 4) Review of methods of MCPFEF collaboration with other ministries concerned with the above activities 1) -3) and review of methods and structure of capacity building of personnel involved in these MCPFEF coordination activities.

References : Revue of agriculture domain in the previous study of JICA

1. Agriculture

(1) Tests, technical results and problems of the Pilot Projects of the previous JICA study

In the previous JICA study, pilot projects were carried out in 3 oases in Adrar and 2 oases in Tagant.

Table 4.6.3 Overview of the Pilot Projects in Each Oasis

Wilayas	Oasis	Collaborators	Planted varieties	Others
Adrar	Tawaz	Men/Women Group	Winter Cultivation : (Tomate)	Trial only by drip irrigation
	Toungad	Women Group	Winter Cultivation : (Details are unclear)	
	Tenllaba	Men/Women Group	Winter Cultivation : (Tomate, Eggplant, Potato)	Installation of motor-pump
Tagant	Tidjikja	Women Group	Winter Cultivation : (Tomate, Betterave, Eggplant, Radis, Cabbage) Summer Cultivation : (Eggplant, Betterave, Onion, Cabbage)	Installation of manual-pump
	Nimlane	Men/Women Group	Winter Cultivation : (Tomate, Carotte, Betterave, Eggplant, Radis, Cabbage) Summer Cultivation : (Tomate, Eggplant)	Installation of manual-pump Deepening wells for water level measurement
Priority Context		Applied Techniques		Resolved Problems
<ul style="list-style-type: none"> ➤ Improvement of production techniques ➤ Improvement of the physical properties of soil ➤ Diversification of varieties and the planting period ➤ Water-saving production ➤ Usage of unused resources ➤ Collection of baseline data 		<ul style="list-style-type: none"> ➤ Ridge Production ➤ Soil replacement ➤ Shading ➤ Irrigation sprinkler or drip, pumping with hand pump ➤ Compost by fish waste ➤ Measurement volume of water pumping and irrigation, volume water from soil 		<ul style="list-style-type: none"> ➤ Low yield because of root rot ➤ Assimilation of vegetables limited in quantity and period ➤ Rotten root from watering to water saving ➤ Assessment of the volume of irrigation water and use on the farm

Source : Report of the previous JICA Study

Note : The irrigation system drip inserted into all oasis above

(2) Results of the technical contents in the previous JICA study

Interview study was conducted in all the pilot projects' oases in the previous JICA study, and the followings are the main results.

- The usefulness of the method of ridge cultivation was recognized in all oases for pilot projects and they continued to practice this method.

- People understood the efficacy of compost.
- People understood the effect of shade (in the previous survey, when we can not have the shade under the trees, we set out to create shade with tissues or dates' leaves.).
- People understood the meaning of the production of good nurseries, whose technology transfer has not taken place in this area.
- Few cases continued the drip irrigation system. Above all systems installed for groups of women operate more in almost all cases. Only some portion of the introduced systems to the individual farmers were continued to be used. The problems lie in the management of hose or resistant pipes for continuous dripping.
- People have difficulty for protection against enemies of culture, but as natural pesticides do not show their usefulness, and their use remains limited.
- No cases relating to the extension of the growing period is observed. Extension of the period was tested with carrots but remained unsuccessful. One might think that the cause lies in the selection of varieties.

Table 4.6.4 Actual Situation and Problems of Pilot Projects in the Previous JICA Study

Wilaya	Oasis	Content of the trial obtained by interviews	Problems	Measurments, Notes
Tagant	Tidjikja	<ul style="list-style-type: none"> ➤ Gardening with a group of women. ➤ Farmers included the method of cultivation by ridge and continue to be practiced. ➤ Lack of information on seed introduced. ➤ Blackout hand pump introduced. ➤ Difficulties of protection against enemies of culture. 	<ul style="list-style-type: none"> ➤ Drip irrigation system were installed ➤ Blackout hand pump therefore unusable ➤ Lack of information on seeds introduced ➤ Difficulties of protection against enemies of culture 	<ul style="list-style-type: none"> ➤ Existence of willingness to cooperate ➤ Cooperation with the Spanish NGO is decided. The facilities are currently under construction * 1 ➤ Provision of information on the seed is important. ➤ Improved measures to combat the enemies of culture.
	Nimlane	<ul style="list-style-type: none"> ➤ Pilot Project started with the men, women took part later. ➤ Inhabitants included the method of cultivation by ridge and continues to be practiced. ➤ Blackout hand pump introduced. ➤ It was found that the ridge method is not suitable for onions. ➤ Farmers understood the value of compost. ➤ Culture has been tried but without success (varieties non-relevant) 	<ul style="list-style-type: none"> ➤ Drip irrigation system were installed ➤ Blackout hand pump therefore unusable ➤ Production Method Nursery incomplete (transplanting small nurseries) ➤ Lack of information seeds introduced ➤ Participation of women's groups not ordered 	<ul style="list-style-type: none"> ➤ Wrong impression for the continuation of cooperation with the provision of new equipment (pump repair or installation). ➤ Provision of equipment and materials required. ➤ Providing information is important seeds. ➤ Transferring production techniques of good nurseries.
Adrar	Toungad	<ul style="list-style-type: none"> ➤ Culture with a group of women. ➤ Inhabitants included the method of cultivation by ridge and continues to be practiced. ➤ Inhabitants understood the value of compost. ➤ Inhabitants have understood the importance of preparing nurseries. 	<ul style="list-style-type: none"> ➤ All systems drip were installed ➤ Production Method Nursery incomplete (transplanting small nurseries) ➤ No transfer of technology for production of good nurseries 	<ul style="list-style-type: none"> ➤ Existence of willingness to continue to cooperate. ➤ Changing the leader of the group. ➤ Transferring production techniques of good nurseries.
	Tawaz (only drip irrigation)	<ul style="list-style-type: none"> ➤ Test cultivation with farmers. ➤ Culture drip continued even last year by residents own efforts. ➤ Repair plugging nozzle drip own effort by residents. ➤ Improving the method of irrigation racinaires 	<ul style="list-style-type: none"> ➤ No transfer of technology for production of good nurseries ➤ Inhabitants do not wish to transfer technology method of cultivation ordinary 	<ul style="list-style-type: none"> ➤ Existence of willingness to continue to cooperate (farmers drip). ➤ Apart from farmers drip no desire for collaboration.
	Tanllaba	<ul style="list-style-type: none"> ➤ Test culture with farmers (drip) and with a group of women ➤ Inhabitants included the method of cultivation by ridge and continues to be practiced. ➤ No conscience for the production of good nurseries. ➤ Installing pump for the study ➤ Remedy techniques accounting methods. 	<ul style="list-style-type: none"> ➤ No understanding of the superiority of transplanting nurseries ➤ No transfer of technology for production of good nurseries 	<ul style="list-style-type: none"> ➤ Willingness to continue very low ➤ Residents wishing to cooperation in other fields as agriculture

Source : Study Team

Note: Survey on test water-saving irrigation of date palms has already been completed.

* 1: Inside the cooperation of the Spanish NGO (CMS Sahel), information obtained through the investigation on Oct. 11, 2005.

- 1) Construction of facilities (2 tanks, 2 reservoir for irrigation drip, deepening wells (2.5m), power supply, introduction of the tractor)
- 2) Technical Training (direct training to the group of women and the extension agent by a technician who remained on site until December 2005. Is projected distance learning after)
- 3) Varieties of vegetables to be grown should be determined from the desire of the party counterpart on the ground and by the tendency of the market.

2. Poultry

Success and failure were observed in the poultry farm pilot project of the previous JICA study. Although successes were observed, there were some failures for poultry management processes.

Failure Cases and Lessons Learned

First Failure Case and Lessons Learned:

Picture-1 shows that the bones of animals are directly given to poultry without treatment. Many textbooks show that calcium is absorbed by giving bones, but in reality it can be absorbed in the form of powder after calcinated bones. This point on the calcination being forgotten during training, even though some people assumed that there's been declines in productivity caused by lack of calcium.



Picture 1. Untreated bones given to chickens



Picture 2. Cage constructed under the sun

Second Failure Case and Lessons Learned:

Cage seen in Picture-2 is exposed to direct sunlight. Although Mauritanian poultry resists better to heat, confinement in a cage without much movement will lead to heat stroke and possibly death. Unlike this case, the cage succeeded by placing under the shade of a tree and the mortality rate remained very low.

All poultry perished in the cage seen in picture-2, and livestock stopped. Cages for success and failure are located in sites close to the oases.

Third Failure Case and Lessons Learned:

The rainy season is not taken into account, and almost all poultry in the cage died when

accumulated rainwater on the roof has fallen sharply in the cage. This accident could have been avoided by putting a pole higher than the other in the middle of the cage. It is necessary to pay attention to small details such as putting a pole earlier to have a cone shaped roof.

Forth Failure Case and Lessons Learned:

There were many instances where wild animals entered the cage and poultry were all eaten, the house being installed in a location away from the residential area. By installing the henhouse near homes, we can prevent this type of accident as poultry will make noise in case of intrusion of the animals. In addition, we can reduce such accidents by setting up an additional fence on the outside of the cage.

Fifth Failure Case and Lessons Learned:

Providing food supply is not ensured in the area, as it raises production costs. People buy rice, millet, couscous or corn to feed poultry. Because they also eat the same products, the rates of autarky for the animals are not known.

We believe that the activities of the poultry farm can be improved significantly by taking remedy steps of the above points.

CHAPTER 5

Action Plan

CHAPTER 5 Action Plan

5.1 Basic Concept

The Action Plan for supporting women in the oases areas was developed on the basis of the following principles obtained from the cultural and socio-economic situation, lessons learnt in the pilot projects.

- i) Community development of the oases through the activation of latent capacity of women
- ii) Establishment of synergistic effects with similar projects that are already being implemented

The background of two principles is as follows.

(1) Community development of the oases by activating the latent capacity of women

In the present Action Plan, the project encourages women and women's groups directly who are the main beneficiaries and participants that did not benefit much from any development before.

Through the pilot projects, the need for the promotion of men understanding of women latent capacity has been identified for the sake of women promotion within the community. It is reasonable to seek women participation in the community development of the oases through the following cycle of "strengthening women capacity", " women contribution to the household economy" and "gathering and unification of women strengths".

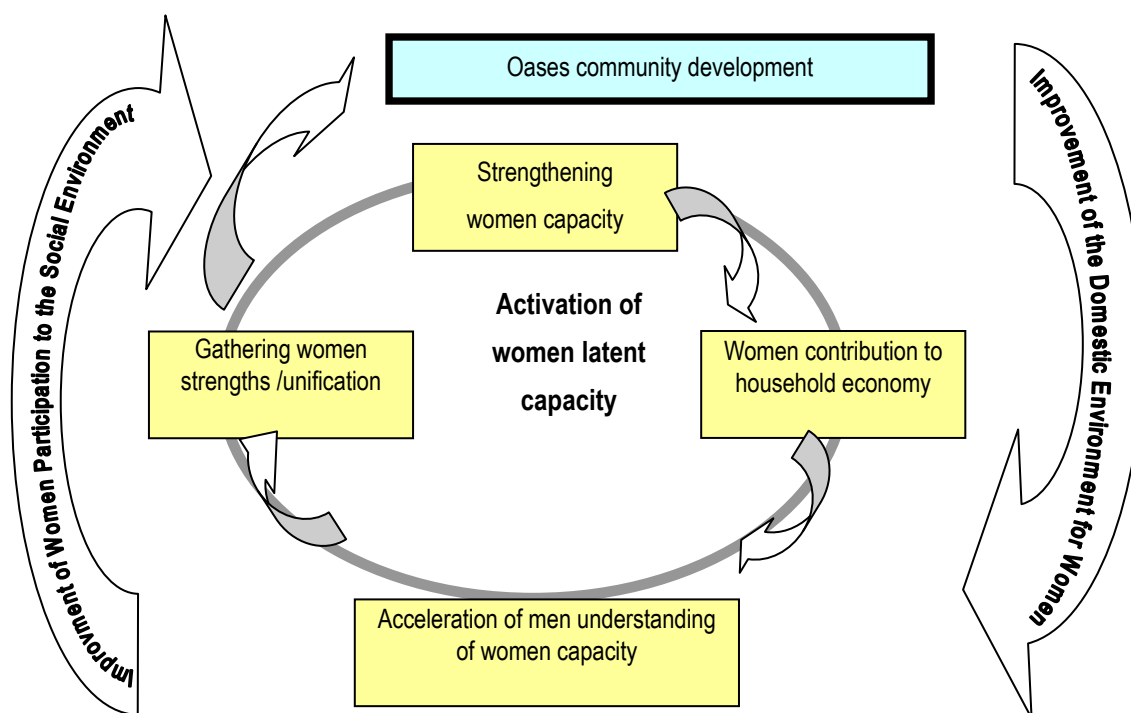


Figure 5.1.1 Concept of Community Development by Activated Women Capacity (1)

(2) Creation of the synergy with preceding project

The idea of women support proposed above in the framework of the present study has the following complementary relationships with the two projects which are already being implemented, namely the PDDO and the PDRC.

Unlike PDDO and PDRC which engaged in activities focusing on community committees such as AGPO and ADC, the approach taken in this Action Plan aims directly at women and their groups that did not benefit from projects before, and promoting their participation in the oases development or decision-making process, which will in turn accelerate the oases development (see Figure 5.1.1 above)¹.

By integrated execution of these activities, a synergistic effect is expected to be reached.

¹The oases development is carried out under the initiative of projects such as the PDDO or PDRC. These projects set up committees in their supervised oases where they develop activities. Even if they engaged in activities that take into account women and the gender aspect, support such as improving the living conditions of women or the diversification of production is necessary, as these projects do not adopt methods to improve the ability of women in general.

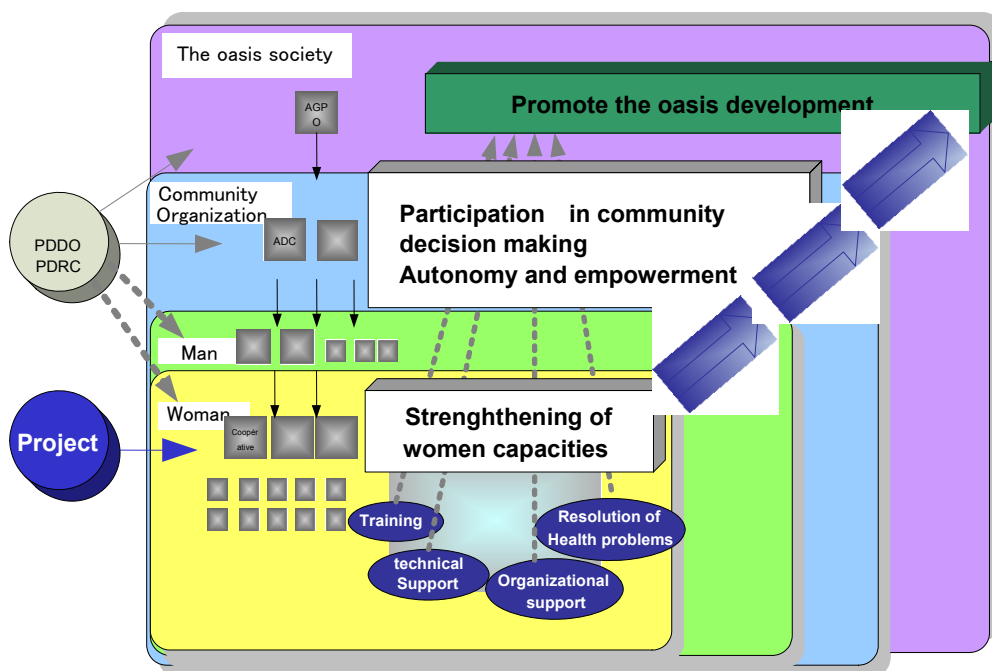


Figure 5.1.2 Concept of Community Development by Activated Women capacity (2)

5.2 Development Approach

Initiating development with people as main actors is of paramount importance for sustainable development in the remote and landlocked oases environment. The efficient promotion of the local human and material resources, the promotion of various activities based on daily needs of the oases inhabitants and the extension of the low cost philosophy (low cost activities approach) are proposed as development approach in the framework of the present Action Plan.

5.2.1 Effective Use of Local Resources

(1) Activating the latent capacity of women

Up to now, outside personnel have been used to provide support for the rural development projects in Mauritania. But it is important to train focal points selected from the inhabitants, who are able to carry out activities in a sustainable way in an oasis where extension services find it difficult to intervene. The recognition by the inhabitants themselves that it is possible to raise the latent capacity of the women is indispensable.

(2) Efficient productive activities through the cyclical use of local resources

The life of oases people is based on the use of limited local resources. Hence, people bring in animal feed while producing agricultural products or livestock. The use of agricultural by-products or residues generated by agricultural activities and local resources is essential for livestock. Agricultural production in the oases is based on the organic combination of agricultural products and animal husbandry. The fact to keep this cycle of utilization of resources is essential to the sustainable activities.

5.2 2 Multi-sector Approach

A multi-sector approach rather than uni-sector is necessary to promote the improvement of living conditions and poverty reduction in the oases area. Considering not only the improvement of productivities, this approach, which is essential to support women in household food security, improved nutrition or as vegetables producers or beneficiaries of basic health services, has shown a synergistic impact through the pilot projects. The fact that executing each project separately being deemed to be insufficient even for priority projects, it is desirable to implement projects, grouping together the issues concerned.

5.2.3 Dissemination of the Idea of Non-Wasting Philosophy (Low Cost Approach)

The fact to create a better environment by improvising things close to life at a lower cost instead of waiting for support or changes brought about by the outside world was vital for sustainable development. One can cite the example of groups of women who come together to develop dyeing marketing activities by buying all dyes after their training on dyeing in the context of this pilot projects. The improvement of living conditions starts with little things surrounding the daily lives and by gradually developing low cost and small scale activities instead of waiting for the arrival of a big project.

5.3 Action Plan

5.3.1 Targeted Area and Groups

Women and their groups in the Regions of Adrar and Tagant who did not benefit from many development projects are targeted by the Action Plan. About 40 oases of these two Regions have AGPO, and 39 auxiliary midwives (AA) have been trained in 26

oases. The support program for women will be conducted in the oases having both AGPO and AA.

5.3.2 Objectives

The purpose of this Action Plan is to try to improve the living conditions and reduce poverty by focusing on activities to support women and their groups in the target area.

The following objectives are to be set in the short term.

- (1) Improvement of households' food self-sufficiency, increase of the income and nutrition improvement
- (2) Sustainable use of local resources
- (3) Improving access to basic medical treatment and improving the nutrition of oases people.
- (4) Promoting women's participation in socio-economic activities, emphasize the promotion of the understanding of the activity of the women by men.

5.3.3 Expected Results

The results that can be expected of the Action Plan are as follows.

- (1) Improvement of households' food self-sufficiency for women's groups and products diversification.
- (2) Improved knowledge about health and hygiene and change of behaviour and amelioration of the eating habits.
- (3) Improving the basic medical service.
- (4) Capacity building and organizing women's groups.
- (5) Improved awareness of men and empowerment of women.

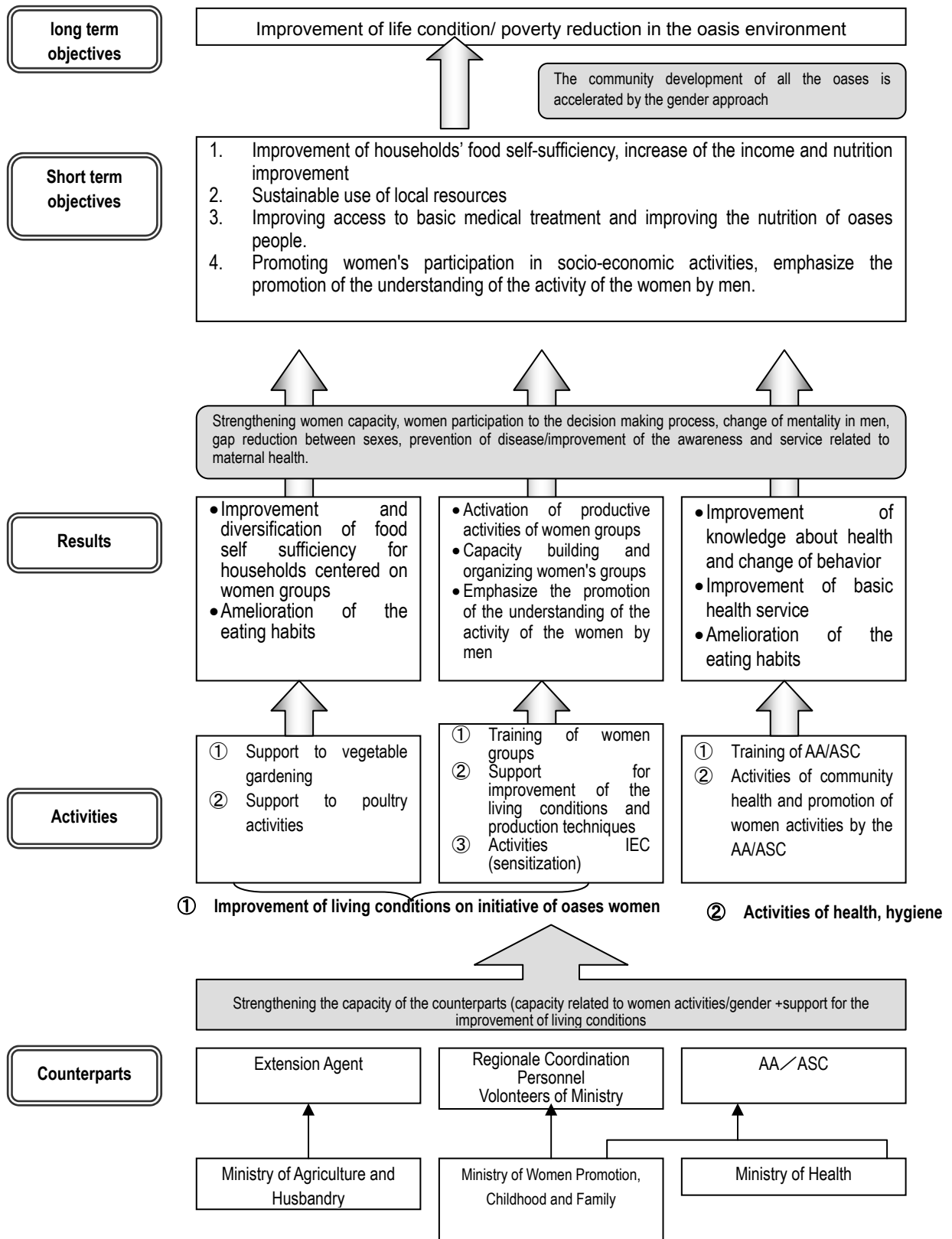


Figure 5.3.1 Action Plan and Results

5.3.4 Planning

(1) Frames

The Action Plan will be implemented in accordance with the following 4 frameworks to achieve the objectives and desired results above.

- 1) Vegetable gardening and poultry breeding whose importance is in line with the policy to improve nutrition, which are activities easily addressed by women, should be implemented on a priority basis.
- 2) The improvement of the lives of women who are in charge of managing the households along with the techniques of vegetable production and poultry farming.
- 3) To train and assist the AA / ASC able to conduct activities to support women in addition to community health activities as local women 's leaders.
- 4) The MCPFEF will implement support activities at the oasis or at the seminar for the improvement of living conditions (techniques of production and making a living, awareness on the gender aspect) through the technical assistance of the MAE or MS.

(2) Axes of activity

The Action Plan has a point in the development of the activity shown in Figure 5.3.1 along the frames above-mentioned. That is, an important concept in the achievement of objectives of AP is “the community development of the oases is accelerated by the women participation”. Therefore, the activities of vegetable growing, poultry farming and improvement of health hygiene etc. are not aiming improvement of productivity and medical services etc. but aiming at improvement of the status of women and participation in the society and economy. Based on this idea, AP will be executed aiming the following 4 axes of activities. At first, 1) training local women leaders and strengthening women organizations are necessary in AP. And the next, the specific training will be conducted from the viewpoint of 2) training/support for the income generation and the techniques of livelihood. To change people mentality, 3) sensitization will be indispensable, and 4) strengthening the capacity of the MCPFEF is also indispensable to disseminate these activities through “the seminar for the livelihood improvement” as an effective dissemination method.

- 1) Training local women leaders and strengthening women organizations

It is intended to train and assist local women leaders who take the initiative of various women activities in the oases and strengthen women's organizations. The activities consist of i) a seminar for the livelihood improvement in the regional level, ii) re-training AA (training on the subject of women leaders and the Promotion of women and IEC), iii) the training for local women leaders (leaders of women's organizations and AA / ASC), iv) strengthening women's organizations.

The staff of the Regional Coordination that attended the seminar at the central level will serve as trainer in the seminar for the livelihood improvement at the regional level. This seminar is carried out along with the study tour to pilot projects in oases in order to exchange opinions with the inhabitants. This seminar primarily intended for the MCPFEF regional staff plans the participation of the AVB of MAE executed in the Moughataa for the preparation of development activities in other areas.

The re-training of AA consisting of training related to the community health activities and promotion of women support activities, aims at the promotion of community health activities in the oases by the AA who will undertake the role of activities facilitator in various aspects of the improvement of the living conditions, AGR, or support to sensitization and extension. The role expected from the leaders of women's organizations is supporting the AA while establishing a collaborative relationship with them for giving vivacity to women's activities. Thus, a synergy is expected from these actors.

In addition to the activities above, other support activities to better organize and strengthen the capacity of women's cooperative by assisting women in spontaneous measure-taking include i) training/support to organization management for women groups (planning, design of documents like accounting book, organizing regular meetings etc.), ii) support to promote women empowerment (Support for the resolution of problems identified through the support for income generation or the improvement of the living conditions).

- 2) Training/support for the income generation (techniques of production) and the techniques of life

Carry out technical support activities to strengthen and diversify income generating activities which leads to livelihood improvement activities. The activities are i) support for the extension of gardening and poultry activities for food security, ii) support to income-generating activities other than agriculture (dyeing, sewing, crafts

and small-scale trade.), iii) support for improved techniques of life. These three elements, which represent the main pillars in these activities, should be combined as necessary for meeting the practical needs of women.

The coherence with regard to the needs of the residents, the results and the self development ability of gardening, poultry, dyeing and sewing activities were confirmed by the pilot projects. These activities will be carried out on a priority basis in consequence.

3) Sensitization and extension activities (IEC)

Carry out activities in support of sensitization and extension (IEC) on the awareness of women or gender in order to promote activities related to the improvement of the living conditions or the participation of women who are aware of their right and duty to community development. The activities consist of i) the sensitization and extension by the MCPFEF staff in the oases, ii) the sensitization and extension by the local women leaders and follow up.

4) Strengthening the capacity of the MCPFEF and seminar for the livelihood improvement

Proceed to strengthening the function of MCPFEF that is in charge of implementation of the Action Plan and the capacity of MCPFEF, MS, and MAE regional staff which must carry out the activities in the field. The activities are: i) extension of the concept and approach to the livelihood improvement through seminar on livelihood improvement at the central level, ii) review of the execution of support for women on the basis of experience learned from the pilot projects in the model oases, iii) capacity building for execution of the training on the techniques for livelihood improvement in the field on the basis of the above activities, and iv) establishment of links and collaboration structure between different ministry departments that are concerned (establishment of the steering committee).

The concept, the approach and the techniques for the livelihood improvement being applicable to other regions, the seminar on the livelihood improvement at the central level will also welcome the representatives of regional coordination of the other Regions to develop activities for the livelihood improvement focusing on women in other areas.

(3) Period of the Plan

The period covered by the Action Plan will be 5 years from 2008 to 2012, synchronizing with the last year of the PDDO. Being considered as a preparatory phase, the training for women leaders or strengthening of the capacity of the MCPFEF personnel, etc... will be undertaken in the first year. From the second year, which is considered an extension phase, each component of the programs will be carried out.

5.4 Implementation Structure

As already described, the activities of AP such as vegetable growing, poultry farming and health services are not aiming the sector objectives but aiming the improvement of women status and the promotion women participation in the social and economic activities. Therefore, the MCPFEF shall play important role in the implementation structure to execute the AP from these aspects.

The proposed implementation structure of the Action Plan is composed of central, regional and oases level. During the implementation of pilot projects, system for unitizing all levels and capacity development of each level actor were conducted. Therefore, this implementation structure is proposed based on the results of verifications that the structure works or not. Now, therefore, the each level actor in the structure shall be promoted C/Ps and trained actors in the pilot projects who know well the know-how of the implementation and dissemination mechanize. In addition, MCPFEF had the budget in prospect for the implementation of AP at February 2008 seeking cooperation from United Nations and the Government. After new Government established, MCPFEF was elevated from Agency to Ministry and has enhanced their organization both central and regional offices. As explained in the above concerning the environment of MCPFEF, the proposed implementation structure has increased viability. However, the capacity development of regional staff under MCPFEF was not sufficiently within the implementation of the pilot projects. So that the necessary measures to strengthen their capacity should be given in the AP. In this regard, the implementation structure of the AP is proposed based on the current situation and the results of the pilot projects as follows;

5.4.1 Implementation Structure of the Central and Regional Levels

(1) Central level

The basic implementation structure is composed of the MCPFEF as coordinating institution, MS and the MAE as collaborating institutions (Figure 5.4.1). At the central level, Steering Committee (SC) is developed, and all activities are coordinated by the MCPFEF through SC in regular consultation with the MS and MAE.

It is ideal for Cooperation Department in MCPFEF to take principal role for holistic management of AP and organization of SC, however, there is only four technical staff under MCPFEF and the number of the people for coordinating AP is not enough. In this regard, a Project Management Unit (PMU) of the Action Plan should be installed within the Directorate of Studies, Cooperation and Monitoring of the MCPFEF. Considering the lack of personnel in that directorate, it is necessary to find a staff dealing specifically for the implementation of the Plan (an officer, two people in charge of the two regions or 3 people in total). It is better to have technical cooperation from donor community for the smooth establishment of PMU at the beginning stage of AP. In addition, all the ministries should allocate staff in charge of SC.

The following adjustment between ministries would be necessary.

<MCPFEF and MAE>

MCPFEF would have to request MAE for the assistance of its extension officers dispatched at the regional departments. As these regional departments have freedom of action in the Regions, the coordination at the central level would be fairly simple.

<MCPFEF and Ministry of Health (MS)>

The two ministries should have a common agreement on the direction of the training of auxiliary midwives (AA) / community health staff (ASC). 47 AA (for 40 oases) have been trained in both Regions. In the framework of this Action Plan, the MCPFEF should provide to these same AA training on community health (ASC), gender aspect, promotion of women's activities or improvement of living conditions, coordinating the training of ASC conducted by the Ministry of Health that will last for two to three weeks.

(2) Regional level

1) Regional administrative structure

In the Regions, it would be necessary to set regional technical committees, composed of

technical staff at the regional level, under the initiative of the Regional Coordination of MCPFEF to adjust activities with the regional departments of MS and MAE. This committee will develop and periodically review the plan of activities, reflecting the experiences acquired on the field. It will also make periodic reports to the PMU and monitor the activities.

With the development of new ministry, MCPFEF could increase budget for regional office, increasing the number of regional staff; however, it is necessary to empower the regional offices, in order to implement the AP at the regional level. Number of staff at the regional level is about 2 people together with the head of the office, it is necessary to ensure the number of the staff who can be totally in charge of AP (1 Main person, 1 Assistant, 4 Animators). Animators should be in charge of teachers at the vocational training centers or volunteers who cooperated with MCPFEF before. The current status of the Regional Coordination of the MCPFEF does not yet allow the development and evaluation of the program to support women proposed in the framework of the Action Plan. For this, the support from the PMU will be vital to the start of the Action Plan. However, the possibility of technology transfer to improve living conditions is confirmed with the trainers of the vocational training centres of MCPFEF, and with staff and volunteers of MCPFEF.

<MCPFEF and MS>

In this context where there is the training and monitoring of AA / ASC, MS takes care of 1) the training, retraining and monitoring of AA / ASC and MCPFEF will be responsible for 2) the training of AA / ASC on the issues related to the advancement of women, the gender aspect and local women leaders training. Furthermore, by making the MCPFEF benefit from the existence of radios in the health centres in addition to periodic communication on health, the project team will try to create a communication network, connecting the oases with the capital of the Region for the exchange of information. The team will also try to get the information from the oases thorough the health posts of DRPSS (MS) to collect the activities monitoring forms issued by MCPFEF when performing their health monitoring.

<MCPFEF and MAE>

The Coordination between MCPFEF and MAE consists in the participation of the extension officers in the seminars of the livelihood improvement and in bringing their support on farming skills at the oases. These staffs, which possess techniques on the livelihood improvement such as vegetables drying or improved cooking methods in

addition to improved agricultural techniques, can provide assistance according to the needs of the oases people on the basis of the request made by MCPFEF. It has been demonstrated through the pilot projects that one can improve farming techniques or production in a more efficient manner by combining them with the "techniques of life", the "techniques of production" or "sensitization and extension" related to the daily lives of women. Thus, based on this viewpoint, the structure is one in which the staff and volunteers of MCPFEF provide assistance to livelihood improvement, strengthening of groups or improvement of consciousness. However, impacts to support women in activities such as vegetable gardening and poultry breeding will be implemented on a priority basis.

2) Support structure of the regional administration to the people

<AGPO and regional administration>

The AGPO are the main representatives of the oases inhabitants with the administration or the outside world. By focusing on the training and strengthening of women and women's organizations that are members of the AGPO, the objective of the Action Plan is to involve women and women's cooperatives along the line AGPO-regional administration. The Mauritanian government which provides for the amendment of the Law on AGPO intends to increase the number of female members in the executive office of the AGPO from one person to four people. The support for the oases women in the present Action Plan corresponds to that institutional amendment of the government.

<Ensuring the link between AA / ASC and health posts and the link with the regional administration>

In providing capacity building to the activities of community health staffs and sensitisation/advisory services to the auxiliary midwives which lie at the bottom of the ladder of the health administration, one can ensure the link with the regional administration through their activities to support women at the health posts. The main issues are explained below.

- AA / ASC have been trained in awareness on the advancement of women and gender by the MCPFEF.
- AA / ASC are attended by nurses in health posts.

The nurses in health posts are obliged to submit periodical reports to DRPSS. Thus, the AA / ASC can transmit reports or requests regarding the activities of women within

the women's cooperative or the oases to the Regional

- Coordination of MCPFEF.
- As was demonstrated by the activities of the pilot projects, use the radios in health posts for activities other than health, such as agriculture.

<Coordination between the Regional Coordination of MCPFEF and residents>

The Regional Coordination of MCPFEF could only partially assist oases women because of the lack of staff at the regional level and the lack of local representation. As has been made clear that the volunteers of the Regional Coordination have each specialties in a variety of areas (e.g. dyeing, cooking or awareness on nutrition) by the seminar on the improvement of living conditions organized at Tidjikja in the framework of the pilot study, the team will attempt to create synergy between staff and residents for the improvement of the living conditions, exploiting to its maximum the capabilities of these volunteers.

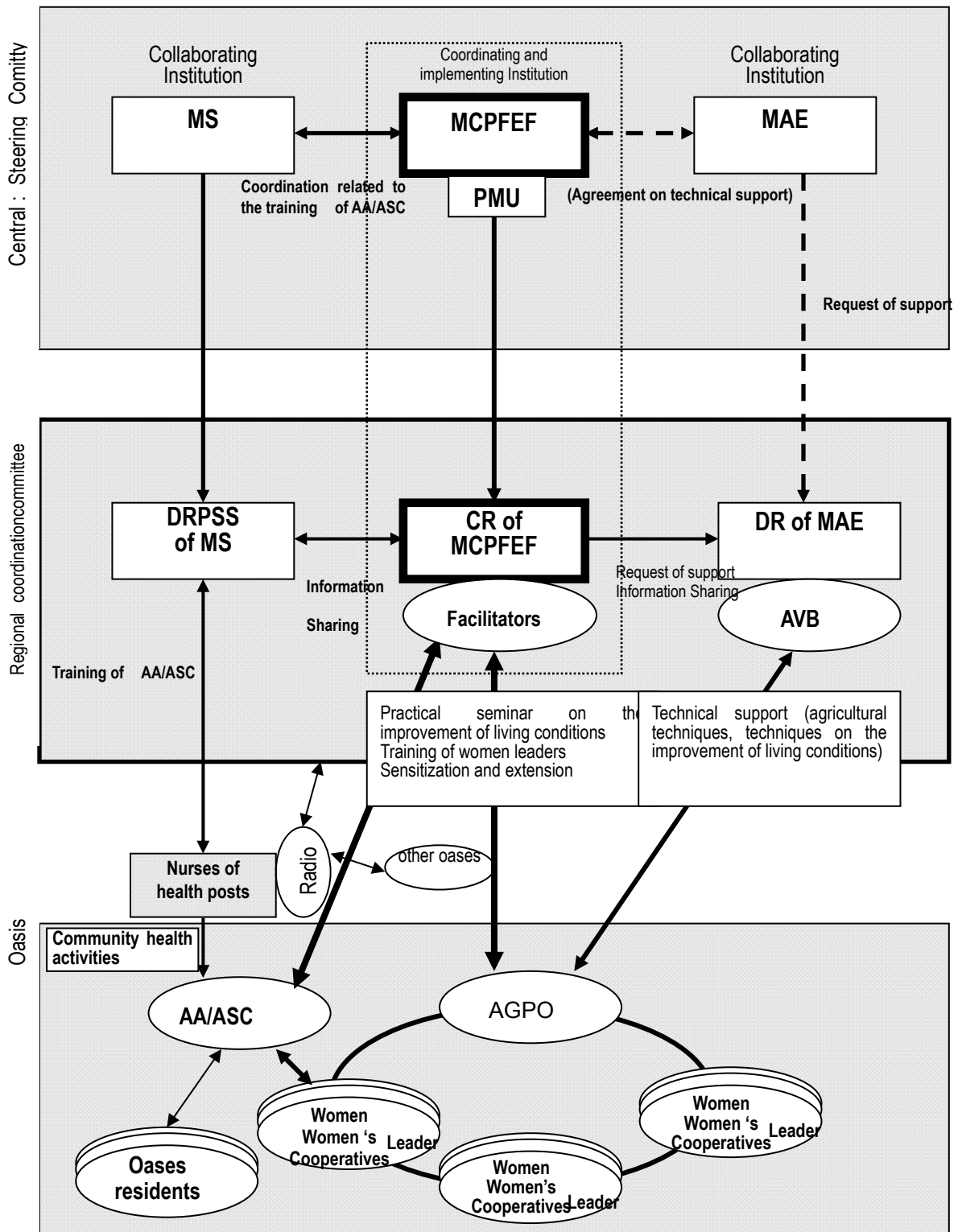


Figure 5.4.1 Implementation Structure

AGPO : Association for the participatory management of Oases
 Facilitators : Facilitators of MCPFEF (Trainers of CNFP, staff and volunteers of the Regional Coordination), Extension officers
 AA/ASC : Auxiliary midwife/community health staff, at the same time extension staff for the improvement of living conditions and resident facilitator AVB : Extension Officer. Woman leader: Resident facilitator
 PS: Health post

5.4.2 Implementation Structure in the Oases

(1) Organizations of the people in the oases

<AGPO as a representative or interlocutor of the oasis>

The Associations for the Participatory Management of the Oases (AGPO) implemented in every oasis serve as an interlocutor for coordination with the women's cooperatives or assistance in support of agriculture. The approach to women and women's cooperative in the framework of the pilot study being conducted through AGPO, the same approach should be adopted in the implementation of the Action Plan. The organization of AGPO will be soon amended by the law of AGPO. The AGPO have the function of the community to ensure that development in the area of oases is always done through AGPO. In addition, the president or the vice president should be a woman and the implementing office should have more than 30% representation of women (1 female representative at present). One can say that the environment which allows the participation of women or the deployment of their capacity is being created through the training of women leaders or through the strengthening of the capacity of women's organizations with the institutional support of AGPO for women's participation

<AA / ASC as women's leader>

Train women that will be in charge of the community health, giving additional training to already trained auxiliary midwives as community health staffs.

In addition to community health, the AA / ASC will be responsible for the role of the promotion of women's activities in the development of oasis receiving training and support on issues of promotion of women's activities, gender or improvement of living conditions. The roles as auxiliary midwives, community health staff or person providing support to women being confirmed by the pilot study, AA / ASC's role will help people such as the extension staff or staffs of MCPFEF who cannot frequently visit the oases as they are also members of the women's cooperatives.

<The Women's Cooperatives ensuring women's leadership>

Train leaders of women's cooperatives to enable the activities while maintaining complementarities with the AA / ASC who have relatively high educational level.

Although the level of literacy of leaders of women's cooperatives is low, the team saw many instances of initiatives taken in implementation activities. The team have witnessed a case by which a woman leader who had undertaken a transfer of technology

to other organizations through the activities of the vegetable gardening of the pilot study.

<The oases neighbouring the central oases >

The type of extension service foreseen in the oases would consist of gathering the inhabitants of the neighbouring oases toward the central oases where social infrastructures and marketing facilities exist, taking advantage of the network of people coming together after the development of AGPO or the health post and the establishment of AA / ASC.

The improvement of living conditions/technical support in agriculture, the training of groups or sensitization and extension (IEC) will be conducted by MCPFEF with the assistance of the extension staffs of MAE to solicit input participation of leaders of cooperatives or women so that they can benefit from these activities. The intent is to create one extension structure taking advantage of the "Guide for the extension of farming techniques" or the "technical form for the improvement of living conditions/techniques of income generation", enabling women in the neighbouring oases to revise the training content after coming back to their houses.

<Creation of the network of women's cooperatives >

It aims to establish a network through the creation of a union of women's cooperatives even though the exchange of information and experiences is not easy within and among isolated oases. Especially the creation of the women's union of cooperatives is under way in Adrar region; one may consider the exchange of information on the activities of women. The women cooperative in Tagant region being at the level of structuring their organizations, the establishment of the union cannot be considered in the immediate future.

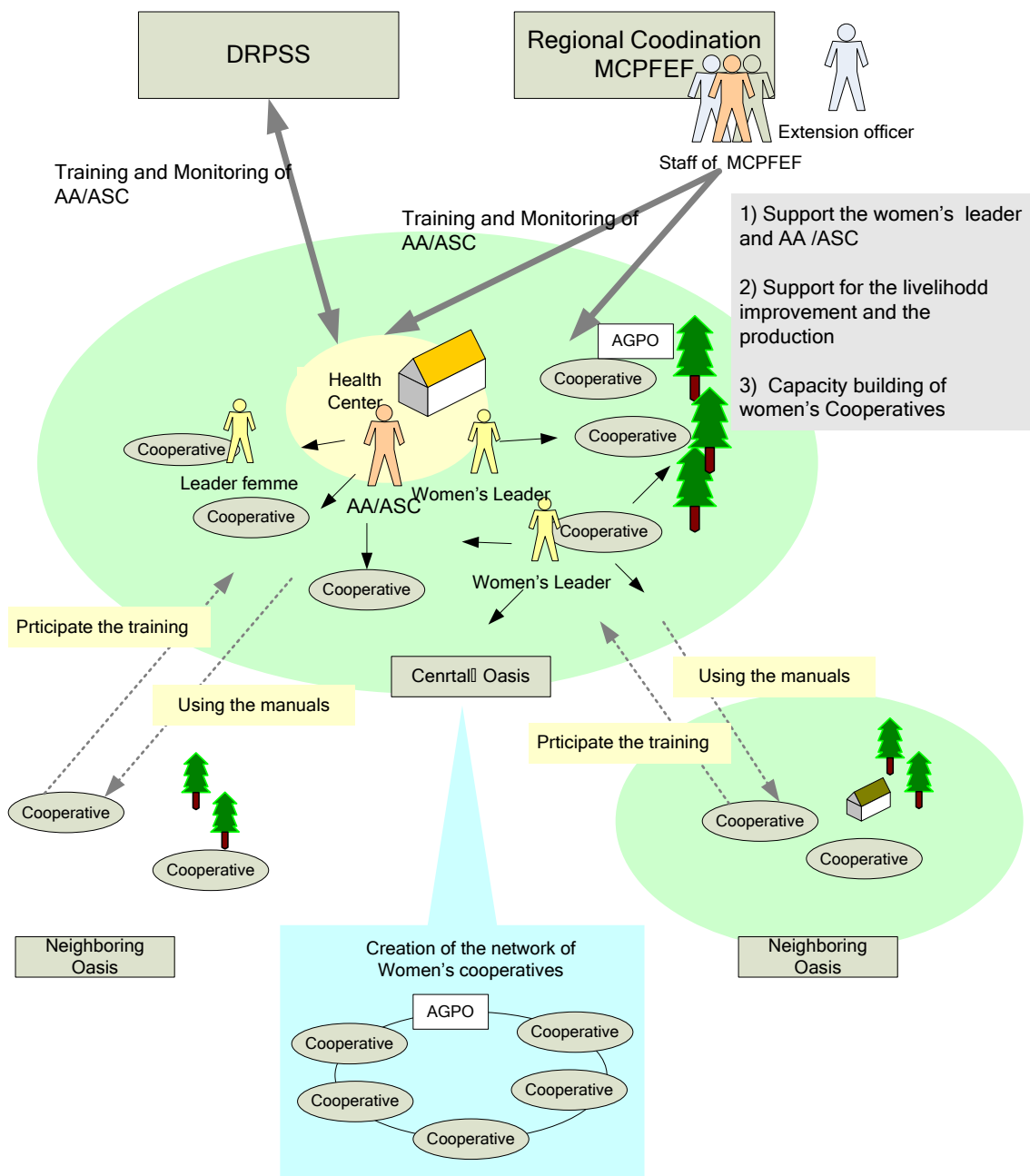


Figure 5.4.2 Extension Structure linking Oases and the Region

5.5 Implementation Plan

5.5.1 Phases of Execution

Considering the first year as start-up phase, one will proceed to the selection of target oases along with strengthening the capacity of MCPFEF and the program of the seminar on livelihood improvement. In addition, the program of capacity building for the local

women leaders will be started.

Then the extension phase starts from the second year. In this phase, there are various programs (support for the training of women's organizations, the production and life techniques encompassing technical support in the areas of vegetable gardening, poultry or dye activities) mainly for women leaders trained while receiving assistance from the staff of MCPFEF, the AVB or the staff of MS.

5.5.2 Execution Timeframe

The action plan should be executed by identifying the oases areas according to the following categories:

Category 1: oasis featuring AGPO and AA: 26 oases;

Category 2: oasis with only AA (without AGPO): 13 oases;

Table 5.5.1 shows list of the corresponding oases. The 22 oases of Adrar region and 17 oases of Tagant region are concerned. Even though the total number is 39, the oases where the pilot activities were carried out are the 6 highlighted in this list (pilot activities were carried out in 2 small oases of proximity in addition to the 4 pilot oases). The number of oases accounts for 30-40% of the total number of oases, but the number of the people accounts for about 60% (about 50,000 people) of the total population.

The 4 oasis in which pilot activities were conducted will be used as a basis for exchange between oases (Oases Tirabane and M'Haireth in Adrar, and N'Titam and N'Batt in Tagant). Activities will be developed in several proximity oases of each department at a rate of 8 oases per year as shown on the following list.

The implementation should be based on the following four ideas:

- develop extension activities taking the four model oases above as exchange bases;
- During the first period (from the 1st year to the 2nd year), running the exchange between people at the model oases in addition to strengthening the capacity of various participants like MCPFEF.
- Then in the second period (from the 2nd year to the 5th year), try to develop and extend each activity taking the oases in which the training of women organizations is going well as exchange bases.
- Develop activities in 4 or 6 new oases per year from the second year. The 33 oases will be trained during the period of 4 years.

Table 5.5.1 List of the Concerned Oases

Adrar						Tagant					
	Moughataa	Oases	Population 2007** 2000**	A A	AG PO		Moughatta a	Oases	Populati on 2005*** *	AA	AG PO
1	Aoujeft	Aoujeft	3,306	2		1	Moudjeria	Dwarah	669	1	
2	Aoujeft	Azweiga et El Hessiane	434	1	1	2	Moudjeria	El Housseiniya	920	1	1
3	Aoujeft	El Maaden	3,144	1	1	3	Moudjeria	Lemgueita	827	1	
4	Aoujeft	M'Haireth*	1,097	2	1	4	Moudjeria	Mechrae	1,896	1	
5	Aoujeft	Faress	750	2	1	5	Moudjeria	N'Beika	3,090	1	
6	Aoujeft	N'teirguent	1,423	2	1	6	Moudjeria	N'Géroo (Tichinane)	810	1	
7	Aoujeft	Terjite*	343	1		7	Moudjeria	N'Titiam	888	1	1
8	Aoujeft	Timinit*	501	1	1	8	Moudjeria	N'wao	425	1	
9	Aoujeft	Tirebane*	605	1	1	9	Moudjeria	Seigih n'dour	483	1	
10	Aoujeft	Toungad*	835	2	1	10	Tidjikja	Aghlembit	636	1	1
11	Aoujeft	Wekchedatt	250	1	1	11	Tidjikja	Echarine	1,203	1	1
12	Atar	Ain Ehl Tayaa	3,177	2	1	12	Tidjikja	Eddendane	276	1	
13	Atar	Azougui	550	1	1	13	Tidjikja	El Gheddiya	1,832	1	
14	Atar	Choum	1,588	1		14	Tidjikja	Lehoueitatt	984	1	1
15	Atar	Kseir Torchane	1,121	2	1	15	Tidjikja	N'Batt	603	3	1
16	Atar	Tawaz	3,908	2	1	16	Tidjikja	Nimlane	1,118	2	1
17	Atar	Teyaret*	612	1	1	17	Tidjikja	Rachid	2,433	3	1
18	Atar	Touzeikt*	635	1		TOTAL			19,091	17	8
19	Cginguetti	Chinguetti	2,528	3	1						
20	Cginguetti	Tenwemend*	482	1	1						
21	Ouadane	Ouadane*	2,255	1	1						
22	Ouadane	Tenllaba*	992	2	1						
TOTAL			30,536	22	16						

*Source: Adrar Population 2007, DRPSS Adrar
 ** Source: National office of statistics, National population census 2000
 *** Source: Tagant Population 2005, DRAS Tagant

As shown the schedule for the implementation in Table 5.5.2, the preparation activities is required before starting the trainings in AP.

1. MCEFE will convene Steering Committee (SC) for AP to discuss and confirm the plan of operation in AP, roles, coordination between Ministries and schedule etc.,
2. After SC, staffs of MCEFE who have to manage main activities will be enhanced through the seminar of livelihood improvement.
3. Following the agreement in SC, MCEFE will convene Technical Committee (TC) for regional administration staffs who engage in extension activities with oasis people to discuss and confirm the plan of operation in AP, roles, coordination between Ministries and schedule etc.,
4. In TC above, target oases will decided tentatively through the pre-studies concerning activities of each Ministries and projects, activities of AGPOs and women's groups in the oasis area. After these activities, specific trainings and supports will be commenced.

Table 5.5.3 Roles of Concerned Ministries in Each Activity

	Sections	Activities	Level	Target	Responsible	Actors	Need of additional staff	Role
1	Training of local women leaders	Training / recycling AA	Regional	Trained AA	MCPFEF-MS	MCPFEF MS MAE		Coordinates Executes;-Supervise;- monitores Information
		Seminar on improving the regional living conditions	Regional	AA / ASC, Leaders of groups and/or women associations	Responsibility is collective but coordination was made by the MCPFEF	MCPFEF MS MAE	Trainers	They coordinate, execute, monitor and evaluate, supervise They coordinate, execute, monitor and evaluate, supervise Execution, monitoring and evaluation
		Training of women leaders and AA (women promotion)	Oases	AA / ASC, Leader of groups and/or women associations	Regional Coordination of MCPFEF	MCPFEF MS MAE	Trainers	They coordinate, execute, monitor and evaluate, supervise Execution, monitoring and evaluation Execution, monitoring and evaluation
		Strengthening the capacity of women groups	oases	Groups and/or women associations	Regional Coordination of MCPFEF	MCPFEF MS MAE	Trainers	coordinate, execute, monitor and evaluate, supervise Execution, monitoring and evaluation; supervision Training, monitoring and evaluation; supervision
2	Training and support on the techniques of life and production	Activities of AGR, Cooking, Vegetable, animal husbandry	oases	Groupings and/or women association	MCPFEF	MCPFEF MS MAE	Trainers	Technical support Planning, production, control and management; improved stoves; AGR
		Support for the AA / ASC on the IEC technique	oases	Groupings and/or women association, people	MCPFEF	MCPFEF MS MAE		Training, monitoring, supervision Participation Participation
3	Support for sensitization and extension (IEC)	Support for the AA / ASC on the IEC technique	oases	Groupings and/or women association, people	MCPFEF	MCPFEF MS MAE	Trainers	Training, monitoring, supervision, coordination and organization Participation Participation
		Seminar on improving the living conditions	Central	MCPFEF	MCPFEF	MCPFEF MS MAE		Participation Participation
4	Strengthening the capacity of MCPFEF	Seminar on improving the living conditions	Central	MCPFEF	MCPFEF	MCPFEF MS MAE		Participation Participation

5.5.3 Methods for the Implementation of the Action Plan and Execution Procedure

The Action Plan of the present study is prepared on the basis of the assumption that MCPFEF will take the lead for its development. The following implementation methods can be considered.

- 1) The MCPFEF implements the Action Plan in collaboration with the departments concerned.
- 2) The MS or the MAE implements part of the Action Plan independently under its own initiative.
- 3) A project such as PDDO, PDRC or PASN implements part of the Action Plan.
- 4) The people implement part of the Action Plan by using the system of micro-credit.

The implementation procedure of the Action Plan by the MCPFEF in collaboration with the ministries concerned is as follows.

- (1) In case the MCPFEF implements the Action Plan in collaboration with the ministries concerned.

1) Financial Source

Total funding by the Mauritanian Government to cover the necessary expenses for the realization of the overall Action Plan being supposed difficult, one should rely on a certain level of donor assistance. For the start up of the Action Plan, a technical assistance from a national or an international expert should be provided for a smooth execution of the activities. The MCPFEF should seek donor while trying to seek funding sources at the governmental level.

2) Execution procedure

- First year: preparatory phase

- i) Establishment of the project management unit (PMU) under the supervision of the Department of Studies, Cooperation and follow up of the MCPFEF.
- ii) Establishment of the Steering Committee of the Action Plan (within the MCPFEF: the members are: the MAE, MS, MEF, PDDO and PDRC).
- iii) Ensure budget and activities planning.

iv) Ensure the staff for implementation of the project.

The MCPFEF should dispatch a staff that will be solely dealing with the project activities as staff at central and regional levels.

- Central level: 1 coordinator, 2 extension staffs, 3 drivers

- Regional level: 1 coordinator, 1 assistant, 4 extension staffs (in each region)

v) Inter-ministerial Coordination by the steering Committee and preparation of detailed plan of activities of the Action Plan.

vi) Establishment of the Regional Technical Committee and Coordination (Members: Regional Coordination of MCPFEF, the MAE, MS, PDDO and PDRC)

vii) Implementation of the seminar of the livelihood improvement at the central level: strengthening the capacity of the MCPFEF.

viii) Selecting oases where to intervene and study (adjustment to the needs of the residents).

ix) Re-training AA / ASC

x) Implementation of the seminar of the livelihood improvement at the regional level (the seminar is organized for local women leaders, representatives of women's cooperatives and AA / ASC)

xi) Support to local women leaders at the oases level

xii) Reports writing and annual evaluation.

- 2-4th year: extension phase

i) Furthering activities in the oases: strengthening women's organizations, training and support on income generation techniques (production techniques) and the techniques of life, sensitization and extension activities.

ii) Monitoring / Evaluation, report writing

(2) In case the MS or the MAE would implement a part of the Action Plan independently under its own initiative.

In the Action Plan, the AA / ASC represent the axis of the activities in the oases. The MS, intending to train again more auxiliary midwives (AA), will carry out training for the extension of the community health along with the training of AA in order to enrich the basic medical services in the oases.

The MAE will implement the demonstration of gardening activities or poultry mainly with AVB at the level of the Region or the Moughataa for the inhabitants of proximity oases. The MAE Delegation in Tagant already plans the demonstration.

(3) In case a project such as the PDDO, PDRC or PASN should implement part of the Action Plan.

When carrying out the activities with funding from donors such as IFAD and the World Bank, the plan is already established. However, the needs of the oases inhabitants especially those of women being identical, one can expect these activities to run in an efficient manner using the handbooks/manuals developed in the framework of this study to support women.

(4) In case the inhabitants implement a portion of the Action Plan, taking advantage of the system of micro-credit.

One can cite, as example of initiative taking by the inhabitants, the women group of M'Haireth which is seeking for a funding of one million UM (about 4,000 US\$) from the training fund of PDRC for dyeing and sewing activities to develop the technical support activities initiated by the present study. One can thus expect activities to develop by their own initiative of the inhabitants who take advantage of the system of micro-credit.

5.5.4 Execution Methods

The MCPFEF having no extension agents in the oasis, it will be useful to train local diffusion/extension staff (Local volunteers and AA / ASC) and basic extension staff through activities such as the seminar on the improvement of the living conditions, in order to conduct extension activities in the oases. The diffusion staff from the central level (trainers of vocational training centre and the MCPFEF staff), the MAE personnel

in charge of organization, or the training units of ASCs and DRPSS will be in charge of training the local diffusion and extension staffs.

In the framework of the Action Plan, the extension consists of training, and exchange between residents and dissemination of books and pamphlets by bringing together stakeholders from 3-5 oases every time, instead of a demonstration in an oasis serving as a base, taking into account the extension at a lower cost. Investments in this case are related to: (i) the training, (ii) the exchange between the people, (iii) the cost of printing handbooks and brochures, and (iv) the travel expenses of the staffs and extension agents. This method which requires taking initiative by peers (MCPFEF etc.) already being used in the pilot activities in the third year of this study, has proved the effectiveness of a low-cost method.

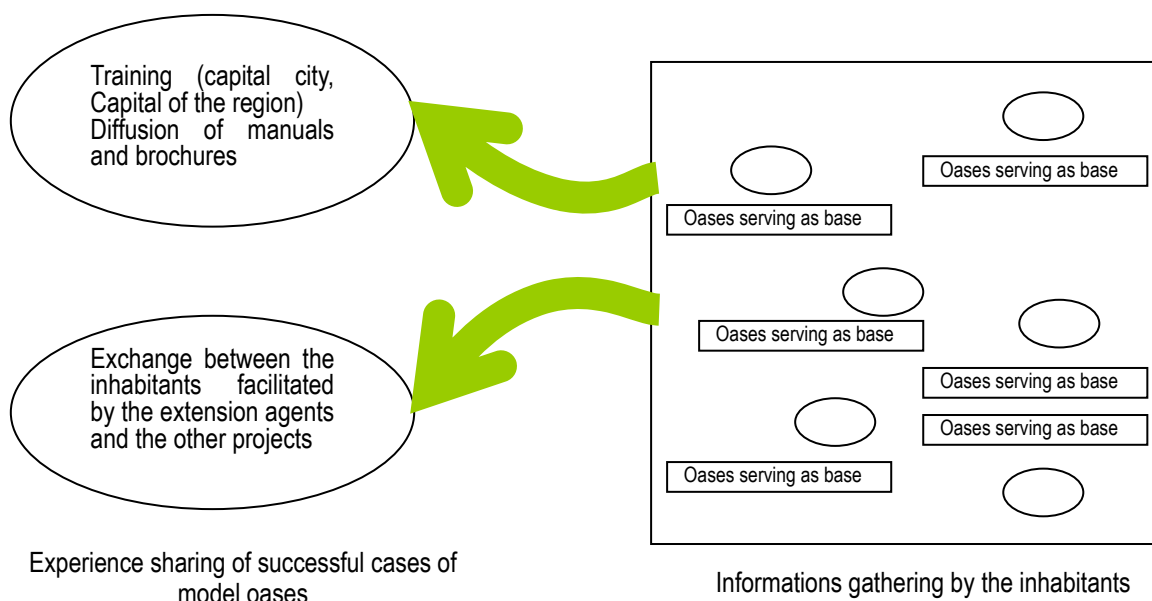


Figure 5.5.3 Extension Method at Reduced Cost

The women groups, the AA / ASC and the concerned oases' AGPO members who have learned experiences of model oases through various trainings in the capital of the region, or exchange between oases, will develop activities in their oases by taking the initiative.

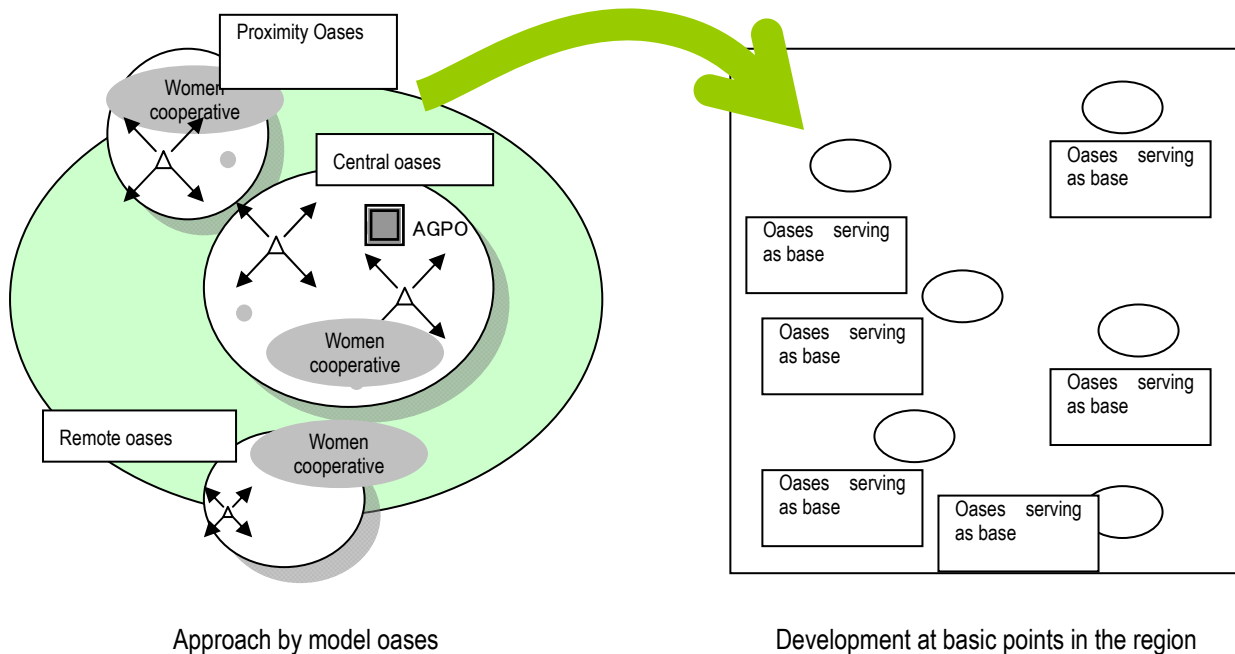


Figure 5.5.4 Diagram Flow of Successful Experiences by the People under Administrative Extension Support

5.5.5 Monitoring and Evaluation

The monitoring and evaluation of the programs will be carried out with the following methods.

- The regional coordinator makes monthly report from the preparatory phase.
- The monthly report should be submitted to PMU by the 30th of each month.
- The project management unit should summarize the progress of each program on the basis of monthly reports submitted by the regional level in order to establish a quarterly report and present it to those concerned.
- The field study.
- The PMU should carry out a quarterly technical monitoring and prepare a report.
- The PMU should report the progress of the programs once every 6 months to the MCPFEF and the donor.
- The PMU should be required to confirm the status of the activities on site once a month.

5.5.6 Project Cost

The women support program is composed of 4 sub-programs of training or technical support. The investment required for the implementation and management of these programs are i) the maintenance fees of the Project Management Unit: ① the experts, ② the office equipment such as computers, ③ the office management cost, and ④ the management and maintenance of vehicles, and ii) the costs of training programs, iii) the costs of printing extension handbooks/manuals, and iv) the project monitoring and evaluation.

If one evaluates the necessary costs to realize the investment above, the total amount except expenditures for the experts from the Project Management Unit is about 110 million UM (about 0.4 million US\$). The annual cost falls between 16 million UM (about 63,000 US\$) and 28 million UM (0.11 million US\$). The activities of first 2 years of strengthening the capacity of MCPFEF staff are estimated at 6 million UM (24,000 US\$) and the annual cost for the entire training runs between 8 million UM (32,000 US\$) and 20 million UM (85,000 US\$).

Table 5.5.4 Estimated Cost of the Women Supporting Programs

Note: The cost of the project management unit does not include the expenditures for staffs and experts.

	1st year	2nd year	3rd year	4th year	5th year	Total	Remarks
1. Project management unit							
Computer	1,200,000					1,200,000	Laptop×3
Projector	900,000					900,000	3 sets
Generator	400,000					400,000	2 sets
Office furnitures	1,000,000					1,000,000	Table, chair etc.
Office maintenance and management	400,000	400,000	400,000	400,000	400,000	2,000,000	Tonner, paper etc.
Management and maintenance of vehicles	824,000	824,000	824,000	824,000	824,000	4,120,000	Fuel, spare parts
sub total	4,724,000	1,224,000	1,224,000	1,224,000	1,224,000	9,620,000	
2. Training							
1) Training of women leaders and women organizations							
Seminar on improvement of regional living conditions	4,848,000	4,848,000	4,848,000	4,848,000		19,392,000	
Re-training of AA	2,570,400	2,570,400	2,570,400	2,570,400		10,281,600	
Training of leaders	992,000	992,000	992,000	992,000		3,968,000	
Training on organization management		2,971,200	2,971,200	2,971,200	2,971,200	11,884,800	
Sub - total	8,410,400	11,381,600	11,381,600	11,381,600	2,971,200	45,526,400	
2) Techniques of production and life							
Vegetable, poultry		1,020,000	1,020,000	1,020,000	1,020,000	4,080,000	
Income generating /techniques of life		3,587,200	3,587,200	3,587,200	3,587,200	14,348,800	
Sub - total		4,607,200	4,607,200	4,607,200	4,607,200	18,428,800	
3) Sensitization and extension activities		416,000	416,000	416,000	416,000	1,664,000	
4) Strengthening the capacity of MCPFEF	3,200,000	3,200,000				6,400,000	
Sub - total 2.1)~4)	11,610,400	19,604,800	16,404,800	16,404,800	7,994,400	72,019,200	
3. Diffusion of documents							
Handbooks and manuals		750,000	750,000	750,000	750,000	3,000,000	50 sets / year
Flipchart		500,000	500,000	500,000	500,000	2,000,000	50 sets / year
sub - total		1,250,000	1,250,000	1,250,000	1,250,000	5,000,000	
4. Monitoring and evaluation							
Reguler monitoring		1,376,000	1,376,000	1,376,000	1,376,000	5,504,000	
Agricultural monitoring and orientation		2,304,000	2,304,000	2,304,000	2,304,000	9,216,000	
Evaluation	1,459,200	1,459,200	1,459,200	1,459,200	1,459,200	7,296,000	
Monitoring forms		60,000	60,000	60,000	240,000	240,000	
sub total	1,459,200	5,199,200	5,199,200	5,199,200	5,199,200	22,256,000	
5. total (1~4)	17,646,000	27,278,000	24,078,000	24,078,000	15,667,600	108,895,200	
6. Unforseen (10%×(1~4))	177,936	272,780	240,780	240,780	156,676	1,088,952	
Total MU	17,971,500	27,551,000	24,319,000	24,319,000	15,824,000	109,984,000	
Total US\$	72,000	110,000	97,000	97,000	63,000	440,000	