Ministère de l'intérieur
Diréction Général des Collectivités Locales
The Kingdom of Morocco

THE STUDY
ON
THE PROJECT OF RURAL DEVELOPMENT
IN ERRACHIDIA PROVINCE
IN
THE KINGDOM OF MOROCCO

Final Report

(Appendix)

February 2012

Japan International Cooperation Agency

SANYU CONSULTANTS INC.

PADECO

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1.1. Present situation of Errachidia Province In and Around

1.1.1. Errachidia province in Morocco

1.1.1.1. Situation of Errachidia Province in Meknes-Tafilalt Region

Morocco consists of 16 regions and 61 provinces. Errachidia Province as the Study Area belongs to Meknes-Tafilalt Region and occupied about 75.4% of area in the region. Population density is the lowest value of 9.3persons/ Km2 and poverty rate shows the highest value of 29.49% (Poverty line is less than 1,745DH/month/HH in rural area) among the region. In this regard, reshuffling of communes was performed among provinces, 13 communes were regrouped into Midelt Province, 5 communes were shifted to Tinghir province.(*) Note, Refer to Appendix 5 Table 1.1.1).

Situation of Errachidia Province in Meknes-Tafilalt Region

Region	Area ((Km^2)	Communes No.	Population (person)	Pop. Density Persons/ Km^2	Poverty Rate (%)	Vulnerable Rate (%)	Illiteracy Rate (%)	
							male	female
Errachidia *) Note	60,000 (75.4%) 53,850	47 29	556,612 394.235	9.3 7.3	*29.49*	20.58	25.7	53.4
Khénifra	12,320(15.5%)	38	511,538	41.5	18.18	20.80	41.1	63.4
Elhajeb	2,209 (2.8%)	16	216,388	98.0	21.43	*22.68*	35.0	61.0
Ifrane	3,310 (4.2%)	10	143,380	43.3	16.03	18.31	36.7	58.0
Meknés	1,786 (2.2%)	23	713,609	399.5	12.85	16.17	22.0	43.8
Total	79,625(100%)	134	2,141,527	26.8	19.5	19.22	29.8	53.6

Source: Données cartographiques et statistiques September 2004 ORMVA/TF Monography (2006)

Food Security and Food Balance

(1) **Food Consumption**

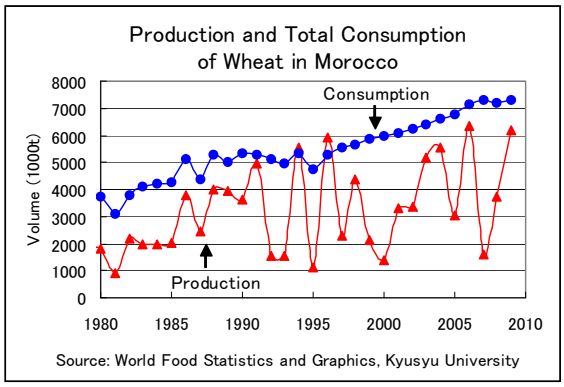
Analyzing the dietary life of Morrocan citizens from the Food Balance Sheet by FAO (2003), it is at the first glance characterized from its high rate of wheat consumption. They consume their staple wheat at the rate of 180 kg/year per capita, which is by far higher than that of global average, 67kg. As to their vegetable consumption, tomatoes, onions, potatoes are mainly consumed among others, while in terms of fruit consumption, they consume citrus fruits like oranges, apples and dates more than others. Dates, as a specialty fruit produced mainly in such inland areas as Erracidia Province, have a typical annual pattern of increasing consumption during the Ramadan period as described in Coran.

As to edible oil, Moroccan people consume more olive oil and soybean oil than that of other countries. Especialy, the consumption of olive oil is 6 times as much as the global average. In terms of meats, they characteristically used to consume less beef than mutton/ram and goat meat, while consuming other livestock products such as milk and eggs less than the global mean level (Refer to Appendix5 Table

1.1.2).

(2) **Food Security**

Morocco has failed to accomplish self-supply of its staple, wheat, because of unstable domestic production, relying the deficit on imports. As mentioed-above, the level of Moroccan wheat consumption is exceedingly higher than the world average, taking around 45% of the mean daily uptake of adult calory requirement per capita from wheat, reaching about twice as much as the global mean. Acreage under wheat is dominantly cropped with soft wheat varieties used for baking round-shaped bread, or Arabic bread, popularly consumed at home, followed by duram or hard wheat varieties utilized for cooking cous-cous.



(3) **Food Balance**

Following table shows the food balance of basic foodstuff in Morocco. According to the FAO Food Balance Sheet, wheat, sugar and milk are import goods, whereas fresh vegetables (tomato and other vegetables) and fresh fruits (oranges and mandarins) are export goods of Morocco. Some amount of olives is exported, but mostly table olives are domestically self-consumed after processing into pickles. Around 90% of olive oil consumption is provided by domestic producers, and the rest is procured from foreign countries. Dates and apples are locally specialized products of inland regions including Errachidia Province, but their import quantities are exceeded than export ones. Although Moroccans used to drink tea at any time, tea leaves are brought from other countries such as China.

The below table shows the rate of food self-supply of Erracidia Province. Wheat as the staple of Moroccan nation is cropped in almost all the communes in the Province, however, the rate of food self-supply is nothing but 35% of the Provincial demand. Not only wheat, but other foodcrops like other cereals, vegetables and fruits are also far from self sufficiency, dependent upon importation from the producing areas out of the Province. As Provincial food production, dates and apples outweigh provincial domestic consumption, thus exporting towards consuming areas out of the Province. Though self-sufficiency rate of olive stands at 92% in the Province, with higher amount of annual production as compared with those of other crops, no processing plant is available in the Province. Therefore, most of olive domestically produced other than that utilized for oil extraction is to export out of the Province while processed produce is reimported therefrom to meet its domestic consumption.

Self-sufficiency Rate of Basic Foodstuff in Errachidia Province

Item	Production /a (t)	Food/capita/ year (Kg) /b	Food Consumption /c	Surplus (t)	Self-sufficiency Rate (%)
wheat	45,389	8,425	131,290	-85,901	35%
Barley	10,377	1,831	28,534	-18,157	36%
Maize	2,654	1,406	21,906	-19,253	12%
Beans	3,580	8,425	131,290	-127,710	3%
Onion	728	999	15,564	-14,835	5%
Tomato	1,087	1,138	17,739	-16,652	6%
Potato	7,952	1,827	28,476	-20,524	28%
Apple	7,277	411	6,409	868	114%
Olive	12,316	860	13,408	-1,092	92%
Date	14,918	69	1,077	13,841	1386%

Source: a/ ORMVA Monography 2006 (Data: 2004)
b/ FAO Food Balance Sheet 2003
c/ Population: 2004

Natural characteristics

(1) Climate

Errachidia Province consists of a great arid stretch including, essentially, high mountains that make access difficult and consequently, cause the difficulties in the establishment of modern routes (Roads and railways).The climate is the Saharan type, temperature gaps are great between days and night or summer and winter (it varies between -5° to 45°). Pattern of annual precipitation is irregular and unequally repartitioned. On the other hand, in drought years the rainfall deficit can be very enormous while in wet years there may be risks of floods as have recently happened during the autumn and winter of the year 2008/2009. Therefore the temporal irregularity as well as geographical disparity of rainfall makes figures a bit uncertain; the average of 100mm in dry year and 200mm in wet year. The rivers crossing the province are characterized by a great irregularity of flow, they are completely full only during rain flood seasons. These water streams start at the heights and are wasted at the desert.

(2) Farming

Agriculture accounts for 90% of economic activity in the region of Tafilalet, 71% are rural. According to ORMVA/TF, there are three agro-ecological zones:

Mountain zone: The culture system includes two stages: the Rosaceae fruit (apples, pears and quinces) and low crops (cereals, alfalfa and vegetable crops) associated with rearing of cattle and sheep extensive. This system is specific to the High Ziz, High Guir and High Gheriss.

Intermediate zone: The culture system includes three stages namely: palm, olive and underlying cultures (cereals, alfalfa, pulses and vegetable). This system is practised in the middle of Ziz, Ghriss, and Guir.

Plain Zone: The plain is characterized by a culture system to two floors: the date palm and the underlying cultures (cereals, alfalfa and henna) associated with the intensive rearing of sheep breed of D'man. This system is conducted at the plain of Tafilalet, down Gheriss and down Todgha.

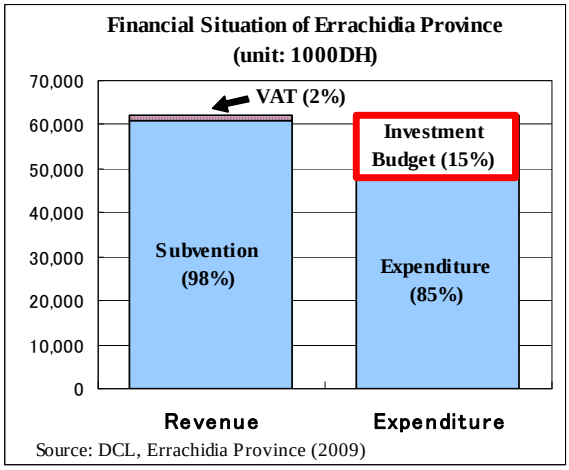
60,000 hectares out of the 7.7 million in the jurisdiction zone under responsibility by ORMVA/TF in the Tafilalet are irrigated. The rest consists of pasture land(45%) and uncultivated land (52%). The land holding size per household is mostly as small as 1 ha where irrigation has been practiced by farmers' groups owning water right.

1.1.1.2. Financial status of Errachidia Province

The provincial budget can be divided into two (2) major items, one for general administration (Functioning) and the other for development (Investment). The latter is included in the former item, that is, the difference between the budget for general administration and the general expenditures can be availed for development budget. Revenue items for Errachidia Province include six (6) items as derived from taxes and subsidies (Refer to Appendix5, Table 1.1.3).

The provincial budgets in the year 2007, 2008 and 2009 are shown below. Assuming the budget for 2007 to be 100, it shows an increasing trend until 110 % in 2008 and 128 % in 2009.

The financial status of Errachidia Province in 2009 is shown in the figure on the right, where only 2 % of revenue is sourced from taxes and so much as 98 % is derived from the subsidies allocated by the central government. For development, 15 % of the provincial revenue is allocated in 2009, however, the budget scale is considered not sufficient enough. Major reasons for the limited budget available for development can be by by administration costs where personnel costs are the largest showing as much as 78 % out of the total expenditures. In Errachidia Province employment opportunities are quite due to the least number and the smaller scale of industries developed/ operated. As is the case, the employment by the local governments is of quite important in increasing the job-less rate to cause eliminating social unrest as much as possible. These can be as the reflecting the higher ratio of personnel cost. At present, as many as 580 persons are employed by the provincial government, but to reduce the increasing administration costs, recruitment of new employee has been suspended since 3 years ago.



Source: DCL, Errachidia Province (2009)

1.1.1.3. Administrative Framework of Errachidia Province

Each region / province is subdivided into districts (cercles, sing. cercle), municipalities (communes, sing. commune) or urban municipalities (urban communes, sing. urban commune), and arrondissements in some metropolitan areas. The districts are subdivided into rural municipalities (communes rurales, sing. commune rural). The municipalities are generally considered on the same level as the localities of urban communes.

Local administration still follows many French and Spanish procedural patterns, but final authority rests with the king through the Ministry of the Interior. Each region /province has a governor appointed by the king. The regions and provinces select councils or assemblies, which hold public sessions in spring and fall. The assemblies are serenely restricted to social and economic questions.

The provinces are divided into administrative areas, called cercles, each headed by a superqaid (caidat). Each cercle is subdivided into rural and urban communes, each headed by a qaid or a pasha, respectively, and assisted by a communal council. Councilors are elected for 6-year terms, and each council is composed of 9 to 51 members, depending on the size of the commune.

1.1.2. Superior Plans related to Rural Development Plan

1.1.2.1. Rural Development Strategy 2020 (SDR 2020)

The index of poverty has been elevated from 13% in 1990/91 to 19% in 1998/99. The number of people economically vulnerable increased meadows of 3 million. Under such a situation, Ministry of Agriculture and Marine Fisheries formulated “Rural Development Strategy (SDR2020) targeting poverty reduction, relief of socially vulnerable people and improvement of agricultural productivity based on a long-term plan, in which the following 6 major goals were envisaged:

- ✓ Rural development and agricultural productivity enhancement by means of accelerating rural employment, efficient water management and desertification control
- ✓ Small participative integrated projects, starting with the irrigated poor zones and Bour
- ✓ The expansion of the basic rural infrastructures and the access to the social services
- ✓ A sustainable management of the natural resources based on the participation of the users and the conservation of the natural resources
- ✓ Poverty reduction and promotin of rural employment by means of rural development,
- ✓ The involvement of the rural women in the development process and the development of human resources in the rural areas

1.1.2.2. “Green Morocco Program (PMV)”

In Morocco, the agricultural sector occupies nearly 40% of the working population. In particular, 5 basins out of 8 are in the situation of water shortage where water competition between agriculture and

livimg / industry grows seriously. Under such situations, the Government of Morocco aims at improved these situations and formulated PMV. .

This plan consists of two pillars shown in the following, in particular, as for the promotin of the second pillar, 3 priority development plans have been provided:

1. Promotion of powerful agriculture by the participation of newly type, enterprising groups and joining into international markets though the investment by overseas private sector who has powerful management capacity, capable of introducing investment in the order of 10,000 million Dh/ year,
2. Expansion of agricultural income of socially handicapped who depend their livelihood on rain-fed farming in rain-fed areas

Program 1: Crop diversion into high return cash crops like olive, almond, locust bean (Ceratinia Silica L.), cactus etc from which higher value addition can be expected toward poor formers who have been dependent on cereal cropping by erratic rainfall,
Program 2: Increase of household income by introducing diversified crops toward poor farmers in the areas where soil improvement can be practiced, and
Program 3: Instructions on farming and rearing livestock toward farmers and creation of information sustem on these contents of instructions and promotion of enlightenment activities.

To accomplish the above-listed targets, ADA (Development Agency of Agriculture) has newly been organized, that has formulated agricultural development plans at national level and 16 regional levels. As to the first pillar of soliciting investors 1,000 projects have been provided and for the second pillars 500 projects have been provided for the scheduled beneficiary of about 14 million farmers.

1.1.2.3. National Initiative on Human Development (INDH)

19% of the Moroccan population, or around 5.3 million belong to the poor, of which 66% live in rural areas, where rectification of area disparity in economic and social terms is a pressing issue. Under such a state, the King Mohammed VI announced the State Initiative on Human Development (INDH） on 18th may 2005. This project has objectives of supporting income generating activities toward social handicapped (poor stratum, inhabitants in slams etc) as well as improved access to basic social services (health/ hygiene, educatin etc) through improving basic infrastructure. This also provides a national approach to eradicate social instability attributable to poverty and social disparity.

The first phase project has completed in 2010, and now reflecting its fruit and lessons learnt the second phase one will start from 2011. The outline of INDH is summarized in the following table.

Outline of INDH Project

	Executing period	Target Communes	Amount of Budget（Dh）
Phase I	2006-2010	Rural Commune 403 Urban Commune 264	10 billion
Phase II	2011-2015	Rural Commune 701 Urban Commune 530	17 billion

1.1.3. Action Plans of provincial offices of various ministries

(1) **Water resource development by DRH/GRZ**

1) Further utilization of water resources by planned reservoirs

16 barrages have been studied and/or designed in the basic plan of integrated water resources development in the southern watershed of Atlas mountains（étudiés et programmés dans le cadre du Plan Directeur d'Aménagement des Bassins Sud-Atlasiques）, among which the most important ones are Tadighoust Barrage and Timkit Barrage scheduled sites of which are situated in the watershed of Gheris River. 139 MCM/year will be secured as the storage volume of these two planned reservoirs. Also, 118 MCM/year of flood control will be realized. Besides, 15 MCM/year will be envisaged through the elevated rehabilitation of existing barrages by raising the elevation of the water intake, while 4 MCM/year can be expected as an increased amount of water use by the construction of newly constructed water intake facilities. (For details, refer to Appendix5, Table1.1.4).

2) Risk management against natural disasters：countermeasures against floods and droughts

Though Guir-Gheris-Ziz watershed has been known as that of large scaled and seriously affecting floods that occurred in the past, the problem of huge flood damages within Ziz valley has been overcome since the construction of the Hassan Addakhil dam. Nevertheless, risk of flood damages still always threatens in other watershed areas. In fact, 13 out of 15 sites located in the watershed of Guir-Ghéris-Ziz liable to flood damages are included in the national plan on flood protection. In this Plan, an integrated structural measure is included as shown in below table to which the cost amounting 265 MDH has been allocated (Refer to Appendix5, Table 1.1.5).

(2) **ORMVA/TF**

1) Stable water use by planned irrigation facilities (measures against floods and droughts)

ORMVA/TF is planning and scheduling to implement 5 irrigation systems as listed below targeting in 2015, of which an increase of about 65MCM/year for irrigation purpose can be anticipated by 2015.

i) Management system by 4 areas by constructing / rehabilitating dams for diverting stream water and facilities for flood dispersing systems.
ii) Completion of 2 project sites that aim at water harvesting and flood dispersing
iii) Project to diverting floods taking place in the watershed of Guir River into that of Ziz river
iv) Construction of flood protecting facilities to protect farmland from flood damages
v) Concrete lining of small- and medium-scaled irrigation canals, rehabilitation, extension and construction of pumping stations, water intakes for watershed diversion.

The project cost for implementing these projects will be funded by MCA and FIDA with the estimated cost of 5.4 million Dhs for their studies and 139million Dhs for their implementation. On-going and planned studies as well as repairing of irrigation facilities are shown in Appendix5 Table 1.1.6

a) The following advantages can be expected as the effects of the projects

- Improved water use

  Water use will be improved through rehabilitation of intake weirs coupled with adequate water management, thereby capable of maintaining surface flow of the originally planned 4 MCM/year.
- Restored date-palm orchards

  Supplemental irrigation equivalent to 4,000 m3/ha/year will be realized to feed date-palm orchards through the implementation of the above stated projects, thereby capable of the restoration of around 1,000 date-palm orchards.
- Improved irrigation efficiency

The irrigation efficiency will be improved from current rate of 50% to 75% through improving water management, concrete lining etc of the existing irrigation facilities. In addition, flood damages in the watershed of Guir River will be alleviated by diverting flood water in the watershed of Guir River into that of Ziz River, thus additional water use equivalent to 40MCM/year can be realized in the command area in Tafilalet Plain. Available water for agricultural use is estimated at 727MCM, of which until 2009 476.5MCM (66％) has been developed, further 541.5MCM（75％） is planned by 2015 (refer to Appendix5 Table 1.1.7).

(3) DPET

National Road Program (II), PURR2 has been implemented by DPET. The progress of 290.8km of road construction/rehabilitation equivalent to 64% will be completed in 2009 so far against the final goal of road integration of 452km in total. DEPT has 2 action plans up to 2012. The one is PURR2 which implementing cost is estimated at about 95 million Dh and the other is the rehabilitation of bridges damaged by the flood which cost is at about 70 million Dh. Total cost are estimated at about 165 million Dh up to 2012.（Appendix5 . Table 1.1.8、Table 1.1..9）.

(4) ONE

ONE carries out local electrification projects based on 5 development strategies, namely, to improve the quality of service provided to customers, to develop ways to solar, thermal, hydro and wind generation, to increase safety and reliability of the national transmission network (Very high voltage and high voltage), to develop interconnections with neighboring countries and to achieve and enhance the Rural Global Electrification Program, (PERG).

1) The Rural Global Electrification Program: PERG

The program was launched in 1996, since then steadily promoting rural electrification projects. Around 540 million Dh have been amounted as the budgets covering project execution program and related projects by 2011. Outline of this program is shown in Appendix5, Table 1.1.10 and 1.1.11.

2) Introduction and promotion of solar system

In local areas where introduction of electricity distribution system is not cost-effective introduction and diffusion of solar system have been carried out at ksar level. ONE made a survey targeting 2,402 households in ksars of Errachidia Province in 2009, out of these 1,288 households (52%) were decided to introduce this system.

3) Promotion of stabilized policies for local electrification

ONE develops policies of local electrification with the following 5 obbjectives based on PERG program aiming at activating rural economy. Particularly in remote areas and those with low project effect, ONE has principle of creating close coordination with associations and NGOs, then operation and management/ maintenance of the project are provided by the assistance of these local organizations.

- Development and promotion of livelihood improvement for the inhabitants who live near the electricity network,
- Contribution to the state as well as area development plans,
- Improved access to electricity by poor households,
- Provision of improved services in rural areas (outsourcing of tariff collection),
- Development of management/ operation of electric facilities based on the partnership with associations, NGOs, DPET etc.

(5) ONEP

Major mission of ONEP resides in diffusion of water supply and sewage system, water supply rates inurban and rural areas are 100％ and 90%, respectively. The great issue remains on how to diffuse water supply in the rest 10% and under the situation that contamination of groundwater is recently called for, how to diffuse sewage facilities. Water supply plan was formulated in 2009 to cover the rest 10% of the rural area, with the project cost estimated at 284 million Dhs. Also, as to diffusion of sewage facilities, project program has firstly been formulated in Municipalities as the center of urban Communes, then stepwise project implementation by 2015 is scheduled (Refer to Appendix5, Table 1.1.12 and 1.1.13).

(6) DPT

DPT promotes tourism development in partnership with DPET and DAT/POT. It schedules by the department itself i) supporting construction / repair of auberge (conventional hotels and home-stay based

facility), ii) training for association and NGOs in terms of operation tourism enterprises and iii) public communication activitie through provision of panphlets as well as utilization of web-sites. As DPT projects it now carries out the following 2 programs (details are given in Appendix5, Table 1.1.14).

1) PAT DO（project of promoting tourism development in desert as well as oasis areas）, and
2) PAT Imilichil (project of promoting tourism development in mountainous areas)

(7) DPEFLCD

DPEFLCD (Direction Provincial des Eaux et Forêts et de la Lutte Contre la Désertification) is a Provincial delegation of water, forest and desertification control committee. It manages natural resources in particular forest conservation, promotion of timber/wood industries, watershed management including river basin, and management of national parks etc. Its service covers not only conservation of natural environment, but it carries out projects based on a decade program 2005 ~ 2014 that takes social environment into account (Refer to Appendix5, Table 1.1.15). Reflecting policy direction by INDH, each project has been planned based on the basic principle of inhabitant's participation. However, since some budgets do not accompany any decision on activity levels, there is possibility of participation in the new project if the application of the participation is judged feasible and effective in line with the principles of activities provided by the Direction. Thus, such a budget can be examined as a source of funds for associations and cooperatives that desire to execute projects in this domain.

(8) DA

This is the provincial delegation of handicraft under the ministry of craftworks (DA). It promotes craft-work activities including traditional carpet weaving, manufacture of ceramics, processing of fossil, presious metal works, wood carving works, iron-ware casting, tanning leathers etc. Such projects an be examined as a potential financial source for Communes, associations and cooperatives that desire to carry out projects in this domain. Budget of DA in 2009 was 1.6 million Dh. The following 5 items are priority fields of DA activities: i) Promotion of fossil processing industry, ii) Establishment of women's traditional weaving cooperatives (Imilchil, Tinejdad Communes）, iii) Consolidation of vocational training (especially fortification of fossil processing and straw handworks), iv) Expansion of area of ceramic industry and related service of soil property survey/analysis and v) creation of new markets for traditional weaving/ carpentry (refer to Appendix Table 1.1.16).

(9) Provincial office of National Promotion

This is an agency under the Ministry of Internal Affairs. Provincial office of Errachidia has 580 staff, mainly responsible for small-scaled projects (such as repairing Seguias, construction of schools and dormitories, construction and greenization of health centers etc) at the requests of Communes, traditional associations 8Jamaa) and associations. Project budget of the office was 3 million Dh in 2009, and for 2010 fiscal year it issed a request of 4 million Dh to MDSFS for its project execution. It implements only single

year projects but does not have any middle-or long-term projects. Besides, as for the cost of emergent assistance projects for example to take measures to give first aid for flood damaged area, it can receive additional budget as a special budgetary frame from the patron ministry. In this agency annual personal cost exceeds the mount equivalent to three times as much as annual project cost, 10 million Dh in 2009. Outline of projects by Commune is given in Annex II, Table 2.19.

(10) Provincial education office（DPMEN）

DPMEN made an analysis on internal environment within Provincial health Office as well as external environment of health in the Province based on the 5-year plan of the State. Then, it classified domains of health care activities into hospitals/ rural health care/ medical services toward expecting mothers, serious diseases (diabete, tuberculosis etc)/ collaboration with NGOs etc. and finally has formulated a systematic Action Plan (2008~2012) including 268 indicators including action targets, contents, indicators, area, year of execution etc.

1.1.4. Assistant of JAPAN

(1) Construction/rehabilitation of Rural Main Road financing from Japan

The project for construction/rehabilitation of rural main road financing from Japan is summarized as below. According to the following figure, total length is 210 km and project cost has been estimated for 118 million DH. Construction has been commenced since 2009.

Construction/Rehabilitation of the Rural Main Roads Financing From Japan

Name of Route	Length (km)	Population along the Road	Cost Estimation, 1,000 DH
R703 Bouzmou-Aït Hani	52.00	5,147	32,500
P7103 - Lhroun	7.00	2,580	5,600
P7319 Itzer-Imilchil par Tounfite	20.00	2,198	9,000
NC ASRIR RN10 PK 557- Limite Province (douar)	14.70	3,413	8,820
RN10 - Ksours Asrir	8.43	2,517	5,280
RN10 - Tizouggarine	12.00	3,826	7,200
P7110 Macissi-Oum Jrane	40.00	1,274	22,000
R702 Arfoud-Merzouga	32.00	21,062	11,200
NC Aoufous-Zaouit Aoufous	7.00	711	5,600
NC RN13- Ksours Tillicht	14.00	1426	9,000
NC RN13 - Ksar Tarda	3.00	305	2,200
Total	210.13	44,459	118,400

Source; Ministry of Eqiopment and Transport, 2009 March

(2) Activity of JOCV

Twelve members of JOCV have been engaged in the Errachidia province as shown in Appendix5, Table 1.1.17. Their activities closely harmonized with local living have highly been evaluated by stakeholders in Communes concerned and in the Province. Collaboration between JOCV staff and the Study Team has also been realized in the execution of quic projects and pilot ones.

1.1.5. International Institutions and NGOs

Development partners engaged in the Errachidia province are IFAD, UNDP, WB, CIDA, etc. Main activities concerning the rural development are described as below.

(1) Project for formulation of rural development plan of Ksar in mountainous zone by ORMVA/TF and IFAD

ORMVA/TF plans an agriculture based area development project win 17 rural and 1 urban Communes in cooperation with IFAD targeting population of 143, 602（2,461 households）covering about 1,115,600 ha.This project started in October 2009 and 7 years are scheduled until December 2014. Prior to its implementation, it scheduled to formulate project plan (PDK) in 287 Ksars の and 18 PDM (Mountainous Commune Development Plan).

2 million Dh has been prepared to execute rural society survey for formuating PDK and PDM, capacitydevelopment for inhabitants' organizations (scheduling to hire 2 local consultants to perform these programs) and monitoring/evaluation. Target area of formulating PDK and PDM is given in Appendix5, Table 1.1.18 and Fig. 1.1.1.

(2) Program for Oasis Area Development Plan in TAFILALET (POT) supported by UNDP, etc.

Oasis area all over the Morocco has been focused on for the purpose of development in collaboration with MHUAE (DAT), DGCL, ADS and UNDP, etc. They are now formulating a development plan in oasis areas targeting the entire territory of Morocco. The project will continue 6 years from 2006 to 2011 with its cost amounting 8 million US$ (Refer to Appendix5 Table 1.1.19 and Fig.1.1.2) The project plans to introduce promising date varieties, support for farming, rehabilitation of irrigation facilities, promotion of tourism projects etc.

1.1.6. Financial Sources and Institutions regarding Rural Development and Local Autonomy

(1) Sources of project funds for rural administration

The budget of the Errachidia province has discussed in "2.2 Financial State of Errachidia province". Taxes include Market Tax, Trade Tax, Sales Tax, Slaughter House Charge, Museum Fee, etc. But the total amount of these is a very limited. In financial state of the Province in 2009, only 2% is from the taxes, but the remaining 98% one is from the central government. Average annual investment budget is only 420,000Dh.

The budgetary system of the Commune is the same as in the Provincial budget Source of revenue consists of subsidy granted from the Central Government whose main source is the Value Added Taxes

(VAT) and communal own incomes from the social services and taxes, etc. Almost all the amount of revenue is allocated to the administration fee. Table below shows the summary of investment budget in 47 communes in 2009. Annual average investment budget at each commune is only 1.7 millionDh/year including.

Annual average investment budget between Urban and Rural Commune

Type of Commune	Ave. Investment Budget (Dh/ Year)	Invest. Budget per Capita (Dh/ person/ year)	Remark
Urban Commune	2,300,000	13	
Rural Commune	1,700,000	118	Max 7million Dh in Alnif, Max Min 2,000 Dh in Ennzala

(2) Sources from other Moroccan Agencies

The other sources of investment budget are INDH, ADS fund and each delegation's one. Total project cost of INDH amounted to 120million Dh and 180 million Dh in total, respectively..

(3) Projects collaborated by development partners

Rural development projects for planning stages and on-going ones financed by the development partners are shown in Annex II, Table2.24. The projects related to the ORMVA/TF are dominant because the first priority to promote the rural development is given to agriculture and rural area development in Errachidia province.

1.2. Present Situation of the Study Area

1.2.1. Natural Environment

1.2.1.1. Topography and Geology

The relief of the province comprises two morphological units; namely 1) The muddy desert of Guir and 2) High Algero-Moroccan plateaus. In the north of Anti Atlas or in the basins of Souss de Ouarzazate, from Errachidia to Boudnib, morpho-structural units are variable ; button-structure (anticlinal arch excavated by water erosion) of Precambrian and Archaean formations (horseback of Rguibat), Appalachian relief is observed in Mountainous zone where alternate monoclinal crests of Archaean formations (Jebel.Bani, Jebel.Quarkziz) and Devonian~Cretaceous complex depressions (feijas, plains of Dra, Sidi Ali etc) forms pine-plained multi-folded structure of Jurassic era (Lias and Dogger epoch).

Fluvial system in the Study Area consists of three major streams. Oued Gheris flows southward~southeast ward to which a confluence Oued Firkla merges westward. This stream approaches to Oued Ziz that flows southward amidst the center of the Study Area in the Plain zone of Tafilalet Plain and finally merges at the southernmost border of the Study Area. Generally, surface water in these streams flows only during rainy seasons while during dry seasons it seeps, however, in Oued Ziz, surface water flows most periods of the year because Hassan Addarkhil dam has been constructed from

which water is discharged through the downstream for conveying irrigation water to commanding perimeters in its downstream.

Soils known as “Aridisols/ Régosols” of aeolien origin of the types little evolved» as well as those of alluvial deposits formed in and around oases transported by floods, known as “Vertisols/ Inceptisols” are in general predominant in the Study area. These soils have been exposed to an intensive erosion (aeolian / water) due particularly to an absence of vegetative cover that otherwise can serve as an effective protection media against the mechanism of erosion (raindrops and wind blowing).

1.2.1.2. Meteorology and Hydrology

Climate in the Study area, the conditions of which indicate a spatial variation due to topographic position is a type of semi-arid in the south (with a cool winter) and semi-humid in the north (with cold winter), and also the Saharan type (with cool winter) at the extreme south. Rainfall observatory network has been dispersed and the number of observations are either not sufficient to analyze the climate.

The Atlas mountain range gives a decisive effect on the climate of the Study area. From the southwest to the northeast, the transitional zone passes within the Morocco that separates Mediterranean climate from the Saharan. These two types of climate have marked contrast each other because the mountain range exerts an orographic barrier and the line of dividing climate is marked. Also, the climatic systems in the north-west, north-east and south-east of Morocco are controlled with different dynamism. In mountainous as well as plateau/ piedmont zones annual precipitation exceeds 500m where snow accumulated during winter is thawed as water source, whereas in plain as well as desert zones subtropical climate gives warm winter but annual rainfall is merely 100mm or less.

Temperature : The main characteristics of atmospheric temperatures are wider variables both in season and diurnal change. In principle, July is hottest while January is coldest. The maximum diurnal temperature reaches 50℃ in Erfoud. Here, even diurnal atmospheric temperatures during winter times happen to reach higher than 40℃ just as high as those in May. Minimum atmospheric temperatures go down to –1.5℃ in the coldest month (January） .

Precipitation : Annual precipitation never exceeds a range of 60 mm to 120 mm/ year in plain as well as desert zones, 300 mm to 500 mm in mountainous as well as plateau/ piedmont zones (except for this year with casual rainfalls frequently fallen during February to March), with an evaporation that can reach 2,200 to 3,000 mm / year in the south of the Study Area. Rainy days in a year comes down to 25 days on average. Refer to Appendix5, Table 1.2.1

Winds : The predominant winds blow with the direction of north-east and south-east. The northerly wind accompanies more often with humidity, whereas southerly one (called “chergui”) tends to be dry. For a period from October to February winds are generally calmer, on the contrary that from March to September higher wind velocity is often registered (100 km/h or higher). Southerly winds very often

provoke dusty or sandy tempests. Wind direction is important to design desertification control measures.Refer to Appendix5 Figure 1.2.1.

Hydrology and Water Use Facilities

Water resources in the Study Area mainly depend on two wadis, namely Ziz and Gheris. They are characterized by the irregularity of their annual regime and also by two high-water seasons, autumn and spring, separated with two periods of lowest discharge during which surface flow disappears or at the minimum level. Hassan Aqddakhil dam, completed in 1967 is the representative engineering structure in this province. The hydrological characteristics in the Study area can be summarized as follows:

- The succession of long dry periods and humid periods more or less shorter than these. Such an irregularity poses a major constraint when it comes to management of water resources.
- Frequency of flood occurrences (at least twice a year) with rapid flow as well as heavy density threatening water utilization works, with such a violent flow that they cause such heavy damages in the form of soil erosion, damages on infrastructure and on various human properties,
- Inequality of water flow in wadis, as well as irregularity of flow regime of wadis. Great deviations have been recorded between maximum and minimum of fluvial surface flow,
- Frequency of the lowest discharges in summer occurs when water demand for crops is raised.

The Study Area must not only situate in the south of High Atlas, its marginal situation explains partly its isolations towards other regions located in northern Morocco, aridness of its climate and poorness of its vegetative cover, but also relative importance of its water resources. Catchments area extending the south of High Atlas and eastward is drained by water works of vital importance since the almost all oases rely their life absolutely on this watershed. Refer to Appendix5 Figure 1.2.2.

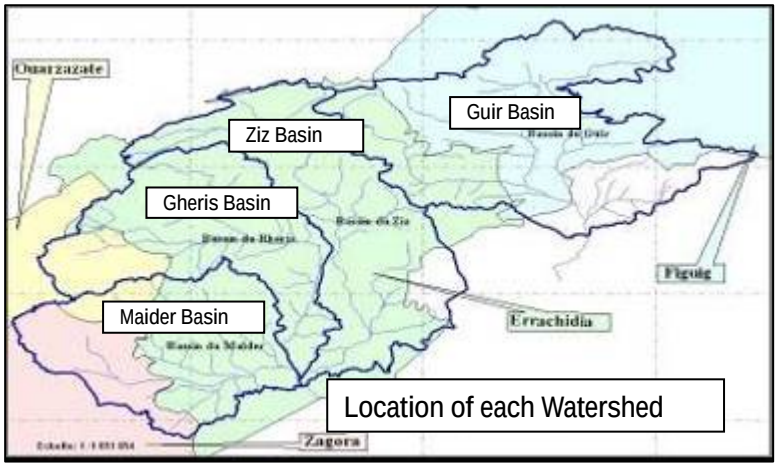
1.2.1.3. Water Resources

(a) Water resource（surface water）

The Study Area is situated in a part of watersheds of 3 streams, i.e., Ziz-Gheris, Giur-Bouanane, and Maider as shown in the following table and figure. These watershed areas occupy approximately 59,000km^2, accounting for 9% of the total land area of the Kingdom. Annual mean of discharge of surface water is measured at 626MCM with widely variable distribution both annually and monthly, with a typical character of wide difference between minimal flow period and flooding one.

Principal hydrological dimensions by watershed

Watershed Name	Catchment Area (km^2)	Mean Elevation (m)	Mean Annual Precipitation (mm) (1970-2006)	River Discharge (Mm^3) (1945-2006)
Ziz-Ghéris	27,018	1,326	141	375
Guir-Bouanane	19,476	1,176	147	211
Maïder	12,374	1,070	97	40
Total	58,868		134	626



Source : DEBAT NATIONAL SUR L'EAU, DIECTION DE LA REGION HYDRAULIQUE DU GUIR-GHERIS-ZIZ Févier 2007

(b) Groundwater

As to groundwater, available groundwater resources in the Study area consist of 9 aquifers. They are utilized for the supply of potable water as well as for irrigating vast farmland. Exploitable quantity of groundwater is 313 MCM, but the quantity practically exploited and utilized is estimated at 220 MCM or equivalent to 70% of the exploitable volume. Refer to Appendix5 Table1.2.2.

(c) State of water resources in utilization

Despite great variability in hydrological cycles in this area, substantial efforts for utilizing water resources have been continued, owing to which approximately 570 MCM or 61% of the exploitable amount of water has been utilized through the construction of major agricultural water facilities. Appendix5 Table 1.2.3 gives its breakdown. Since devastated floods in 1960s, a large dam "Hassan Addakhil" was constructed in the upstream of Ziz wadi, with the initially designed capacity of 380 MCM. Tafilalet plain nowadays takes benefit of improved water use with almost 600 km of canals and around 20 reservoirs for water conveyance/ delivery for conveying flood water. This facility mobilizes in advantage of agriculture and the inhabitants more than 70% of surface water. Groundwater is also utilized at the improved rate of 75% per year, with traditional system of khettaras, but more practically by many wells and pumping up from existing groundwater aquifers.

Three determinant factors are conjugated during past decades for coping with progressive deficit and a

dramatic degradation of water resources in Tafilalet plain. Paradoxically, the first factor was the construction of the dam in Ziz wadi (Hassan Addakhil) that is indispensable for protect the valley of Ziz and Erracidia City from destructive floods. Catching major stream flow in the upstream of its catchments, this large dam considerably limited natural recharge to groundwater aquifers in the downstream and conditioned water flow in the downstream at the south through a hydraulic regulatory function with a strong gradient (almost 50%, with 119 MCM at the site of the dam, also 62 MCM at the starting point of irrigation perimeter).

The second factor concerns well-understood drought cycle that hit all this area since 80s. In addition to the resulted reduction of rainwater flow quantities for recharging groundwater aquifers, droughts also brought a cause of dam management with water regulation, the latter could not play role of regulator with its threshold within the perspective (in 30 years, the repairing programmed at 140 MCM has not been surpassed 100 MCM).

The third and decisive factor lies in the farming practices, not realizing the actual situation of water shortage. Farmers have engaged in exploiting water even now more drastically than the period of starting water shortage. This massive recourse of individual water pumping coupled with ecologically not-friendly management of irrigation system due to too many water consumers trying to pump up from impoverished aquifers allowing very little water yield (in Tafilalet, only 22% of consumed water is utilized by crops), have brought an immediate consequence of shooting down of groundwater level. The groundwater level that was once estimated at -3 m from the ground surface 10 years ago now dropped to an average depth of -20m throughout Tafilalet plain, with some areas recording -30m. The rate of annual drop has been accelerating nowadays. The gradually appearing outcome of over-pumping accompanies with gradual rate of salinity in water, with a level of 8g/liter.

1.2.1.4. Biodiversity and Forest Resources

(1) Different types of ecosystems in Morocco

In Meknes-Tafilalet and southern-central areas of Morocco including Errachidia province forest area has been registered at 810 thousand ha, equivqlent to 9.45％ of the total forest area in Morocco. However, most of the tree stands has been over-exploited for fuels etc. to have reduced to rocky naked mountains without significant vegetative cover. Deforestation has been accelerated through overexploitation of fuel collection, farmland reclamation and over-grazing by both inhabitants and nomads, whereas reforestation/ forest tree planting has rarely been executed because of low cost-effectiveness and time-consuming growth of seedlings. Even in southern arid zones, scanty natural tree resources such as Acacia radiana and Tamarix amplexicalis other than planted as road side trees are also dwindling by fuel collection. Firewood consumed by a household per day amounts to 30~40kg, procured by felling of natural trees and crop residues.

(2) Ecosystem Protected Areas

Under the 1996 Master Plan, the national network of protected areas is being expanded. Four new national parks were created in 2004, namely: AI Hoceima (AI Hoceima Province), Talassemtane (Chefchaouen Province), Ifrane (Ifrane Province), High Atlas Oriental (Errachidia and Khénifra provinces).

(3) Biosphere Reserves.

The Southern Morocco Oases Biosphere Reserve (RBOSM) was created in 2000 and covers 7,200 thousand ha. National Park of High Oriental Atlas is located both in Errachidia province (Amouguer、Outerbalset、 lmilchil Commune）and Khénifra province(Agoudim Commune）covering about 50 thousand ha (in which the area under Erracidia province extends around 32 thousand ha）. The north-western part of the National Park is covered by forests. They consists of Atlas ceder (Cedrus atlatica）occupying 7,400ha or 15% of the entire area of the Park, and as minor tree species such as oak （Quercus rotundifolia）、juniper (Juniperus thurifera, J.oxycedrus, J. phoenicea)、Alep pine (Pinus halepensis). In this park, at about the border of these pronvinces and the side of Erracidia, transhumant grazing has very often practiced. During winter, livestock are grazed in Ouarzazate and also in the southern (or Errachidia) side of the border, while in summer they are transferred to other prefectures, such as adjacent Blessed Mellal province or Azllal province for summer grazing.

1.2.1.5. Characteristics of Watershed Area

The upstream courses of these wadis are known as perennial flow all the year round. Regime of perennial flow in the stream can partly be explained by the altitude of the mountain range that exceeds 3,000 m to mount and even as high as 4,000 m at the crest of Ighil Mgoun, and also partly by the water permeability of the calcareous formations as well as quaternary deposits that favors reappearance of surface flow and underground flow that enables, even in case of abnormally drought condition, fostering latent flow that often fills up grand river-bed of these wadis. Similar to the course of downstream flow, the upstream flow of wadis in this zone is characterized with a marked regime of floods. In this context, the Hassan Addakhil dam, responding to the initial goal of its construction especially for preventing floods, has been useful for this objective at its downstream side.

In a zone characterized by an extremely poor rainfall, these water resources are vital for the traditional peasants cannot afford to rely on other measures than the irrigation for making full use of land resources. Except for some disconnected places generally located in high and medium mountains with limited area and space, “rainfed crops” called “bour” is occasionally practiced but the acreage under rainfed cultivation accounts for only a few percent of the total.

These climatic conditions confer at water course a fluctuating regime with a seasonal rhythm according to the rainfall and snowfall quantity. As important as rainfall quantity, irregularity observed in the flow

regime of wadis (=non-perennial streams) is also found from year to year as well as diurnal. Whatever they may be, it is relevant to underline that the water problem was and still now is the utmost concern among peasants in oases of this zone. Innumerable numbers of engineering works for water are completed and still the skill from ancient times is equally important to warn in dealing with mastering of water techniques and of collective management of existing resources and the water controlling equipments.

However, what has always been problematic is different with the zones especially between upstream and downstream of the same wadi at the first stage about inequality as regards land/ water between two societies and by the application of water rights that is according to a general average allowing priority of usage at the side of upstream.

Precipitations are not only poor but they are seasonally, annually and pluri-annually variable with great variance. The scale of Tafilalet ~ High Atlas extends around 500 km in latitude and the difference in altitude between 500 and 4,068 m, and this vastness leads to a great special variation of its rainfall. The precipitation regime here is characterized by an outstanding irregularity. The mean annual rainfall gradually decreases as shifting from the north with the range 200 to 250 mm towards the south where the mean comes to only 50mm. Two humid periods in a year can be identified, autumn and spring, during which a little more rain has fallen than other seasons.

In the catchment area of Guir Wadi, over a series of observation period, average pluriannual precipitation is 156mm in Gourrama, 118 mm in Tazouguert and 115 mm in Boudnib. It is to be noted that the mean rainfall diminishes from the north to the south and that the marked difference particularly recorded between maximum and minimum values is very significant. In the case of the catchment area of Ziz and Ghris Wadis, the mean pluri-annual precipitation is also poor with significant irregularities concerning their monthly distribution. The mean values of minimum are recorded in July, whereas those of maximum have taken place in October and in November. It is also remarkable that rainfall is fairly reduced from their upstream to the downstream of the catchment area, meaning from the north to the south.

The Hassan Addakhil dam constructed in Ziz valley regulates its flow in Ziz Wadi. It has allowed guaranteeing oases in its downstream a minimum discharge regulating at 140 MCM. Diurnal discharge of this wadi was measured as about 3.44 m^3/s during the period from 1970 to 1989. It has been reported that the discharge recorded at the dam in 2006~2007 has been 291 MCM whereas the water volume stored in it was 58 MCM.

The catchment of Guir-Bouanane corresponds to that of Guir Wadi with its tributary Bouanane Wadi. Its total area is measured at 19,476 km^2 within Moroccan territory. It starts from Errachidia province flowing down to the eastern Errachidia and to Figuig to the east. Refer to Appendix5 Table 1.2.4

Catchment area of Ziz and Ghris Wadi

Catchment area of Ziz-Gheris is located in high altitude relief of Atlas. It consists of the catchment of Ziz and Gheris Wadis. Its total area is 27,018 km^2. It is located for the most part in Errachidia province. Only the high Todhra, in the upstream of Tinjdad, belongs to a part of Ouarzazate province. In the upstream of Tadighoust, the catchment area of Ghris Wadi occupies around 2,420 km^2.

Irrigation network in Errachidia consists of some wadis, of which important streams are Ziz, Ghris and Todgha. As referred to as Mount Dadès and Mgoun, these wadis stem from the southern slope of Hogh-Atlas and flow to the south, at times flowing in a transversal way to the general directions of the relief.

Similarly, these wadis flow along to pasuring fields, dissecting formations of narrow valleys and deep gorges. At the southwest of the watershed, the basin of Ed-Daoura wadi represents the common collecter of these major wadis together. Further, discharges of these wadis tend to be attenuated from the north to the south and at the depression of Ed-Daoura, the surface flow is reduced to only intermittent and also sporadic. These two wadis approaching together near Rissani town (distance between these wadis is about 3km) where these wadis recharge to the same aquifer under the oasis of Erfoud.

The relative discharge in Guir / Gheris / Ziz Wadis is estimated at 106.34 m^3/ ha, or only 8%, but if the fluvial underflow discharge is taken into account as 20% of the surface flow, the value will come to 11%.

Floods:

Different catchment areas have recorded large floods in 2006 during the months of September, October, November, and also in April and May 2007. Irrigated area by floodwater has reached 33,840 ha, the distribution of which is given below. Nevertheless, in November 2008, a catastrophic flood threatened Gourrama and Guir communes by torrential rain concentrated in watershed of Guir River with toll of human life and livestock. In communes located in upstream of Ziz Wadi and that of Ghris Wadi (up to the dam) flood damages have been repeated every year. Floods in the Study Area tends to hit limited watershed rather than vast area, often giving heavy disasters that can alter the distribution of poverty in a province. Refer toAppendix5 Table 1.2.5.

Basic Flow

Though the zone located in the upstream takes advantage of water than that in downstream, water shortage often comes earlier, the lowest discharge in the valleys of mountains absurdly appears in summer and precisely in July and August and sometimes also in September. As a general tendency, low water level during summer period as well as even the beginning of autumn coincides with agricultural campaigns (chutanbir), during which water levels in the streams remains lowest. However, it must be kept in mind that irrigation water in the upstream side modifies the values of lowest water level at the level of gauging stations. The important point related to lowest stream flow is that it is a function of

annual rainfall. In the case of Ziz wadi the minimum flow levels are recorded not only in summer but also in January and February. The lowest flow is just like the annual rainfall has considerable variation among the years. This variation is characterized by the rate between the maximum flow (E) and minimum one (e) of the flow (E/e). Refer to Appendix5 Table 1.2.6.

Hydrogeology:

Groundwater in Tafilalet is held at the downstream of Ziz -Gheris -Todgha, this consists of a closed basin out of Cretaceous basin of Erracidia and Anti-Atlas. The major substratum (schist, quarzite and limestone) has a depth of 15 to 35m. Two levels of aquifers have been found in Tafilalet plain, the upper ones are utilized as sources of shallow wells but liable to depletion.

- At the base, some conglomerates and some limestones of lacustine origin including some rate of gravels,
- At the summit, some sand, pebbles and stones, covered with thick layers of loams unequally graded.

Permeability of these aquifers is very high (0.001 m/s) but for some places in the upstream, stratigraphy predominant with mudstone prevails and the permeability varies considerably as a function of lithographic heterogeneity of quaternary cover. The variations are the most spectacular of the permeability in longitudinal direction. The mean transmissivity varies in a range of 0.01 to 0.02 m2/s, and the mean hydraulic gradient stays at 2/1,000 and irregularity decreasing from upstream to downstream. Capacity of water retention in the rocks is about 5%.

1.2.2. Socio-Economy and Rural Society

1.2.2.1. Local Administration and Demography

(1) Local Administrative System

Structure of government and decision making (both formal and informal) is shown inAppendix5 Figure 1.2.3. Each Ksar has an organization called Jmaa, a traditional and ancestoral system. It is like a council of respected elders in the community, and control the use of the commons or the administration of the community. Depending on the scale of Ksar, Makadam (for small Ksar) and/or Cheykh (for large Ksar) are chosen from residents by the Department of the Interior and govern it.

Commune is made of around 7-20 Ksar. Kaid is appointed as a traditional ruler of Commune by Department of the Interior and takes charge of order maintenance. Kaid is usually selected from outsiders instead of the residents. One term of Kaid is 3-5 years and helives in the central Ksar in the Commune.

There are Urban Communes and Rural Communes. Election of Commune Council is performed every six years, and around 9 to a dozen of representatives are chosen depending on the population size. The President of the Commune is chosen by the mutual election of the representatives.

Commune is the smallest unit of self-governing body and takes major responsibility for local infrastructure, but the budget and human resource are very limited. Therefore, in reality most of the projects are carried out by Delegations, which are the provincial-level office of the central government, as well as foundations, donors, and international organizations.

A Cercle consists of 3-7 Communes. This is not a self-governing body, but there is a Super Kaid appointed by the Ministry of the Interior of the central government and is in charge of order maintenance and communication adjustment between prefectural governor and Kaid.

Appendix1.2.7 Table 1.2.7 shows the population in 2004 and 2007 at each Cercle in rural communes.

(2) Number of communes and population after reorganization of communes

Due to the reorganization of the communes in 2010, area, number of communes, and population, etc. in Errachidia province was changed as table below.

Comparison table in Errachidia province befor and after the reorganization of the communes

	Area(km^2)	Commune	Cercle	Ksar	Population	Remarks
Befor reorganization	65,787	47(39)	7	659	554,300	(39)or (22)shows Rural commune numbers
After reorganization	53,916	29(22)	4	362	409,117	

(3) Organization of communes

There is slight variation among communes, but the structure is more or less the same. In general, the administrative organ of a commune comprises four departments, i.e., Technical Department, Civil Department, Acconting Department and Administration, managed by 20 permanent staff. Appendix5 Figure 1.2.4 shows a common organigram of a commune.

Out of the organizations of a commune that are responsible for communal projects, the following three are considered particularly important.

- Communal Council (CC)
- Comunal Committee for Participatory Planning(CCPP)
- Commmunal Technical Team (ETC)

These organizations play core roles or mandates in formulating, operating and managing PCD. The members of CC are elected by vote (6-year term as official service). CC is a decision-making organization that is not only responsible for services related to PCD but also for appraising draft budget of the commune and the approval of projects and other matters of commune management. It has been stipulated in a regulation that CC should include at least 2 female members. CCPP promote community participation at each stage of PCD elaboration to support participatory rural diagnosis and planning workshop. This committee is the core of the planning workshop. Size of CCPP may be 15-30 members.

Expanded CCPP meetings for validation of important issues may have 25-40 participants. The members of CCPP are composed of Commune President, Commune officers, Some council members and Representative from ksars、etc.

ETC is a working team for PCD elaboration assigned by SG of commune. Once PCD is prepared and validated, ETC plays a role to facilitate PCD. At each milestone points, ETC summarizes outputs and gets validation of commune council. The members of ETCis composed of Commune officers, Delegation officers, Members of Association and other CBO. ETC needs more than three members, and should include at least one female. ETC may include 5-7 members.

(3) Status of Commune Finance

Similar to Provincial budget, the budget of the Office of Commune consists of operating budget and investment one. The following shows these budgets.

1) Operating budget

Sources of the operational budget consist of subsidies granting from the central Government (Ministry of Interior). The original sources of the subsidies are Value Added Taxes (VAT) and autonomous financial ones collected from public service revenues and local taxes. The granted amount of VAT is evaluated from or allocated by the population and land area of the commune as well from the amount of annual fiscal revenue from the commune's own financial sources, thus it has little flexibilities. On the other hand, fiscal expenditure is appropriated to salary and allowances of the staff of the commune and the members of commune council, office expenses (cost for expendables, electricity fare, petrol charge, water fee, telephone charge etc), also to the amortization of the debts of the commune.

2) Investment budget

The source of the investment budget includes not only the commune's own financial sources but also VAT, subsidies granted from the central Government, loans granted from the bank that gives services to commune or FEC (Fond Equipment Communal), revenue from the sale of land owned by commune （Vent de Terrein (VT)). The commune's exclusive financial sources are composed of the excess amount of operational budget and after management costs are paid (recurrent expenditure) (=differential excess or a positive amount), with a mechanism that the excess in the balance of current fiscal year will be appropriated for the development funds in the next fiscal year. As observed in the case of Provincial budget, the more the operation budget escalates, the less the portion of commune's own resources in the investment budget results. Further, VAT, subsidies from the central Government and loans from FEC consists of the project-oriented budgets or expense-specified one, specifically spent on large-scale (for example such infrastructure projects as consolidation of roads and sewage treatment) that can hardly be afforded by communes. In other words, the portion of communal budget that communes can decide at their own disposal is confined to a part of revenue from differential excess of operating budget and revenue from the sale of land held by commune.

As to granting VAT and subsidies to a commune, the Ministry of Interior makes decision of grant based on the project applications by the commune and also appraising feasibility, urgency and expected benefits etc. (in some cases through consultations between the commune and the delegations of related ministries or communal office of the Province). For instance, in 2008, VAT equivalent to 5 to 25 million yen was allocated for the budget of the projects of consolidating domestic water supply to 4 communes in the Province (Alnif, Aoufous, Guir, and Gourrama).

Items of the expenditure as investment budget include not only costs for managing/ consolidating office building of Commune, but also expenses for local social activities (education, health, sport, cultural activities), those for consolidating infrastructure (domestic and drainage water facilities, roads, electricity etc), those for economic activities (costs for consolidating public markets, dismantling houses etc) and costs of the projects that contribute to VAT/ subsidies. Since the amount of investment budget depends heavily on that of VAT and Government subsidies, it has a large fluctuation from year to year.

The composition of the budget of the Office of Commune is schematically illustrated as in the Appendix 5 Figure 1.2.5.

3) Outline of the budget of rural communes

According to the budgetary plan by commune in 2009 compiled by the provincial DCL (Division of Local Collective), the fiscal budget of all the communes in the Province amounts to 278 million Dh, 45% of which is allocated to 8 urban communes and the rest is allotted to 39 rural ones. The average budget amount per commune is 5.8 millionDh for urban communes and 4 millionDh for rural communes. The rate of the recurrent expenses in the operational budget reaches 75% in rural communes and 94% in urban ones, showing that urban areas have comparatively higher rigidity in their finance, implying difficult state to cope with new administrative requirements. In contrast, as regards rate of dependency on subsidies (VAT), rural communes have heavier dependency, or 95% compared to that of urban ones, 76%.

Concerning the ratio of operational budget to investment one, the average of urban communes stands at 8.5: 1.5, while that of rural ones give 6.5: 3.5 indicating relatively higher proportion of investment budget in rural communes. On the other hand, average annual investment budget per commune in rural and urban communes are 1.7 million Dh and 2.3 million Dh respectively. However, there seems to be large difference in the amount by the communes. Refer to Annex I Table 3.2.2.

4) Outline of the budgets of target communes for elaborate of PCDs is shown in Appendix 1.2.8.

5) Budgeting Procedures

The fiscal year of the Kingdom begins in January and ends in December. Operational budget plan is made by the communes in October, and approved by the commune assembly, and the rural communes submit application to the Province and the urban communes to the Ministry of Interior. The applied

budgets are approved by the central Government and the Province at the end of December of the previous fiscal year.

As for investment budget, a tentative application is made in October because the application is made during the course of previous fiscal year, while the real investment budget amount is not determined until next February when the operational budget account is settled. Applications of VAT and subsidies on investment budget, or those of newly planned projects are possible all the year round.

1.2.2.2. Information Management System

(1) Situation of Information Management at the Provincial Office

The situation of the information management at the two departments of the provincial office, DCL and DAS, which are most relevant to the formulation of PCD, was analyzed through observational analysis and key informant interviews.

1) DCL

At DCL, most of the information is being stored in a paper-based format. Computers are primarily used for word-typing and printing purposes for various administrative documents using MS Word, with only exception of the budgetary information, for which the basic calculation functions of MS Excel is in use. Usage of more advanced analytical functions of computers is very limited at the DCL office. Refer to Appendix 1.2.9

2) DAS

DAS has a large volume of information to manage related to the projects of the INDH program under the three major programs. Each active DAS staff member has his own computer, either desktop or laptop, or both, to use for their work. All the information is generally stored in a digital format as well as paper format. The usage of computers is not limited to word-typing. Data organization and analysis using MS Excel and developing presentation materials using MS Power Point are also common among DAS staff members. Refer to Appendix5 Table 1.2.10 and Table 1.2.11.

After the implementation of the Quick Project and Pilot Project, Integrated Network System for DAS and DCL has been remarkably improved and well integtated at a moment.

(2) Situation of Information Management at the Target Communes

1) Overall Assessment Summary

The assessment of the situation of information management at the target communes was conducted through the key informant interview and field observation. The use of computers is very common in every commune office. Most of official documentations and permits are issued and printed using computers. Each core administrative office more often than not is equipped with at least one desktop computer. Laptop computers are not available throughout the target communes.

However, the degree of availability of computers and sophistication of technology in use is considerably different from commune to commune. While one commune has even an internal network system connecting each division already, another commune was found to have only 3 outdated computers without any network system. Internet connection was found available at two of the five target communes, while one more commune is currently planning on installing the internet connection. Skills of the staff of computer utilization are also unevenly distributed across communes. Despite the prevalence of computer use at the commune offices, none of the commune staff members in the target communes had any previous IT training experience, and no IT engineer was assigned. Therefore, how well computers were utilized at commune was largely dependent upon serendipitous availability of staff members who are personally knowledgeable or interested in utilizing computers, and was not based on a strategic vision. At three out of the five communes, at least one staff member was found to be playing a key role in enhancing the computer utilization by developing databases, teaching other staff members how to use computers and solving technical problems as they can, despite the fact they are not officially assigned in charge of IT. The administrative divisions of communal offices typically consist of the sections are shown as Appendix5 Table 1.2.12

2) Capacity of the communes and SIC implementation

a) The purposes of SIC implementation and the progress of SIC implementation in Errachidia

SIC system was an information management software that aims to assist the process of regional development plan development and decision-making by local commune themselves, and ultimately to promote socio-economic development of each commune. SIC has a database system and defines other information collection methodologies and worksheets. SIC allows communes to manage a comprehensive set of socio-economic information in the commune, based on which accurate analysis of the socio-economic conditions of the commune becomes possible. The effectiveness of SIC ultimately hinges upon the quality, quantity and timing of information collected, and the prime responsibility of the information collection lies with commune themselves. Also, SIC is sometimes seen as a prerequisite for PCD formulation, but there are many communes that formulated PCD before installing SIC.

Many of the data SIC manages require regular update. For example, the information from public service provision (education, health, etc) or progress of project implementation should be kept updated at an appropriate timing. Commune office is responsible for coordinating activities necessary to update all the relevant information appropriately.

SIC software is available only in Arabic language. It has three major functional modules as follows:-

SIC Fuctional Module

Module	Description
Monograph Module	Manages Census information, as well as socio-economicinformation of the Commune and Ksar
Development Plan Module	Manages information related to communal development plan and project information and monitoring information.
Dashboard Module	Manages many output function that produce development indicators based on the information in the database

Principally, it is the role and responsibility of DGCL/ DCL to support the implementation of SIC system in communes. However, in Errachidia province, although the provincial office has received an instruction from DGCL to form a provincial institution to manage SIC implementation, no concrete action has been taken so far.

1.2.2.3. Road Network, Electricity, Sewage and Water Supply

(1) Road

Road projects are under the control of Ministere de l'Equipment et des Transport in Morocco. Public Roads (total distance: 57,600 km) are classified into express roads (1 %), national roads (20 %) and regional roads (17 %). Non-classified roads cover 23,200 km. Though more than 80% of express roads, national roads and regional roads are paved; there is a delay of the improvement of province roads and non-classified roads with their pavement ratio of less than 50 %.

The First National Rural Road Program (NRRP-I) was introduced to improve rural road network in 1995 as a national level project. As a result of this project the total distance of 10,062 km of rural roads was improved and of which the distance of 485 km was in Errachidia Province. At present NRRP-II is ongoing with financial assistance from JICA, WB, AFD and EIB. With total investment of 467 million DH NRRP-II has targeted to improve the roads of 452 km in Errachidia Province. Ministere de l'Equipment et des Transport aims to improve the access rate to roads (the distance from Ksar to paved road is under 1 km) from 52 % in 2005 to 91 % in 2012. The number of beneficiaries of this project is expected to be approx. 88,000 persons in 20 Communes out of total Communes of 47 in the Province.

In Errachidia Province there are two trunk roads, Route 13 of national roads which runs between south and north (Meknes-Rissani) and Route 11 which runs between east and west (Oujida-Agadir). Errachidia City, Capital of the Province, main municipalities and the center of each Commune are connected by paved roads and they are well maintained. However, most of rural roads other than trunk roads are not paved and the roads in villages (Ksar) are very narrow making vehicle traffic unsuitable. As shown in the following table, the rate of pavement is 65 % and the unpaved roads cover 35 % in the Province.

Road Network in the Errachidia Province

Type of road	Paved	Unpaved	Total	Paving Ratio (%)
National Road	594 km	- km	594 km	100%
Regional Road	360 km	136 km	496 km	73%
Provincial Road	287 km	544 km	831 km	35%
Total	1,241 km	680 km	1,921 km	65%

Source: Delegation of Ministère de l'Equipement et des Transports, May 2009

(2) Electricity

In Morocco ONE (Office National de l'Electricite) is in charge of electricity projects. National electricity supply system is composed of hydroelectric generation and thermal power generation. In 1977 the participation of private sector in electricity supply services was allowed. Now JLEC, a private firm, is in the sector to supply electricity under management contract basis and the private sector participation for solar energy introduction as alternative energy resource is in progress. Electricity demand in Morocco is in increasing trend and the country is normally importing electricity from Spain and Algeria except the year 2008 when the domestic electricity supply exceeded the demand.

Electrification ratio in Errachidia Province at present (2008) is 96%, of which 94% is supplied by ONE system and remaining 2% by independent solar power generation. The areas under solar energy supply are limited to a part of Erfoud, Gourrama, Assoul and Rich. These are comparatively isolated and remote areas and accordingly the transmission line facilities were not installed considering cost effectiveness. Refer to Appendix5 Figure 1.2.6 and 1.2.7.

The population density is very low in the areas where there is no electricity covering 2% of the country. It is easy to promote electrification in Ksar in the Province because the village areas are dense with population. However the obstacle in electrification is the long distance between villages. There is a detailed electricity tariff based on the time and consumption. Its average price is 1 DH/KWh. In urban areas including traditional Ksar each household has its electricity meter and ONE officer visits each household to check the meter and issue electricity bill.

ONE has a target to achieve the electrification rate of 100 % by 2010 and ONE foresees it is possible. The other issues to tackle are the increase of transmission capacity and expansion of electricity supply system. There are two transmission routes to Errachidia Province, namely Kenifla route and Midelt route. In case the problem occurs on Kenifla route the electricity can still be transmitted by Midelt route to Errachidia city. However, Erfoud area does not have any alternative line when Kenifla route is not functional. Therefore, the issue for the future would be the construction of alternative transmission routes in major cities in the Province on the supposition of emergency on existing lines.

(3) Water Supply and Sewerage

ONEP (Office National de l'Eau Potable) is in charge of water supply and sewerage. In Errachidia Province its water supply coverage (water supply to each household under ONEP system) is 100 % in

urban area and 87% in rural area. It means 10 % of population is not accessible to water. The meaning of "access" here is defined by ONEP by applying its criteria including the distance to water tap (500 m) and water quality. In rural area 53% of water supply beneficiaries are under ONEP system and the remaining are under the management of Communes or Associations using independent system (springs/wells). Out of water supply beneficiaries (53%) in rural area, 40 % are benefited by water supply to each household.

Access to Domestic Water in Errachidia

Area/ System	Accessibility (%)	Area/ System	Accessibility (%)
Urban	100%	Rural	87%
Individual Connecting	(99%)	ONEP System	(53%)
Fountain bounds	(1%)	Other System	(34%)

Source: Provincial Delegation of ONEP in Errachidia, June 2009

At present there are 18 water supply centers in Errachidia Province. According to the World Bank Survey in 1992 the rate of population who can access safe potable water is 25 %. In the same year the national level project "PAGER" started under support of donor countries to improve water supply coverage rate. At the beginning ONEP was in charge of only construction of relevant facilities and the Communes, Associations and Cooperatives were in charge of operation and maintenance of water supply system. However, as it became difficult to continue part of operation and maintenance, ONEP has been also taking care of operation and maintenance since 2001.

In Errachidia Province water supply projects financed by INDH and other donors are on going other than the above mentioned project.Water tariff differs by area. In the case of Rabat ONEP consigns the operation and maintenance to other separate company and therefore the tariff becomes higher. On the other hand, like Errachidia city, where ONEP covers everything the tariff becomes lower. ONEP decides their water tariff with due consideration of ONEP's current account situation and cost of operation and maintenance.

Tariff Rate of Water Supply and Sewage System in Errachidia Province

Users	Drinking Water	Sewage
A/ Private homes		
- fixed part in DH. TTC/ Trim	19.26	9.63
-proportional part in DH .TTC/Trim		
*1st period (0-18 m^3)	2.54	0.70
*2 nd period (18-60 m^3)	7.91	1.71
*3 rd period (60-120 m^3)	11.75	2.80
*4 th period (>120 m^3)	11.80	2.80
B/ Administrations (T51, T53)		
- fixed part in DH. TTC/ Trim	7.70	19.26
- proportional part in DH .TTC/Trim	32.10	2.09
C/ Industries (T46, T49)		
-fixed part in DH. TTC/ Trim	7.15	38.52
-proportional part in DH .TTC/Trim	32.10	2.80

Source: ONEP, May 25, 2009

As seen in the tariff table its fixed part charge is 19.26 DH and the first proportional part charge up to $18m^3$ is 2.54 DH/m^3. Its second proportional part above $18m^3$ is 7.91 DH, more than three times as expensive as the first proportional part, making this tariff as progressive tariff.

Non Revenue Water (NRW) rate is approximately 10% in average and the rate in urban area is high. For example, the rate in Errachidia city is 25-30 %. The reason why the rate is high in Errachidia city is that there are a lot of water leakages because its system itself is old and total length of water pipes is long (approx. 240km). The system chart itself in Errachidia city is well maintained.

The sources for supplying water in Errachidhia city are four deep wells under Hassan Addakhil Dam constructed with the World Bank support. There are three water systems from these water sources. Two of them are used to supply water to Errachidia city with one reservoir constructed with JBIC funding (approx. 4.7 billion yen) with its capacity of 5,000 m^3. Remaining one water system is used to supply water to the Communes of Erfoud, Rissani and Tous which are located along the lower Ziz River with water pipes of 248 km in total. With the World Bank support ONEP plans to renovate the water supply system between Errachidia and Merzouga from 2009 to 2013.

Regarding sewerage system there are treatment facilities only in Errachidia city and Rissani city, and no facility in other areas. Though the sewerage operation became under control of ONEP from local Communes by the law in 2001, any sewerage project still requires approval by Commune and it is causing the delay of sewerage projects. At present each household in many Communes uses septic tank to decay and decompose urine under anaerobic condition and once the tank becomes full they use cesspit cleaner truck.

ONEP prepared its action plan with three pillars as follows. Water and sanitation sector is one of the important subjects in the province, and a total of 395 million DH has been invested during 2000 to 2008, whereas 848 million DH will be invested in the field during 2008 to 2015. Details are shown in the Appendix5 Table 1.2.13.

- Good operation and maintenance and improvement of existing water supply facilities
- Improvement of safe water access in rural area
- Promotion of sewerage facilities construction

1.2.2.4. Education and Health

(1) Education

1) General Overview of the Education Sector in Morocco

Morocco's education system is composed of pre-school, six years of primary school, three years of lower-middle school, three years of secondary school, and a tertiary education. Primary education starts at the age of 6, and is compulsory and free for every child. However, the out-of-pocket expenses for

sending children to primary schools (school fee, stationary, etc.) together with the labor of children lost and general poverty often makes schooling difficult for poor rural families.

The gross enrolment rate (GER) for primary education has reached 106% in 2006, up from meager 86% in 1999, that for lower-middle education has risen to 69% in 2006 (UNESCO, 2009). Refer to Appendix5 Figure 1.2.8.

2) Challenges in the Education Sector in Morocco

Morocco is still facing several formidable challenges in the education sector such as access to education for girls is still low. The Gender Parity Index (GPI), which is a ratio of female students against male students, for the primary education GER in Morocco stands at around 0.89 in 2006 (UNSECO, 2009). Access to lower-middle schools and secondary schools is still limited especially in rural areas because of ever increasing demand from the growing number of primary school graduates (GER for lower-middle schools and secondary schools were 69% and 36% respectively in 2006) (UNESCO, 2009). Also, quality of education arises another problem, for example, Morocco's repetition rate in primary education stands at 12.6% in 2006. Refer to Appendix5 Figure 1.2.9. In the Errachidia province the repetition rates in lower-middle and secondary schools were 23.2% and 20.3% respectively in 2008 (Errachidia, 2009). Repetition rates are generally higher for boys than for girls at all the three education levels. Drop-out rate in primary education, on the other hand, is consistently higher for girls than for boys, probably reflecting the traditional view about the education for girls among Moroccan population. As is the case for many developing countries, the capacity in school management at provincial level has been reported to be inadequate (JICA, 2006).As to illiteracy, acute gender disparity in adult literacy rate (15 years and above) (55% for total, 68% for male, 42% for female, in 2000-2006) is greatly contributing to downgrading the Human Development Index ranking of Morocco (127th out of 179 countries in 2007). In Errachidia province, illiteracy rate in 2003-2004 is 40 percent for the total population, 25.70 percent for men and 53.40 percent for women. In the Study Area, namely, 39 rural communes, in Errachidia Province, 51 percent of people are illiterate, which is higher than the one of national rate (35%) and of the Provincial rate (40%). With regards to women's illiteracy rate, it also shows higher rate in the Study Area than in national level. Furthermore, in all categories, women's illiteracy rate is remarkably higher than men's. Compared to the rate in the Province, while the one of rural communes (the Study Area) and urban commune are more or less same, municipalities are significantly lower than the others.

Illiteracy Rate in Errachidia Province (2004) (%)

	Male	Female	Total
Urban Communes	35.8	65.6	50.7
Rural Communes (Study Area)	36.1	66.0	51.1
Municipalities	12.8	36.8	25.2
Errachidia Province	25.70	53.40	40.00

3) Statistical Overview of Primary, Lower-Middle and Secondary Schools in Errachidia

The education system in the Errachidia province is under the administrative purview of the Education Delegation of Errachidia that is subordinate to AREF of Meknes-Tafilalt Region and then to the Ministry of National Education. The organizational chart of the education delegation of Errachidia is shown in Appendix5 Figure 1.2.10.

Based on the statistical data of the school year 2008 from the Education Delegation of Errachida, the overview of educational landscape and relevant issues in the Errachida province can be summarized as follows.

Primary Education: The number of primary schools, inclusive of satellite schools, in the province of Errachidia is 575 schools as of the school year 2008, among which 58 schools belong to the urban communes and 517 schools are located in the rural communes. The total number of pupils is 79,697, and among them the urban communes account for 32.3% (27,750) and the rural communes account for 67.7% (53,947). Gender inequity in primary education enrolment in the Errachida province seems just about equivalent to the national average (0.89) in 2006. The general national trend of GPI being worse in rural areas also appears consistent with the case of the Errachidia province. The enrolment disparity between boys and girls is gradually growing as the grade progresses. It probably has resulted from the higher drop-out rate on girls' side. In rural areas, there are on average only 88 female pupils for every 100 male pupils (GPI 0.88). The gender inequality in primary schools is still a great educational concern in the Errachidia province as well as at the national level.

Gender Inequity in Access to Primary Schools in Errachida Province (2008)

	G1	G2	G3	G4	G5	G6	Total
GPI (All)	0.91	0.91	0.90	0.87	0.86	0.87	0.89
GPI (Urban)	0.89	0.91	0.94	0.88	0.93	0.91	0.91
GPI (Rural)	0.92	0.91	0.88	0.87	0.83	0.85	0.88

Source: Education Delegation, Errachidia, 2009. GPI calculated by the Study Team (# of female students/ # of male students)

The average student/ classroom ratio (the number of students divided by the number of classrooms) in the urban schools stands at around 30.7 whereas that in the rural schools stays far below at 22.3.

Repetition rate in the Errachidia province in 2008 was calculated as in the table below. The total average repetition rate reaches 17.7%, which is significantly higher than the national average of 12.6% in 2006. The rate is higher for male students than for female students, and this is consistent with the national trend. The rural communes especially suffer from high repetition. The average repetition rate in rural schools goes up as much as 20.40%, and for male students of rural schools it is high, 22.10%.

Rate of Repetition in Errachidia Province in 2008

	Total	Male	Female
Errachidia Province	17.71%	19.67%	15.51%
Urban Communes	12.08%	14.47%	9.45%
Rural Communes	20.40%	22.10%	18.47%

Source: Education Delegation, Errachidia, 2009. rate calculated by the Study Team

Lower Middle Education (Major School): There are 55 schools in lower-middle education in the Errachidia province. Among them, 15 schools belong to the urban communes and 40 schools are in the rural communes. The total number of students is 29,403 in 2008, which can be sub-divided into 16,989 students (57.8%) in schools in the urban communes and 12,414 students (42.2%) in the rural communes.

Comparison of the Number and Percentage of Students of Urban and Rural Communes between Primary and Lower-Middle Schools 2008

	Total	Urban	Rural
Primary Education	79,697 / 100%	27,750 / 32.3%	53,947 / 67.7%
Lower-Middle Education	29,403 / 100%	16,989 / 57.8%	12,414 / 42.2%

Source: Education Delegation, Errachidia, 2009. calculation by the Study Team

Gender balance in lower-middle education is very unfavorable for female students. The total GPI in the province in 2008 remains very low only at 0.71. The gender disparity at the schools in the rural communes is even worse, and their GPI is 0.61, while the figure in the urban communes is somewhat better at 0.79, though by no means a desirable figure. This mostly likely reflects the common reluctance among parents to let their female children to commute to distant schools out of cultural as well as practical concerns. Also, a shortage or lack of dormitory is reported to be another major contributing factor.

Availability of dormitory is quite limited. Totally there are only ten dormitories in the province, and more than half of them (six of them) are concentrated in the urban communes.

GPI and Repetition Rate in Lower-Middle Schools in Errachidia

	Total	Urban	Rural
GPI	0.71	0.79	0.61
Repetition	23.2%	24.1%	21.9%

Source: Education Delegation, Errachidia, 2009. calculation by the Study Team

Secondary Education: There are 22 secondary schools in the Errachidia province as of the school year 2008, among which 14 schools are located in the urban communes and 8 schools in the rural communes. The total number of secondary students in the province is 15,985. Among those, 13,675 students are studying at the schools in the urban communes and account for 85.5%. Many students in the rural communes have to commute to the nearest urban communes if they wish to continue their study. GPI and Repetition Rate in Secondary Schools in Errachidia are shown in Appendix5 Table 1.2.14.

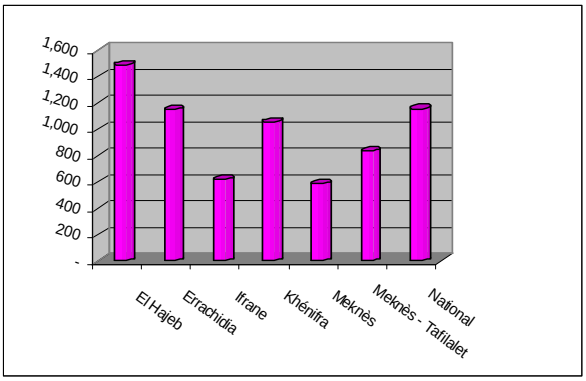
(2) Health

1) National policy and strategy on health

The new policy has emphasized that health sector reform, decrease of infant mortality rate to 15/1000 by 2012, improvement of medical environment for bridging the gap between urban and rural area, and decrease of medical treatment fee.

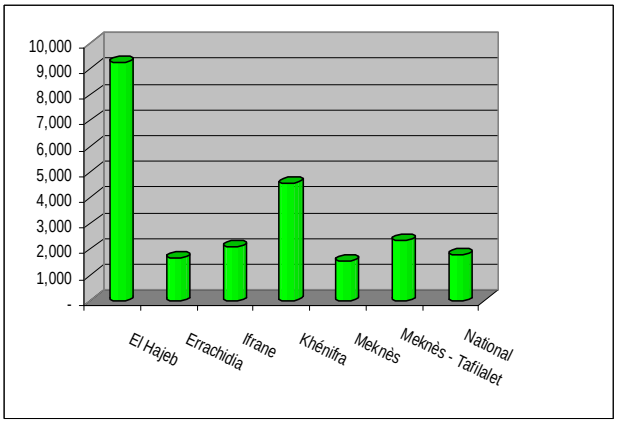
2) Hospital network at National, Regional and Prefecture level

Focusing on Errachidia Province, the number of nurse per person is as much as the one at national level. However, compared to regional average, Errachidia faces the shortage of the nurse. Moreover, according to other prefecture in the same region, Errachidia ranks as the second worst prefecture in terms of the number of nurse. On the other hand, the number of Errachidia is again close to the one at national level, compared to regional average Errachidia has more number of doctor at ratio.. Therefore, while the nurse tends not to be sufficient, Errachidia is relatively better off in the number of doctors.



Ratio of Nurse to Person (2007)

Source; Annuaire Statistique du Maroc (2008), Haut-Commissariat au Plan



Ratio of the Doctor per Person (2007)

Source; Annuaire Statistique du Maroc (2008), Haut-Commissariat au Plan

The Errachidia province has 4 hospitals forming the provincial hospital centre with an autonomous management since first January 1995. The whole capacity is 598 beds. The number of usually functional beds is 418 beds. Apart from doctors, specialized doctors and para-medical doctors who work in Errachidia Province are shown in the Table below.

Number of Hospital and Ratio to Person (2007)

Location	No.	Ratio to person
Errachidia	4	140,250
Meknès - Tafilalet	13	168,538
National	133	231,887

Source; Annuaire Statistique du Maroc (2008),Haut-Commissariat au Plan

Reparation of specialized doctors and para-medical personnels are tabulated in Appendix5 Table 1.2.15,

Table 1.2.16 respectively.

3) Ambulatory Network

Other than hospitals mentioned above, ambulatory network also exist. In Errachidia, the network for ambulatory actions is constituted of 86 Training Formations of Basic Health Care. The repartition according to the categories is shown in table below.

Health Districts	C.S.U	C.S.U.A		C.S.U.A		C.S.C	D.R
		No.	Beds	No.	Beds		
ALNIF				1	4	2	6
AOUFOUS				1	6	0	4
ASSOUL				3	28	0	4
BOUDNIB		1	21			1	2
BOUTALAMINE	1						
ELMASSIRA	2						
ERFOUD	1			1	4	1	1
ERRACHIDIA	1						
GOULMIMA	1			1	4	2	1
GOURRAMA				1	2	1	0
IMILCHIL				2	20	1	1
JORF		1	10			2	
ODBOUNAJI	1					1	5
RICH	1	1	25	3	12	4	4
RISSANI		1	21	2	8	2	4
TINEJDAD		1	3	3	12	1	5
TOTAL	8	5	80	18	100	18	37

Ambulatory Network in Errachidia Province

Source ; Plan D'action Quinquennal « 2008 –2012 »
[Actions à mettre en place au niveau de la province d'Errachidia]

The number of health post in rural area in Errachidia is more or less as same condition as national level or, rather, better-off in all cases. Majority, 67%, of people can reach the health service within 3 km from their house. This could be also a sign of which people living in Errachidia has more opportunity to take health service easily than others. Refer to Appendix5 Figure 1.2.11.

Population Distribution to Health Network in Errachidia Province

Less than 3 km	3 to 6 km	6 to 10 km	10 km and more
67.45	12.88	7.46	12.21

Source; Annuaire Statistique du Maroc (2008),Haut-Commissariat au Plan

4) Health and Gender

Women can be trained as health educators to promote facial cleanliness and good sanitation practices because of their critical role in family and community health. Education with literacy training for women and girls is, therefore, an important element for enabling them to learn about sanitation and prevention of disease by written materials, enhancing their self-confidence, and increasing their ability

to change the behavioral and environmental factors.

1.2.2.5. Tourism

(1) Overview of Tourism

Tourism is the major part of the tertiary industry in Errachidia Province. According to the statistics, there are around 80,000 visitors each year. However, this estimate is based on the number of guests who checked in so-called high quality hotels that are registered by the government, and actual number is assumed to be several times larger. Four stars hotels are concentrated in Erford in the province, but most of customers are visitors of group bus tours. In the comparison between 2001 and 2008, the number of domestic visitors increased and foreign visitors decreased. Those in tourism business said there was an influence of the global economic recession from last year. Refer to Appendix5 Table 1.2.17. One-hundred and twenty-six accommodations are registered in the province that provides 2,651 guest rooms and 5,483 beds in total. Approximately one-third of the accommodations are classified hotels with stars. Other types of accommodations include simple hotels or private homes providing meals and lodging called Auberge. Most of the accommodations in the province are designed in the Berber style, adding to the exotic atmosphere.

Currently tourism is specialized in desert sightseeing of Merzuga. It is necessary to diversify tourism programs and increase the number of lodging days per visitor.

(2) Tourism-related organizations

There is a provincial office (Delegation de Tourism) of the Ministry of Tourism. This organization is in charge of tourism administration in the province. The public organizations concerning tourism are ORMVA/TF and the provincial office of DAT.

As for private organizations, there is Committee for Regional Tourism (CRT) in each Moroccan Region, and Committee for Provincial Tourism (CPT) in each province. It was just recently established in Errachidia Province. According to an interview with the chairperson Mr. Hassan Habibi, there is a subsidy from the Ministry of Tourism to CRT, but not to CPT. He has a plan to post large-sized photograph panels of Errachidia in the major airports of the world including Japan for promotion to the foreign tourists. The main tourism-related groups in the province are as Appendix5 Table 1.2.18 including CPT.

(3) Main tourism resources

The following are the main tourism resources in Errachidia Province.

Major Tourism Resources in Errachidia Province

No.	Tourist Destination	Expalanation
1	Sijilmasa ruin	*Sijilmasa* was in active Berber city with prosperous trading between black Africa and Europe in 7th century.
2	Mousoleum my Ali Cherif	Popular destination for national pilgrims. This sacred house contains patio and picturesque mosques. Reconstructed in 1965 since the original building was damaged by a flood.
3	Ksars	*Ksars* are traditional *belbel* apartment made of mad. Those around *Rissani* named "*El FIda*", "Return Abdelhalim", "Abouaam" are typical ones.
4	*Abu Salem* Library	An old library back to 10 century, named after a scholar named *Abu Salem El Ayachi*.
5	Merzouga dunes	Dunes in *Merdouga*, in *Ettaous* commune is the busiest destination in the province. It is more than 30km long and height becomes more than 100m sometimes. Camel riding is an attraction.
6	Oasises	Picturesque villages are spotted in the oasis along rivers. Meski is a tourist spot in palm tree oasis with swimming pool, café restaurant and accommodation.
7	Lake Isli and Tislite	These two lakes near *Imichil* have a legendary story of romance. With its cool air and wedding festival in August, *Imichil* is a popular base town to visit the lakes.
8	Caves	The province is rich with caves such as "*Imichil Akhinm*", "*Titaouine*", "*Ifrin Ihaouari sidi*", etc. These offer good occasion for speleologist and caving sport funs.
9	Scenery of Mo(3) untain Goeges	The gorges of *Agourai* and *Ziz* in the Atlas mountain have spectacle views. With recent road improvement, access ahs been much improved.
10	Hot springs	"*Hamat my Ali Chrif* " and "*Hammat my Hachem*" is two major spa sites located at north of *Rich* town. This spring water has some effects of medical remedy.

Resource: Presentation of Tourism Delegation

(4) Tourism promotion as rural development

Tourism is recognized as one of the realistic methods of livelihood improvement in the rural villages, and actual projects have begun. Below is an example of Imichil Commune of northwest region of the province in Atlas Mountains.

As for community tourism, there is an example of a project being carried out by Japan Overseas Cooperation Volunteers in Ghriss Ouloui Commune of Goulmima Cercle. They introduced Berber farmhouse stay on a Japanese website in cooperation with the association of local Ksars. The number of visitors increased by words of mouth. The programs such as Ksar (traditional Berber apartment) visit, farming experience, shopping in the market, a public bathhouse, and bread making are available at request. Such community tourism can be started without big investment, and leads to the income improvement of the farmhouses. Case Study is shown in Appendix5 Figure 1.2.12.

1.2.2.6. Craftwork industry

(1) Situation of craftwork activities in the Province

The new national strategy for the craft industry is designed to meet two objectives; 1) to adopt a proactive policy to create enough new jobs, and 2) to illustrate the new role of the administration that encourage the government to move from administration of management to administration of development.

In other words, the state came to be expected more than before in a sense of taking initiative for selection of areas of development, and of activating and supervising the private actors. In this regard, the private sector has become entrusted in the implementation of these axes of development and job creation.

In the context of Errachidia Province, craftwork is considered as the main sources of income for inhabitants following to agriculture. The large number of people devote themselves to crafts activities, either to earn living or to improve their incomes. Therefore, it could be described that this sector is of major economic, social and cultural benefit to the province. Major activities of craftwork in the Province are as follows; Traditional weaving (for male / female)/ Traditional and modern sewing (male/ female) Fossil/ Marble processing (male only)/ Traditional tannery (male only) / Straw processing (material from dates leaves) (male / female)/ Carpentry (male only)/ Iron processing (male only)

(2) Number of people in Craftwork industry

The sector, with its various branches, occupies 4,733 craftsmen/women and 2,608 apprentices distributed in Errachidia Province. Refer to Appendix5 Table 1.2.19, Table 1.2.20 respectively.

(3) Number of association/ cooperative and facilities of DA

[Number]

- Cooperatives: 26 / Associations: 22

[Facilities]

- 2 complex for handicraft in Errachidia and Rissani
- 1 tannery center in Rissani
- 1 community oven for firing pottery products in Rissani
- 1 annex of the Chamber of handicrafts in Errachidia

(4) Activities of Craft work

Main craftwork activities are traditional weaving, pottery, fossil/marble processing, Jewely, carpentry/woodwork, Iron processing and Tannery, etc. Location of the activities is shown in Appendix5 Tab;e 1.2.21

1.2.2.7. Rural Society, Peoples' Organization, Gender

(1) Society in Rural Area: Modern political and traditional system

In the Ksar, there are dual system of political and traditional system in decision-making and making peace of community. As mentioned above, in the modern political system, Cherk/Makadem is a local authority who is politically appointed by Kaid in Commune. On the other hand, traditional leader is, in most cases, elected from the member of Jamma/Jamia. Jamma is a group of 4-10 knowledgable people in Ksar and who are selected by people (further details on Jamma is mentioned in the next paragraph). Traditional leader plays important role for coordination of community based on internal oral regulation. For instance, this internal rule deals with management of common water resource or common land.

(2) Variations of community organizations

In Morocco, Association is an organization which is similar to non-profitable organization, non-governmental organization or community-based organization in the develelopmental term. There is also association called 'Network Association' which aims at making associations' activities more efficient and effective. In order to achieve their goal, it implements the activities to enhance the ability of association through mainly training.

Additionally, an association called 'Supervising Association' exists as an organization to deal with assisting other associations within a one of four INDH program. On the one hand, the association mentioned above needs the legal registration; on the other hand, there exists an association regardless of legal registration, namely traditional association, in community.

The variety of Association is discussed in the details as below;

1) Association

Associations are organizations which are officially registered by law (Dahir1-58-376). In general the activities and purpose of association are diverse. In the field of social development, associations perform, for example, education as kindergarten and literacy classes, income generating activities on support for selling/processing the agricultural products, and environmental conservation.

In addition, some associations assist the small-scale infrastructure, namely rehabilitation of khettara, seguia and road etc. There are also associations which deal with the management of common place of water supply.

2) Network Association

This is an umbrella association making network of associations. In Errachidia province, seven associations like RADOSE are registered as network association.

The main purpose of network association is capacity-building of associations which enable them to work actively and effectively. Network associations carry out the series of training for the skill-up on administrative and financial management, project management, etc. Moreover, making cooperation with development partners, network association plays a role as a coordinator of the project / program.

For reference to see some basic data of network associations in this province, Appendix5 Table 1.2.22 outlines the result of interview with four network associations active in Province.

3) Supervising Association

In the Transversal Program which is one of four INDH Programs, supervising association is funded by Integration Socio-economic Program. In the cooperation with CPDH and ORMVA/TF, Supervising association supports local associations working on agriculture and livestock in terms of budget and implementation. There are five supervising associations in the five zones of the province. In the Integration Socio-economic Program, CPDH is a decision-maker on the budget, ORMVA/TF deals with technical support and supervising association is responsible for the activities by advising, supervising and monitoring of local association. Sellection of local association to assist within the framework of this

programme will be decided by the committee consisting of CPDH, ORMVA/TF and supervising association (see Appendix 5 Figure 1.2.13 on the structure).

4) Traditional Association

As cited above, while associations need to be registered according to the law, in the community (Ksar) there are traditional association called Jamma/Jamia. Jamma/Jamia consists of 4-10 knowledgeable people in Ksar and elected by the discussion among people. Jamma/Jamia is a group for coordination and decision-making as for, mainly, keeping peace within community, arrangement of collective activities such as marriage and funeral, management of water resource and common land.

(3) Gender

Concerning with gender disparity, women have less chance than men to go out to the distant place or to receive education. The interviews conducted in some Communes revealed tradition, culture and poverty are the reason why boys are relatively prioritized to girls to go to school.

The following table shows the figures of comparison between men and women at Rural Commune in Errachidia Province. The average literacy rate of women is 37.7% which only accounts for one third of female population. In particular, in the most of communes at mountain and dessert area, illiteracy rate is higher than 80%. In respect to education attainment, while two third of male population can go to the primary school, only one third of female population can do so.

Figures on Gender (2004)：Rural Commune in Errachidia Province

Item of Statistics		Male	Female	Total
1	Literacy rate	67.4%	37.7%	52.0%
3	Educational attainment higher than primary school;	65.4%	37.9%	51.2%
2	Working ratio	48.1%	17.6%	32.5%
5	Employees public sector in each gender workforce	5.9%	1.9%	4.8%
6	Employees private sector in each gender workforce	41.7%	3.6%	32.0%

Only 17.6% of women are working. 65.7% of women answered their job was housemaid, and there are extremely few employment opportunity for women in the public or private sectors.

Although gender issue has been pointed out, it could be considered that social environment including gender will be dynamic and diverse from place to place. For instance, compared to the illiteracy of women in the province, there is substantial difference from 90.6% in Imichil Commune to 40.5% in Chorfa Daghra Commune. Furthermore, gender issue is delicate and difficult to appear in the statistical figures or interviews. Furthermore, since it is deeply linked to the culture, custom and norms of community, careful consideration is necessary for the developmental intervention.

(5) Nomads and nomadism activities (transhumant)

1) General situation

Because nomad population and their livestock herds have been traveling incessantly their behavior is not

to be statistically elucidated. However, their traveling courses or patterns have been fundamentally traceable and known to the inhabitants along the courses though they are changing from time to time according to natural or climatic conditions. For example, the mountainous route runs Oued N'aam~Rich~Outerbad~Imilchil, while in intermediate zone, the basic course runs Taous~Erfoud~Kheng~ Gourmima~Aghbalou Nkeradous. Nomads move selecting watering spots, sparsely populated grazing land where water and grazing grass are available. They are Berber, consisting of 4 kindred. The area of annual shifting has been confined in the Morocco, where they annually move the distance 200km to 400km. Taous, Sidi Ali and other rural areas were settled and reclaimed by the settlers of original nomads for several decades ago. Similarly, semi-nomadic people also dwell in this area, some of the family members have permanently been settled, but others are still engaged in nomadism in and around the inhabiting area letting their livestock herds grazing all the year round.

Livestock held by nomads are camels and shoats, but not bovine species because it is not suitable for transhumant that requires shifting and browsing. Nomads mainly utilize camels for carrying loads, while settlers use horses, donkeys and mules for this purpose. Nomads have always been exposed to various hazards and dangers including narrow and limited grazing areas, dwindling water spots and decline in available water quantities. Grazing livestock requires 10-20 liter/head of shoat/day, and a camel consumes 100 liter per day as compared with 2-3 liter consumed by nomad people.

2) Living style of nomads

Nomadic people basically live in their residential places determined by each family, rarely living together in a group. Sometimes a few families get along in a group but in most cases such partners are relatives. In Oued N'aam, known as nomadic place in the Province where many nomadic people live in, it is observed that a nomadic family is composed by 7-10 members but living as a core family is seldom observed. Number of children in a family counts 5-6, generally living with parents and grand-parents, with higher birth ratio than the national average (2.5 as of 2004) or the Provincial mean (2.9 as of 2004).

3) Social structure of nomads

No autonomous organization exists in the society of nomads, and in many cases they make society only in weekly marketing fare for their greetings and information exchange. They have no social events such as marriage and funeral ceremonies, festivals and religious assemblies that are customary held among inhabitants in Ksars with solidarity. Preparations of a marriage are to be completed at household level to invite nearby living nomad neighbors to celebration meal. No particular leaders exists among nomadic society, and if any conflict happens it ought to be settled by negotiation between the conflicting parties or by interventions of the leader (Cherk, Mokadem Amgh etc) or traditional association (Jamma) of the Ksar where the conflicting parties are happen to stay. Causes of such conflicts are very often problem of using water and land.

1.2.3. Agriculture, Livestock and Fisheries

1.2.3.1. Principal Guideline of Provincial Agriculture and Agro-ecological Zones

Agriculture represents 90% of economic activities in the Study Area. Mainly concentrated in irrigated perimeter in the oases, it employs around 60% of the active population. Agriculture and its related activities are mainly supported by ORMVA/TF. It covers all the areas of this province with its headquarters in Errachidia and offices in Circles, giving extension activities for farmers. It has responsibility of technical transfer in collaboration with agricultural research agencies and foreign aids Besides it provides such interventions as certified seed/ seedlings, inputs such as fertilizers, technical instructions for post-harvest treatments including processing and marketing distribution, subsidies for facilitating new techniques led by INDH, agro-ecological zoning and strategies by zone, and technical transfer through extension activities. It also covers activities for ecological conservation through controlling / orienting farmers to conserve natural resources.

Agro-ecological Zones

The Study Area consists of the south Moroccan oases, subdivided into 3 agro-ecological zones that are well distinguished and stratified from the north toward the south, namely; mountainous zone, intermediate one and plain one. The agro-ecological zones in this province are illustrated as below. The major factors used in the base of zoning are topography (altitude) and climate.

In the Mountainous zone, water resources are not accounted as the limiting factor. Rather, land availability often counts for constraint here. The mountainous zone is however known with many constraints that impede its development. Among these the most serious are: the problem of how to add value to agricultural products, of strong population pressure on limited natural resources, frequency of floods that often destroy products and farmland, poor, underdeveloped road infrastructure that deteriorates products and difficulties of access to credits and also too much fractioned land holding that limits intensive land use and productivity. Utilization of farmland is characterized by two layers of space occupation with fruit trees and crops under them.

In the Intermediate zone, land under crop is subdivided into palm-tree plantations located mainly along the two main valleys of Ziz River and Ghris River. Date palms as well as olive trees constitute major farm crops in this farming system practiced here. At the south, several perennial crops as well as some parcels themselves have been abandoned due partly to water shortage, partly to soil salinity of surface layer. Social impact was very serious on the inhabitants, the young and family chiefs of whom have often to leave their households migrating to other areas seeking for their remunerative labors. Women and young daughters must also undertake partial responsibility of supplementing agricultural practices (irrigation, weeding, crop management, harvest and so). Agricultural land use is characterized by three layers of space occupation with tall (palm) trees, shrub fruit trees (olive) and crops under them.

Ecosystem in Plain zone is almost desert area where crop species are very limited to oasis-island

specialties. In these green spots, unique crop system commonly practiced is palm trees associated with ground crops like cumin and henna. Pastoral livestock, camels are only practiced and based on the pasture as well as on transhumant in the areas located in further south. Resources of local population stem from sale of products, i.e., dates and also cumin as well as henna as crops of higher value added, and adult camels on the other. The plain zone is of highly vulnerable because of its rare as well as artificially threatened natural resources. Utilization of agricultural land is by two layers of space occupation with fruit (date) trees and crops under them (cumin, henna, alfalfa etc.).

Some salient features that are observed in each of agro-ecological zones include: forest area sharply decreases from the north to the south, rain-fed arable land called "bour" where farmers cultivate crops of very short period like winter cereals collecting flooded water in autumn increases from the north to the south. Irrigated perimeter tends to augment also as we go to the south, but this is attributable to higher rate of plain (flat land) in the south. In the mountainous zone where water resources can most abundantly be utilized but rate of inclined land is also high and even if inhabitants converted stream-bed, riverside terraces and mountain slopes into arable land, they would easily be washed away by enormous floods.

Current Land-use by Agro-ecological Zone（unit：ha, ％）

A.E.Zone	elevation	Irrigated land	Forest land	Pasture	Unused land	Bour *	Total area
Mountainous Zone	1,250 ~ 1,600m	13,889 0.83%	1,094,500 65.24%	370,400 22.08%	197,914 11.80%	960 0.06%	1,677,663
Intermediate Zone	1,000 ~ 1,250m	15,562 0.65%	19,860 0.82%	1,234,261 51.21%	1,138,974 47.26%	1,330 0.06%	2,409,987
Plain Zone	850 ~ 1,000m	25,406 0.91%	0 0.00%	1,024,017 36.86%	1,724,366 62.07%	4,300 0.15%	2,778,089

Note：Bour means non-irrigated or rainfed farmland where people cultivated cereals during winter by collecting flooded water in autumn

1.2.3.2. Farming Practice and Land Ownership

Land use. As regards land use/holding, arable land (SAU consisting of irrigated perimeter and non-irrigated "bour") is roughly divided into individually owned (melk), land used collectively in the commune and habous land (that was donated from large-scale land owners to the Ministry of Religion, often allocated/ leased to small holders), while in urban communes, other than those referred to above, land held by local authorities called "domaine", that held by groups of Islamic communities called "zaouia" are also existing. Land holding of farmland by form of the above cited land categories, melk is by far the dominant form of land holding followed by collective use (as land in common) and very few land belong to the categories of Habous, Domaine and Zaouia. 90~95% of the farmland area is held by smallholders while large scale land owning represents only 5 ~ 10%

Farmland area by Land Holding Type & by Agro-ecological Zone (Unit:ha)

Land holding type	Melk	In common	Habous	Domain	Zaouia	Total
Erracidia province*	57,566	74,759	2,112	154	22	134,613
Mountainous zone	14,653	67,298	229	149	20	82,349
Intermediate zone	15,450	4,506	951	0	0	20,907
Plain zone	22,132	2,655	880	0	0	25,667

Difference between the total of area in the province and that of the above three zones is equal to the arable land held by farmers living in minicipal/ urban communes. Colectively utilized land often found in mountainous zone is grazing area under forest land.

Current Landuse by Agroecological Zone (unit : ha, %)

A.E.Zone	elevation	Irrigated land	Forest land	Pasture	Unused land	Bour *	Total area
Mountainous Zone	1,250 ~ 1,600m	13,889 0.83%	1,094,500 65.24%	370,400 22.08%	197, 14 11.80%	960 0.06%	1,677,663
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Plain Zone	850 ~ 1,000m	25,406 0.91%	0 0.00%	1,024,017 36.86%	1,724,366 62.07%	4,300 0.15%	2,778,089

Note : Bour means non-irrigated or rainfed farmland where people cultivated cereals during winter by collecting flooded water in autumn

As stated in previous paragraph, farming type and land use/land holding pattern is variable with agro-ecological zone. For instance, in mountainous zone, (irrigated) arable land areas are very limited, most of which are located in perennial stream beds or riverside terraces while in plain land unequipped with irrigation facility cropping is practiced over very limited area of rainfed bour.

In intermediate zone, as number of wadis from which water can be supplied is limited, water is a limiting factor of farming activities. Oases have been developed along main wadis where rotation of cereals, alfalfa, vegetables etc has been practiced under canopy of date and olive trees. Arable land is manually and mechanically cultivated but cultivation by tracting oxen has been diminished. Considerable area under bour has been developed in the plain of northern Gourmima where winter cereals are singly cropped. Because urban areas where consumers are concentrated develop mostly in this zone, vegetable gardening and animal fattening are intensively practiced with a background of vigorous demand in peri-urban area where abundant irrigation or livestock water is available.

Agricultural land use in plain zone depends heavily on availability of irrigation water. Although this zone is bestowed with land resources as compared with other zones, water serves as a decisive limiting factor on farming. In plains without irrigation facility there extend grazing areas in common that can be used for pasturing shared with nomad people on which extensive livestock farming with camels, shoats etc is practiced. In some parts in this zone, crops of subtropical origin can be raised, owing to subtropic climate, including such herbal spice or aromatic crops as rosemarry, cumin, henna, anis etc as local specialty. Oases found in this zone do not appear in a belt along wadis as observed in the intermediate zone, but located sporadically at underground wadis or around fountains. Hot gale (chergui) blows from

desert during the season from late spring to autumn, atmosphere gets extremely dry and this climate continues making farming difficult. Farmland is often buried under sand dune by chergui where satisfying yield of crops can barelt obtained once in four years, accoding to the inhabitants. Recently, decayed datepalms are outstandingly visible in consequence with sharp falling of groundwater level in this zone. Accordingly, farm economic character in this zone gradually changes into more dependent on livesock income.

Irrigated Land Area per Farm Household and Per Population

Irrigated perimeter / household	Mountainous zone	Intermediate zone	Plain zone	Urban municipality	Provincial average
< 0.5 ha	0	2	0	5	7
0.51~1 ha	10	4	2	1	18
1.01~1.5 ha	4	4	0	1	11
1.51~2 ha	1	1	3	0	5
2.01~2.5 ha	0	0	0	0	0
2.51~3 ha	0	0	2	0	2
> 3.01 ha	0	1	5	1	7
Average = 0.66 ha	0.84ha = 15	0.67ha = 12	1.33ha = 12	0.23ha = 8	0.66ha = 47
Irrigated perimeter / population	**Mountainous zone**	**Intermediate zone**	**Plain zone**	**Urban municipality**	**Provincial average**
< 0.05 ha	1	1	3	6	11
0.051~0.1 ha	2	6	2	0	10
0.101~0.15 ha	5	2	0	0	7
0.151~0.2 ha	5	3	1	0	9
0.201~0.25 ha	2	0	1	2	5
0.261~0.3 ha	0	0	1	0	1
0.301~0.35 ha	0	0	1	0	1
< 0.351 ha	0	0	3	0	3
Average = 0.10 ha	0.14ha = 15	0.10ha = 12	0.17ha = 12	0.04ha = 8	0.10ha = 47

Farmland area by Land Holding Type & by Agro-ecological Zone (Unit:ha)

Land holding type	Melk	In common	Habous	Domain	Zaouia	Total
Erracidia province*	57,566	74,759	2,112	154	22	134,613
Mountainous zone	14,653	67,298	229	149	20	82,349
Intermediate zone	15,450	4,506	951	0	0	20,907
Plain zone	22,132	2,655	880	0	0	25,667

Difference between the total of area in the province and that of the above three zones is equal to the arable land held by farmers living in minicipal/ urban communes. Colectively utilized land often found in mountainous zone is grazing area under forest land.

1.2.3.3. Irrigation

Irrigation constitutes base of agricultural production in any arid/ semiarid area the water sources of which stem from 3 major rivers; Ghris, Ziz and Guir, with some utilizing groundwater fountains at mountain slope or foot. Irrigated perimeter in Errachidia Province amounts to 14,500ha or only 0.07% of the land area thereof, but the irrigation systems / networks have been developed as common, collectively used local assets of oasis community. These consist of khettara and network of Seguia and are managed under traditional maintenance and management systems by water users' cooperatives or associations. Many of existing khettaras are traditionally maintained irrigation facilities with their water sources of artesian fountains/ wells of shallow aquifers. Their water channels are excavated underground or on the ground surface covered with stones/ earth. In these years, due mainly to ver pumping of groundwater, such groundwater resources has begun to deplete and cases have been reported of the manifest of salinity problems on 60% of existing khettaras according to commune monogpaphs. Also, there observes a recent trend of increased demand for irrigation water as a result of expansion of arable land area and intensified cropping accompanied with growth of population. However, available/ functional number of khettaras and shallow wells tend to decrease as a result of depletion of groundwater ~ artesian fountains as well as dilapidation of canals and insufficient maintenance. Similarly, supply of irrigation water from surface water sources has been leveled off, leading to failure of thorough irrigation practices unless new water sources are exploited. In this context, quite recently, new seguias are being constructed to convey and utilize flood water in flooding season (autumn) into arable land and bour where existing khettara has no more functioned. The existing irrigation facilities in the Study area are summarized in the following table. The amount of irigation water originated from Ziz River in 2006 ~ 2007 within the Study area amounted to 32 MCM, while beneficiaries area of irigation was estimated at 13,000 ha（equivalent to 1.9 crops/ year per percel).

Area of Irrigated Perimeter in the Study Area by Agro-ecological Zone

Water source （major system）	Suface water*		Dam/weir + khettara		Fountain/well**		Total sources
Unit : number of sites ha	Number	Perimeter	Number	Perimeter	Number	Perimeter	Perimeter(ha)
Mountainous (Fountains, stream)	67	6.522	1	0	58	1.701	8.223
Intermediate (Fluvial origin, dam)	65	8.711	7	1.861	8	19	10.950
Plain (Fluvial origin, wells for potable)	18	12.625	1	0	0	0	12.625
Urban (depending wholly on surface)	15	9.294	0	0	0	0	9.294
Study area total	165	37.152	9	1.861	66	1.720	40.732

Note：* Combination of intake facility and seguias, **Wells/ fountains on muntain slope conveyed by contour-line channel

To cope with water deficiency, ORMVA/TF has started to rectify abusing water resources ad to instruct how to promotie water-saving irrigation. Since drip irrigation can save water by several ten percent as compared to basin irrigation over the same area, it subsidizes for the introduction of drip irrigation by

60% of its constructin cost (average construction cost of drip irrigation per ha is estimated at 20,000 Dh). According to ORMVA/TF, the improving measures and facilities requiring improvement comprise 1) lining of seguias (112 km), 2) improvement of traditional system of intake facility (40 sites), 3) repair and newly construction of pumping stations (8 stations), 4) rehabilitation of khettara (2,500m), 5) improvement of water sources (10 water sources, water conveyance work). Besides, for irrigation water saving, it has strategically promoted to introduce drip irrigation. This can be applied to fruit trees such as datepalm, vagetables cultivated in spring ~ summer, and subsidy is to be disbursed to those who equipped it after the completion of construction work as described above. However, the cost of equipping and maintaining drip irrigation facility 200 thousand Dh/ ha plus annual energy cost seems rather expensive for smallholders, and there is also risk of getting damages or completely losing the facility by evil floods especially in mountainous zone. it has lead to a tendency that introduction of drip irrigation has so far been concentrated in intermediate zone where cost of investment for drip irrigation can remuneratively be offset by the benefits. Well prepared maintenance management and technical capacity after the introduction of drip irrigation are indispensable in order to make efficient use thereof in sustainable way. For this reason, ORMVA/TF continues to sustain technical assistance to the farmers in the form of intensified extension services to those who introduced it.

A problem related to drip irrigation is ground water/ surface water quality, especially salinity arising from recently-revealed depleting trend of droundwater resources Crops resistant to salinity have been selected and introduced in oases, among others, datepalm is reported to tolerate up to 12,000 ppm of salt concentration dependin on its varieties and growth stage. However, salt concentration of soils is elevated through depletion of groundwater as well as drying/ evaporation of ground surface and very often salt concentration in surface irrigation water is also elevated as it flows in earthen canals where soils or rocks contain much salt. Appendix5 Table 1.2.23 show pH and electric conductivity of water samples (irrigation water, partly potable water) taken and measured by the Study Team.

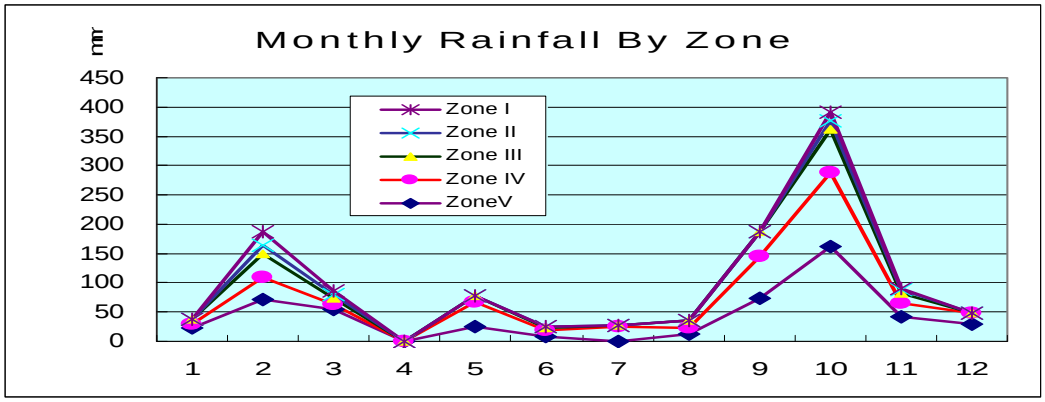
1.2.3.4. Crop Production, Livestock and Fisheries

(1) Crop Production

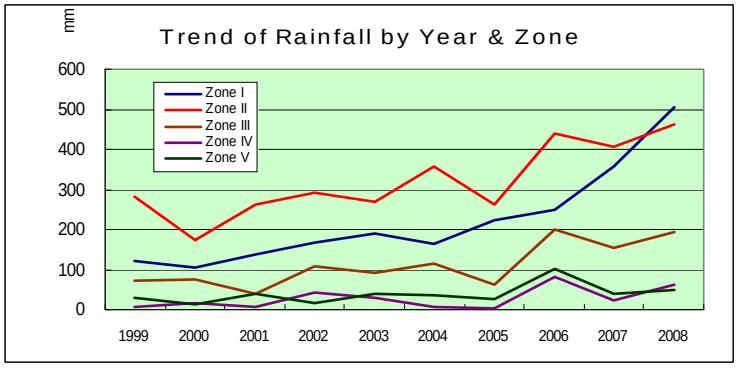
1) Crop Production in Study Area

Crop production in the Study Area depends wholly on water availability and climate. Annual crop production consists of winter crops relying on rainfall during autumn, and of summer ones relying on spring rains, while perennial crops are generally harvested during summer ~ autumn. Rainfall that is the most important production factor has a bimodal pattern with the peaks falling in autumn and spring, according to which winter cropping with the crops that tolerate low atmospheric temperature such as cereals including wheat and barley, as well as summer cropping with those requiring high atmospheric temperature such as maize and pulses are practiced. According to a result of the socio economic survey

that the Study Team has performed, precipitation, state of crop production by zone, their yield levels and cropping calendars are summarized in the figures and tables below (unless otherwise specified, all the tables and figures have been sourced from the socio-economic survey 2009). In general, annual crops as compared with perennial ones have wider fluctuations on the yield levels with such variable factors as rainfall and climatic disasters.



Monthly rainfall distribution by zone delineated by the zoning



Trend of rainfall in the recent decade by zone delineated by the zoning

Number of farm households by land-holding by zone delineated by the zoning and Area, production and yield by principal crop specie by zone are sown in Appendix5 Table 1.2.24 and Table 1.2.25 respectively.

Farmland comprises irrigated fields and non-irrigated ones (bour), the former is cropped all the year round with an irrigated rotation, while the latter is only cropped with winter crops usually started from autumn with its frequent rainfalls. As recent temporal irrigation schemes are applied to bour diverting flood water that takes place in autumn, the area under pure rain-fed bour has been diminishing. With regard to cropping patterns, in the northern part of the Study Area where cool climate prevails, temperate fruit trees (where winter crops are often cropped under the tree canopy) coupled with ordinary crop fields are dominant, while in the southern part where mild climate dominates, three-layer cropping pattern with date palm trees occupying the highest space, with lower tree-crops like olive, fig or pomegranate trees occupying medium space and with annual crops as well as fodders are cropped on the

ground is generally practiced in the oases created along rivers or around fountains. The most recent (in 2008) data on area, production and yield by principal crop specie are tabulated in Appendix5 Table . As concern details of crop production for each crop specie, it is summarized in Annex I Table 3.3.12.

A major winter crop, wheat is cropped with rains in autumn and harvested in next spring. Durum wheat are mainly cropped in mountainous zone , while bread (soft) wheat is more cropped in intermediate and plains. In particular, in southern part of the Study Area most of the cropped wheat consists of soft varieties, with the yield level higher than durum wheat, also with higher yield averages observed more in the north than those in the south. Rain-fed bour is also found in intermediate to southern parts of the Study Area, partly contributing to lower mean yield observed in the south. Since wheat is susceptible to salinity, higher rate of saline farmland located in the south also contributes to its lower yield level. Barley has smaller acreage than wheat does, and the acreage under barley is by far distributed in the south than in the north. Its yield level is equivalent to 60~70% of that of wheat, with a higher level in the north as observed in that of wheat. The cause of the higher yield is considered in higher fertility as well as higher manure application in the north. Cumin, a minor crop is also cultivated as a winter crop in sub-tropic southern and intermediate area.

As to cereals as summer crops, maize has by far larger acreage than other crops, though sorghum and millet are found in the areas hit by chronic droughts as minor cereal species. Maize is often mixed-cropped with such pulses as kidney beans in alternate rows. As regards its yield level, the northern part also tends to have higher level than in the southern one, especially in intermediate zone where its harvest tends to be affected with droughts. Concerning cropping of pulses, broad bean that is more locally consumed has highest acreage in intermediate Zone with higher yield than that found in any other zones.

Vegetables are generally cropped throughout the year with higher acreages in mountainous and intermediate Zones located nearer to markets of consuming areas where sources of groundwater are easily available for their production. Their yield levels are also found higher in the north. Acreage under vegetable species has a descending order of onion, tomato, carrot, turnip, egg-plant, water melon, melon, pod beans etc with more acreage in intermediate Zone than those in any other zones. Fodder crops are cultivated as a component of rotation, and mainly alfalfa is cropped with several times of reaping in a year. Its acreage is by far larger in intermediate Zone but as far as its yield level is concerned it’s highly variable with manure application, frequency of reaping and cropping periods. Henna* and cumin**, typical crops in the countries along the Mediterranean coast, is mainly cultivated in the south, but requiring higher temperature and much water for their cropping. They are harvested in the fall and marketed after primary processing at the producing areas. * used as a cosmetic pigment applied on skin and nail. ** an aromatic spice. C

2) Cropping calendar

In the crop calendar given in Appendix5 Figure 1.2.14, the sowing and the harvesting seasons are different by a month or so for the same crops cultivated in the southern part and those in the northern part within the Study Area. In the mountainous zone with snowfall, sowing period is retarded than that in the south, but in the fall harvest is done earlier than that in the south. Henna is a perennial crop cropped in the same fields for more than a decade and it's harvested 2 to 3 times from late spring to end of summer processed by maceration in producing farmyards to produce green leaf-powder..

In most rain-fed bour fields, cropping is made only once in a year for winter crops while they are kept fallow during summer. Alfalfa (or berseem clover) is usually cropped as forage crop, with several times of reaping during the period from early spring to late autumn for feeding livestock.

As regards cropping acreages of perennial crops, date palm has by far the largest acreage, followed by apple, almond and olive. Quince, fig, pear, walnut, citruses, grape, pomegranate and peach are planted as minor tree crops mostly consumed at home. Higher acreage under date palm is found in intermediate zone, or Zone III and also in plain zone or Zone IV, with highest yield level in Zone IV. Twenty or more varieties of date palm are found in the Study Area, but such high quality varieties as Mejhoul and Boufeggous have been affected with Bayoud disease (with fungal attack on young leaves by water-borne infection) and now in a disastrous state. However, large-scaled farms with high investment fund are growing these almost perished varieties sold at high unit prices in disease free areas with drip irrigation.

Olive is widely planted in most zones, however, it may be centered at intermediate Zone where local oil variety of Picholine is mainly planted. Acreage under almond is concentrated on the riversides, especially that of Ghriss River in mountainous Zone where higher yield and quality can be obtained.

3) Extension activities

Mostly farmers themselves provide their seeds and seedlings on their farm, but they also purchase improved seeds etc. every season through ORMVA/TF and commercial marketing channels. Distribution of improved seeds and stocks by ORMVA/TF is usually targeted to poor farmers from whom some fee is collected just because ORMVA/TF desires them to take a good care for the received planting material. In the case of distributing fruit tree seedlings, ORMVA /TF provides grafted ones. As to fertilizer application, many poor farmers apply only self-supplied farmyard manure or other organic fertilizers because they cannot afford to buy marketed fertilizers. However, many farmers also apply chemical fertilizers along with self-supplied manure in oases. Suitable agricultural chemicals are sprayed to fruit trees in response to occurrences of pests and diseases.

In the periphery areas of Erracidia, Erfoud, Gourmima, Rich etc. such perishables as vegetables have actively been produced in response to demand for them in these consuming areas. In these supply areas higher rates of chemical fertilizers, pesticides/ fungicides as well as herbicides are consumed than those consumed in other areas. During dry seasons production of perishables rely heavily on irrigation water from groundwater resources, but in increasing cases salt content in irrigation water exceeds allowance

limit on account of over-pumping, thus arising need of water source conversion (Refer to Appendix5 , Figure 1.2.15 and Table 1.2.26).

For agricultural extension, ORMVA/TF has established offices at Circles and some Communes staffing over 200 extension workers with various expertise including fruit trees, field crops, livestock/ veterinary, farm economy etc. These workers visit ksars (villages) to instruct and diffuse farming techniques among beneficiary farmers, however, current numbers of staff are too short to cover the whole areas where a staff should cover several hundred villages.

Major Performances of the Activities of ORMVA/TF in 2007（extension service sector）

Performance of agricultural sector activities	Quantities achieved	Performance of livestock sector activities	Quantities achieved
Distribution of certified grain seed to farmers	544 MT	Vaccination of enterototoxemia	586,570 heads
Distribution of chemical fertilizers to farmers	2,493 MT	Control of internal/external parasites	882,855 heads
Distribution of grafted fruit seedlings	116,037seedlings	Vaccination of anthrax	37,089 heads
Distribution of (in vitro) dates seedlings	19,147 seedlings	Quarantine inspection of carcass	2,748,428 MT
Distribution of sucker shoots to farmers	16,780 seedlings	Distribution of subsidized feeds	3,500 MT
Dostribution of (in vitro) date seedlings	17.964 seedlings	Quarantine inspection of live animals	277,511 cases

4) Character of farming in the Study Area

A salient feature observed in the farming pattern in the Study Area resides in tight combination between crop husbandry and livestock. Livestock is a form of holding farm assets almost equivalent to money deposits in the banks, also important and useful in procuring such nutritional sources as proteins as well for providing cash to cope with casual expenses of participating in ceremonies of wedding or funeral. Animal nutrition has so far been procured through grazing, but natural grassland has been degraded by over-grazing leading to gradual depletion of palatable grass species for grazing herds. Accordingly, dependence on self-produced and purchased feeds has recently become much heavier than before. Current situation in the field of drip irrigation on which spotlights have recently been cast as means of water economy in the Study Area is shown in the following table: ORMVA/TF has provided a subsidy with a rate of 60% of the total cost incurred on the installation of drip irrigation kits by associations or cooperatives who utilize them as a group. However, the beneficiary group will have to pay all the cost for installing drip irrigation kits prior to the application for the subsidy, so actually it is difficult to clear the procedure for receiving it though many groups desire utilizing it. As a technical hurdle, a drip irrigation kit requires water free from suspended mud so that it can be operated without choking at its filter and dripping holes in irrigating pipes. Moreover, running cost to procure energy for driving pump in un-electrified areas after the introduction of drip irrigation facility would give economic burden for the beneficiary. ORMVA/T F also provide 30% subsidy for farm mechanization by tractors etc.

The results obtained in recently performed socio-economic survey identified 14 drip irrigation schemes in the Study Area the water sources of which consist of 7 groundwater sources, 6 pump stations and 1 traditional canal (khettara). The size of command area per irrigator is averaged at 8ha, owned equally by

private farm and farming groups. In this concern, the subsidy by ORMNA/TF is not applied to irrigation by private farms. Both groundwater and water from fountains (artesian wells) are suitable for drip irrigation since it is free from any turbidity and litters thereby not requiring sedimentation reservoirs. On the contrary, river water is quite often turbid, and its turbidity tends to increase during flooding period thereby having difficulty in using directly for irrigation source of drip irrigation. As a rational way of making it transparent, turbid water can be tentatively stored in a reservoir or a weir, allowing it to permeate into the ground and again taking out from wells and fountain bottom for the source of drip irrigation. In drip irrigated plots, such devices as mulching them with vinyl sheets or covering the surface with wheat straw are sometimes observed to minimize evaporation from soil surface.An inventory of drip irrigation is tabulated in Appendix5 Table 1.2.27.

5) Agricultural damages and Aquatic contamination

Among what farmers are recently confronted with, several serious limiting constraints have been identified, such as cyclically occurring locust damages by Schistocerca gregaria and fusarious disease of date-palm called “Bayoud” that have already been mentioned above. In addition, very frequently hitting flood damages and lowering of groundwater level and subsequent increasing salinity thereof caused by over-pumping. Annual rainfall seems to have an increasing trend in recent years, accompanying with local heavy floods taking place in autumn and also in spring. Last year, a very old tract of date-palm and olive orchard developed along Gheris River was engulfed and swept away by a torrential flood. Also in Zone III and in Zone IV, shallow wells that had been used for many decades were either depleted or abandoned by such a high degree of salinity that the water could not be used either potable purpose or irrigation, leading to inevitable diversion of water sources.

The following table indicates the result of conventional water quality measurement by Japanese staff. Even for date palms and other arid floras that can tolerate high salinity, detrimental growth hazard and decline in fruit yield takes place when the salinity level in the soil exceeds over 7,000ppm (=7g/L). In general, growth of field-crops, in particular vegetables is inhibited in saline soils the concentration of which reaches over 2,000 ppm, a lethal concentration. In Zone III and Zone IV where much groundwater has been pumped up, a large acreage under date palm have been abandoned in ruin due to heavy salinity identified in Taous, Rissani, Erfoud, Jorf, Ferkhla and Gourmima as notorious over-pumping and wasteful use of groundwater.

Examples of water quality of irrigation/ domestic water in the Study Area

Article/ Place	Fezzou	Ksar Mbidi	Erfoud	Alnif, Taoumart	Alnif, Taoumart	Assoul	Imilchil	Agouba-lounik	Boudnib	Amell-agou
Water source	Well 15m	Well 8m	Canal	Fountain	Well 12m	Fountain	Tap water	Canal	Canal	Ghriss River
Water use	Domestic	Irrigation	Irrigation	Irrigation	Domestic	Irrigation	Domestic	Irrigation	Irrigation	All purposes
pH	7.75	7.83	8.12	7.58	7.12	7.94	8.19	8.19	8.37	7.88
Conductivity*	0.384	3.010	0.784	0.568	0.78~39.7	220	>220	>220	0.048	1.227
Equiv.salinity **	280	2,400	570	410	570~26,000	75,000	>75,000	>75,000	40	950
Water temp.***	19.0	19.2	19.0	20.3	19.1	18.8	18.8	18.8	26.5	25.0

Source: Measured values by the Study Team. *unit : mS/ cm, **unit : ppm equivalent corresponding to conductivity, *** water temperature of the sample during measurement、by the Study Team

In these zones saline water containing 7g/L of salt are often found in shallow wells and fountains that are now used only for washing clothes. Dilute as the salinity in irrigation water is, as it is irrigated in farmland, only water is evaporated/ transpired in it and the salts left in its soils are accumulatively concentrated on. Survival of all the plants except for specific halophytes is not possible when the ambient salt concentration exceeds 16,000 ppm.

Besides, as for post-harvest treatment and agro-processing, a cooling storage depot with a capacity of 1,600 MT for storing apple has been established in Rich, 3 olive-oil extraction mills with a total capacity of 3,500 MT per year have been constructed in Rich and in Gourmima. Furthermore, 2 dairy cooperatives have been established in Erracidia and in Rich with a total capacity of storing and processing 3,300 kL of raw milk per year.

6) Farm-gate-prices and estimated profitability by crop

As a matter of course, farm-gate prices of farm products are settled through demand-supply situations, and as it is mentioned in the paragraph of marketing of farm produce, they vary with annual consumption demand versus production, quality and usage of marketed products, marketing seasons and locations of producing areas.

Dates are marketed after they are sorted, and out-of-grade fruits are traded at 3 Dh/kg or so with middlemen for use of a gradient of concentrate feeds. Likewise, dates are priced by variety, and they are bargained with cheaper prices during peak harvesting season from September to October. Such local varieties as Khalt (mixed varieties) and Bouslikhen are traded with cheap unit prices, as low as 5 Dh/kg, while high-quality varieties such as Medjoul and Boufeggous can be traded with their unit price levels of 50~100Dh though hardly available due to fatal Bayou damages. Hence, well-off farmers often keep their harvested dates until November or even later, trading them later monitoring price fluctuations, whereas poor farmers obliged to sell their harvest soon after harvested to visiting middlemen, thereby releasing their harvests at yielded price levels. Festivals of dates are held every autumn in various places where

quality of harvested dates is competed, and middlemen refer to the result of this competition for quotation of date prices. Farm gate prices are tabulated in the Appendix5 Table 1.2.28. Crude margin per ha is estimated crop-wise from the farm-gate price levels is also summarized in the Appendix5 Table 1.2.29.

(2) Livestock industry

1) Land use/ grazing resources for animal husbandry:

Grazing land accounts for around two thirds of the whole area (2.547 million ha) of the Province, however, it has been degraded to have limited carrying capacity. About 40% of the provincial grazing area, mostly flat, is concentrated in intermediate zone, grazing land while in mountainous zones is mostly located sloppy sides of mountains and hills. In these areas livestock are usually kept in farm-yard stables fed with crop residues such as wheat straw, maize stover and rotational forage crops. Difficulty arises from procurement of winter feeds, for which farmers often sow grain in the field after harvesting summer crop to obtain dry fodder.

In intermediate zone, feeds are procured by cropping mainly alfalfa and sometimes berseem clover and rutabaga as relay crops. Here, dairy cows are fed in barns making use of geographic advantage of urban outskirt. Also, sheep (in many cases D'man variety) are reared in farmyard as compound management with farming. Major type of animal husbandry n plain and desert zones constitutes extensive grazing with herds of shoats (hereinafter referred to as sheep and goats) and camels for meat on degraded pastures that both inhabitants and nomadic people commonly utilized.

2) Outline of animal husbandry

The main form and characteristics of traditional animal husbandry in Erracidia Province includes nomadism, semi-transhumant and agro-pastoral husbandry. Both nomadism and semi-transhumant are the form of keeping animal herds by immigrating in a vast area pursuing grass and water, while agro-pastoral form is a compound farming with crop husbandry coupled with animal husbandry. In this Province, livestock has been kept and fed all the communes. Livestock species mostly consist of luminous ones such as bovine, sheep and goat species.

Herd density **(Unit: head/100 ha)**

Circle	Cow	Sheep		Goat	Camel	Donkey, Raba
		Others	D'man type			
Rich	1.71	4.30	8.32	11.47	0.06	1.87
Imilchil	5.54	88.09	1.14	25.80	0.03	3.43
Assoul	1.59	12.97	2.37	16.27	0.17	0.67
Errachidia	0.18	0.25	0.81	0.45	0.04	0.14
Goulmima	0.75	4.64	2.49	5.04	0.11	0.48
Erfoud	0.32	0.14	2.13	0.77	0.05	0.20
Rissani	0.03	0.00	0.71	0.84	0.13	0.09

3) Areas of animal husbandry and feeding forms

Current situation of cattle feeding by commune in the Study Area is presented in the form of herd density per 100ha. Refer to Appendix5 Figure 1.2.16. The herd density has close relationship with annual precipitation and distribution of natural vegetation. In Amellagou commune (mountainous zone), dairy cows are often kept in barns. Keeping livestock in barnyard requires much more feeding labor as compared with grazing them, but farmers can manage them on improved conditions, thus they can easily allow maximizing producing capacity of livestock. Milk thus produced here is usually home consumed.

Bee-keeping households in the study area is estimated at 5,200. 80% of them live in the mountainous zone（Rich, Imilchil, Assoul）as well as the intermediate zone（Goulmima）. The species of honeybees they feed are Yellow Saharian Bee, a kind of European honeybees (*Apis floroa*) (with golden to brown color and black color at its tail). Way of keeping honey-bees in the Study area consists of 1) traditional fixed hives developing from natural beehives created in rooms, 2) immigrating bee-keeping with modernized portable box-type beehives (modern apiary). The rate of extension with modernized apiary is estimated at about 30%, and the rest, traditional feeding inside rooms is still dominant. Annual yield of honey is highly variable, ranging 2 to 30kg per swarm. Refer to Appendix5 Table 1.2.30 and Table 1.2.31.

4) Feeding of other species of livestock

Principal type of livestock feeding in Erracidia Province is dominated by grass-grazing or luminous livestock species, cattle and shoats, with very limited feeding of pigs and poultry that are mainly fed with cereals.

5) Production of livestock

According to the data by ORMVA/TF, quantities of agricultural production and product consumption in the Study area are as follows: As regards consumption level of livestock produce, the population in the Study area consumes at 50% as much as the average level in Morocco.

Agricultural Production (livestock)

Kind of produce	Quantity of Annual Production
Milk	12,000,000 Litre
Red meat	8,000 MT
Wool and fur	1,000 MT
Leather	345,000 PIC
Honey	40 MT

Demand for milk and meats (Annual per capita food consumption)

Kind of produce	Average level in Morocco	Tafilalet Region
Milk	41	20 Litre
Red meat	14	7.kg
White meat	5.8	2 kg

In the Study Area, two varieties as pure bred stocks, namely, Tarentaise and Bretonne Pie Noire have been introduced from France. As the strategy of ORMVA/TF, the staff plans to extend these pure varieties, but actual rate of diffusion in the Study area has so far been below 10%.

The productivity of bovine species is considerably different both by zone and by period of the year they are fed, but the basic indicators on the productivity by ORNVA/TF are as follows, also shown Table below.

Basic indicators of bovine production

Species		Weight (kg)			Height (cm)	Lactation (ℓ)
		Newborn	Weaning Period	Adult		
Tarentaise	Male	45	390	800	140	
	Female	49	250	600	139	2,800
Bretonne Pie Noire	Male	25	220	600	123	
	Female	22	190	450	117	3,498

c) Productivity of shoats

Different varieties of shoats have been fed in nomadic area (through transhumant） and agro-pastoral area(mixed farming with animal husbandry）in the Study Area. As regards goats, Nomads keep both Sahel varieties and local ones. Sahel variety of goat has an averaged adult height of 80 to 85cm for male, 70 to 75cm for female with live weight of both 25 to 30kg per adult head. Local goat varieties have resistance to drought, with a behavior of utilizing all feeding vegetation including what cannot be browsed by other species of livestock. Besides, they can acclimatize themselves to the harsh environment in mountainous area.

Milk produced in the province is all home-consumed and dairy products are transported from western Morocco to the main dairy producing area.

In agro-pastoral area(mixed farming with animal husbandry) barn-feeding of D'man variety of sheep is often observed. D'man variety is a local one in Tafilalet, widely reared in the southern side of Atlas mountains ranging

from Rissani to Zagora in Morocco. Mostly, 2～3 heads are kept feeding in small barns. Rearing farmers feed them with self cultivated forages including alfalfa (Luzerne). The height of D'man variety of sheep reaches 80～85cm for adult mutton and 70～75cm for ewe with their live weight at 30～40kg. Number of kids born at a delivery are as high as 2.67. The variety has an excellent performance of meat production from which extra-quality meat without sheep smell. This is the reason why it has been introduced as a cash income generation activity for rural women.

As to inland fisheries, two types thereof are observed in the Study Area, both of them are not for food purpose. One is to release domestic fish species and those in Maghreb countries (Issen barbo = *Barbus lepineyi*, Figuig barbo = *Barbus figuiguensis*, *Blackbass*, *Perchoude* in artificial reservoirs to make water clear possibly for utilizing as potable water or to serve tourists for their recreational angling. The inhabitants living in local areas do not have custom to eat fish, or any demand for fish evolves from these areas. It was told that Fario trout (*Salmo trutta*) was released in a natural lake in Imilcil, known as a tourism spot, but according to the inhabitants it was difficult to make the released fish to settle and thrive in the released spot.

The other type is to release indigenous fish species "barbo" and exotic ones such as tilapia (Zill tilapia = *Tilapia zilii)* in currently utilized fountains to keep water clear for potable purpose as observed in a ksar in Tadigouste. In this case, the fountain is an ideal habitat for the released fish, for example fresh water with constant temperature is supplied where algae is thriving for egg laying at the bottom of the fountain and channel, with abundant insects that can serve as their baits, and that capture and eating fish are prohibited, thus the released fish are favorably thriving.

1.2.3.5. Extension Services and Farmers' Cooperatives

In this section, the details of the dissemination station under ORMVA/TF, such as its structure, personnel, role, budget and activities, are discussed.

(1) Structure of technology dissemination service in the field of agriculture, forestry, and fisheries

Technology dissemination as for agriculture, forestry, and fisheries are officially operated by Ministry of Agriculture. In this regard, the Ministry holds its structures at five levels from the central to the regions.

- Ministry of Agriculture (Central): Office of Technology Dissemination
- Regional office: In related to this project, regional office is located in Meknes.
- Provincial Office: In case of Errachidia, Office of ORMVA/TF is the provincial office, which jointly serves the part of the neighboring province. The office also holds Laboratory for agriculture and husbandry. As for technological dissemination, there are three divisions within this office:
- Division of Agricultural Dissemination and Cooperative Organization: Under this division, three concerned bureaus, covers activities related to dissemination such as technical training, encouragement of farmers' organizations and so forth, that is Bureau of Agricultural Dissemination,

Bureau of Cooperative Organizations and Credits, and Bureau of Training

- Division of Husbandry: This division is responsible for technical dissemination in the field of animal husbandry.
- Divion of Facilities: This division is responsible for material dissemination such as facilities and equipment.
- Coordination Office at Cercle levels: In the service area of ORMVA /TF, there are five (5) coordination offices, each located in major cities: Errachidia, Erford, Goulmima, Rich and Tadjit. Under the office, there are sub-divisions of Agriculture, Husbandry, and Facilities, for which chief engineers and officials (disseminators) are assigned. Most of dissemination activities are organized and conducted by the office of this level.
- Branch Office at commune levels (MVP): A single or two officials are assigned. Each branch covers a few communes, working for statistical data collection in regard to agricultural production and livestocks.

(Organizational chart is shown in Appendix5, Figure 1.2.17)

(2) Farmers' Organization

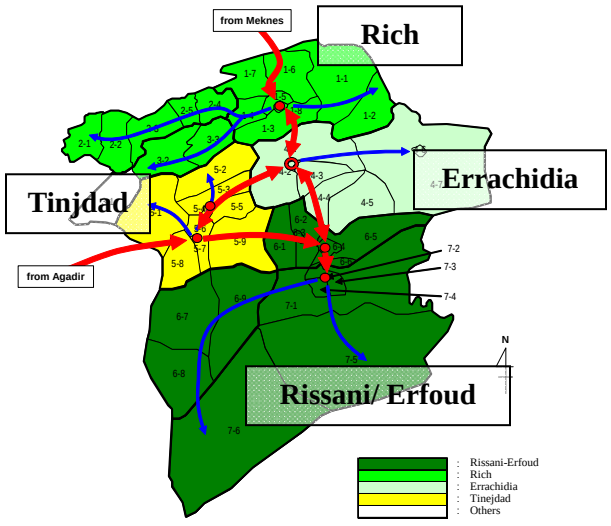
ORMVA/Tarifelet conducts technical dissemination activities aiming at farmers' organizations, such as Associations and Cooperatives. At provincial level, many concerned farmers' organizations are listed as the coverage of ORMVA's service and assistance. Besides the increase of productivity, these farmers' organizations engage wide ranges of activities : processing of agricultural/livestock products, distribution, irrigation, roadways, installation and maintenance of water supply pipes, income-generation by craftworks, and some organizations even cover activities in the field of health/education. In other words, these activities by community groups fill in the gaps of basic services by the administration at village levels.

The numbers and examples of farmers' organizations according to the list of registered associations to ORMVA in 2007 is shown in Appendix5, Table1.2.32 and Table1.2.33).

1.2.3.6. Distribution and Marketing

(1) Distribution Channel

The main trading route in Errachidia are two; Notional Road No. 13 (Meknes－Rissani) and No. 11 (Oujida－Agadir). The major markets in Errachidia province, including Rich, Errachidia, Tinjdad and Rissani/ Erfoud, are developed along these two major routes.



At present, most foodstuffs consumed in the province are coming from other regions such as Agadir, Berkane, Meknes and Casablanca.

Rissani is a core market in Southern area where agricultural products from other regions are once carried in, and redistributed to communal market in Erfoud and Rissani circle. In contrast, local products such as date and olive are exported to other consuming regions via principal road number 13 and 11.

(a) Wheat Distribution

Home-consumption of wheat in Errachidia province, self-sufficiency rate is extremely low, only 35% according to FAO statistics, overwhelmingly deficiency in supply. While Ziz river basin area , including communes in the circle Rich and Rissani, have excess production of wheat, most areas in the province suffer shortage of wheat production.

(b) Vegetables and Fruits Distribution

Self-sufficiency rate of fresh vegetables and fruits in Errachidia province are also quite low, and most products are imported from other provinces including Agadir, Casablanca, and Berkane. Around 70 to 80 percent of fresh vegetables and fruits, transacted in the central wholesale market in Errachidia Municipality, are carried in from Agadir, which locates 680km away from the province (Refer to Appendix5 Table 1.2.34)

(c) Date Distribution

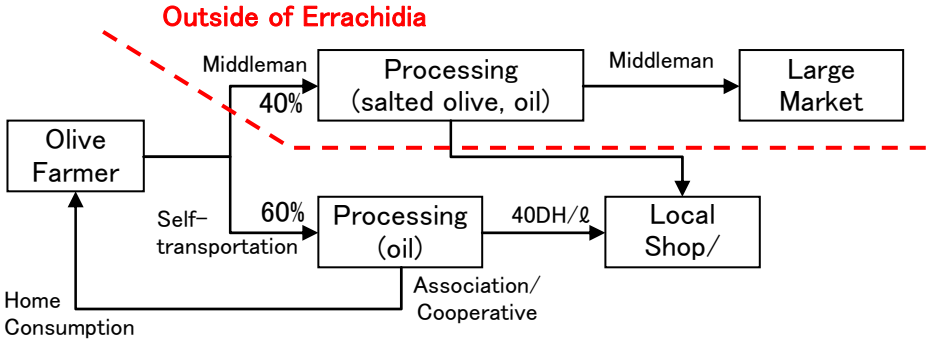
Date is a main product of the Errachidia province, and its production is enough to fill total consumption in the province. Major production areas of Date are Errachidia, Goulmima, and Erfoud circles, and Date from those areas are exported to other provinces. According to the Food Balance Sheet of FAO, annual consumption volume of Date is 1.47kg per capita in Morocco. On the other hand in Errachidia, production volume of Date account for more than 13 times of average consumption volume. Date is an export goods of the province, and there is commercial traders in this transaction. Some cooperatives produce processing products of Date, including dry date, date paste, date jam and date juice.

(d) Olive Distribution

Moroccan people prefer olive oil and pickles for their daily consumption. At Ksar level, Olive oil is produced at small-scale manufactory and consumed mostly within their Ksar. Usually, Olive farmer bring their products in nearby traditional or sometimes modern manufactory, to extract oil with payment.

On the other hand, most olive for pickles is exported to outside the province by commercial traders with a few exception of home consumption. There is no pickles industry in Errachidia province, and most pickles sold at the market are imported from Meknes, Marrakech and Fes. Farmers in Errachidia province once export olive products to outside province for processing, and re-import the final products

for their home consumption. Some farmers want to run processing factory of olive pickles, but it is necessary to establish strict grading and quality control procedure if they want. Following is typical marketing channel of olive in the Errachidia province.



Henna Distribution

Henna is a locally specialized product of Morocco's inland area, and is harvested by small-scale farmers in desert regions. Henna is a perennial shrub tree, which is cultivated three times a year in the same crop field for more than 10 years. Henna is classified as non-food specialty crop in oasis regions, and main usages are traditional cosmetics, traditional medicines, and hair treatment. The main production areas of henna in the province are Rissani and Alnif, and the main markets of its products are Rissani, and out side of the province including foreign countries.

There are three types of marketing channel for the products; that are 1) direct marketing by the producers at the wholesale or semi-wholesale market, 2) selling at the villages to middlemen who circuit local places in Morocco, and 3) selling to henna processing factories located in Rissani, Alnif and Mdaghra. Three henna factories are located in Rissani municipality, and one of them is operating more than 100 years using hand-made milling equipment.

Value-addition to local products by processing into flour and its packaging would give producer farmers benefit and encourage continuing cropping of henna.

(g) Cumin Distribution

Cumin is also locally specialized product of dry zone in Errachidia including Sidi Ali, Alnif, Merzouga and Rissani. The plant is an annual crop and cropped as a winter crop during a period from autumn to spring. It is harvested in April ~ May and sold to middleman visiting villages of production. Grains are utilized for preparing liquor called "kummel", and used as a spice applied in several food industries as well as condiments for cooking recipes. As medicine, cumin has such properties as carminative (letting exhaust intestinal gasses), digestive, stimulating lactation and perspiring.

(h) Meats Distribution

Butchers are the main player of meat transaction, who acquire permission from Municipality or Commune offices for this transaction, and play a key role in the trading process, between purchasing live animals at farm gate and selling to consumers at retail shops. After buying livestock from farmers, butchers receive veterinarian inspection conducted by ORMVA/TF. Then, the butcher bring live animals in slaughterhouse where meats are stocked in cooling facility for a certain period, 24 hours for beef, and 2 hours for chicken. After the cooling, the veterinarian inspect the meats, and provide "a stamp" if the meats are consumable. The certified meats are carried by cooler track to retail shop in the city center.

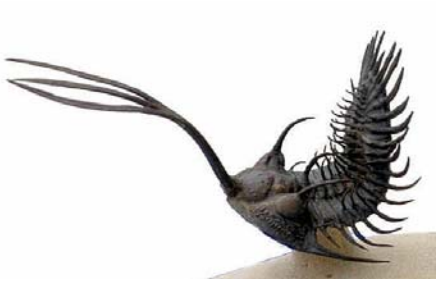
(l) Distribution of Fossil Products

In and around Erfoud is world-famous for mining fossils where such archeological fossils as trilobites, ammonites and nautiluses are mined out, well-known as their densely populated deposits per unit volume of producing formations. As their distribution, the layers found in and around Alnif include diverse kinds of fossils, among others, fossils of trilobites are abundantly found in Alnif and Sidi Ali, those of ammonites in Taous and Rissani, those of nautiluses in layers lain in Erfoud. Major markets of these fossil products are distributed in the US, Japan and China, however Japanese procedure of importing fossils is too much complicated and this complication serves as an export barrier in international marketing of fossils. Due to this hazard, exports of fossils from Morocco to Japan are usually made via European countries. This detouring route reflects in the market price of fossils, for example, fossils dealt with 300Dh in Erfoud cost 400 Dh in France but 1,000 Dh in Japan.

In Errachidia, mining and reshaping/ polishing of fossils are performed in small-scaled workshops, with the handling techniques much lower than those in Western world. Some workshops can cut out marble stone of fossil inclusion by introducing diamond cutters made in Italy, but many of them still resort on hand carving in petty workshops. In Europe, the mined fossils are reshaped into a précised stereo-type produce making use of microscopes and sandblasters, but such an accurate processing is not yet available in Morocco. This lack of modernized technical process has lead to a situation where miners ought to sell their fossil ores by dumping sale with reduced prices and processing is made in the importing countries, thus failing to maximize the gain from really rare resources that can otherwise result in much more export earnings.

There finds a few Associations that deal with mining and exports of fossils in Erfoud, where about6,000 to 7,000 workers are engaged in this industry. They can try to improve their fossil-processing skills by introducing sandblasters（costing $5,000 to $10,000/ implement and other precision machines so that they can improve their income generating capacity. A processed trilobite made in Morocco costs only US$ 20, but in Western world products with precision processing can be dealt by 10 times~100 times as much as the price received by Moroccan dealers.）





(2) Market Transaction

1) Central Perishables Wholesale Markets in Errachidia Municipality

In Erracidia province, only one perishables-wholesale market is available in the center of Erracidia municipality. The wholesale market started in December, 2003, and managed by Errachidia Municipality. The market is operated twice a week (Thursday and Sunday). There work only 3 regular staff, besides 6 agents also undertake the supervision of trading perishables. Agents are civilians, but they have passed the qualification tests by the Ministry of Internal Affaires, with their permitted service period of supervision for 3 years after the test.

1.2.4. Constrains and Potentials for Development

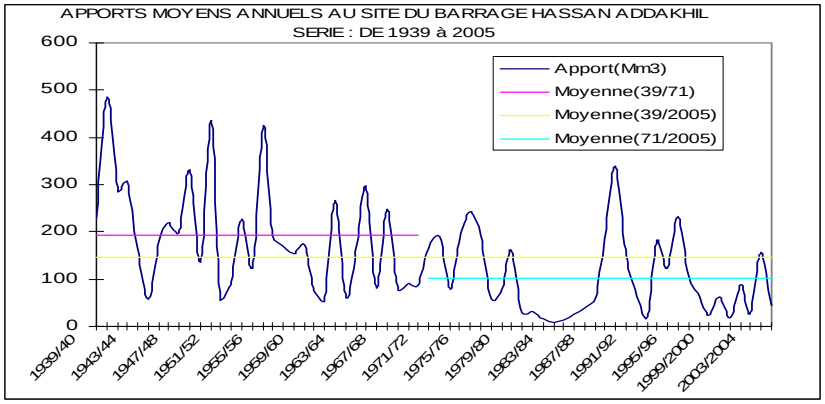
1.2.4.1. Water resources and irrigation

(1) Constraints in Water Resources Development

1) Irregular rainfall patterns and sequential declining trend of quantities at water sources

The annual mean of discharges from 1945 to 2005 was 626MCM, from 1970 to 2005 for 566 MCM, implying a decline by around 10%.

Period (year)	Watershed	Annual Rainfall (mm)	Runoff (Mm^3/year)
1945 to 2005	Ziz-Gheris	150	375
	Guir-Bouanane	149	211
	Maider	120	40
Average Runoff (1945-2005)			626
1970 to 2005	Ziz-Rheris	141	315
	Guir-Bouanane	147	211
	Maider	97	40
Average Runoff (1970-2005)			566



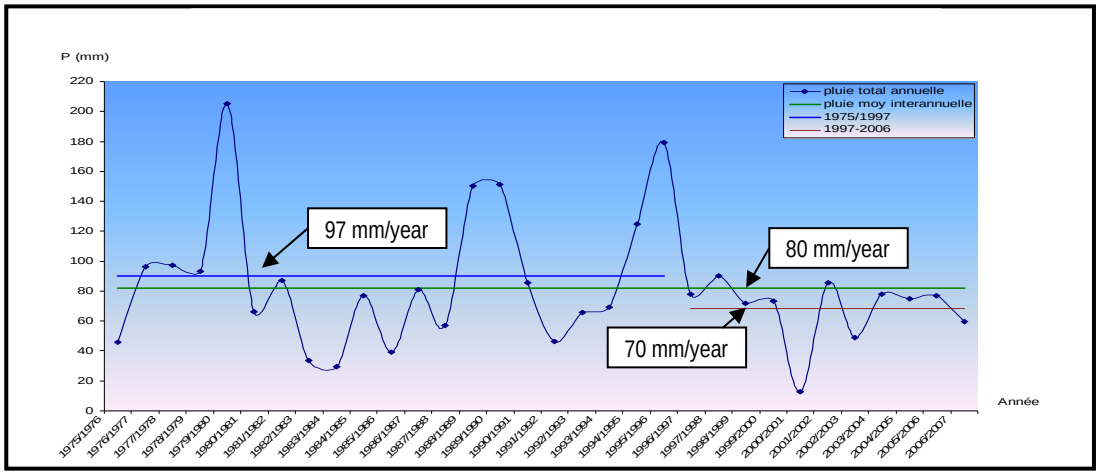
Source : DEBAT NATIONAL SUR L'EAU, DIECTION DE LA REGION HYDRAULIQUE DU GUIR-GHERIS-ZIZ Févier 2007

Trend of mean annual discharges at Hassan Addkhil Dam during 1939~2005

Mean of annual discharges at the site of Hassan Addkhil Dam indicates the following declining trend, by -26% between the two periods 1939~1971 and 1939~2005, while it comes to -48% between 1939~1971 and 1971~2005.

- the period: 1939-1971 the mean annual discharge; 199MCM = 100%
- the period: 1939-2005 the mean annual discharge; 146MCM = 73% or(-26%)
- the period: 1971-2005 the mean annual discharge; 103MCM = 52% or(-48%

Fluctuation of Annual Rainfall in Alnif Between 1975 and 2006



Source : DEBAT NATIONAL SUR L'EAU, DIECTION DE LA REGION HYDRAULIQUE DU GUIR-GHERIS-ZIZ Févier

The above figure shows a trend of annual precipitation at meteorological station in Alnif in the watershed of Maider River. Here, the mean of annual precipitations during 1975~2006 for 32 years gives 80mm, while the one during 1975~1997 for 23 years is averaged at 97mm. moreover, the one during 1997-2006 in the recent decade gives an average of 70mm.

2) Excessive use of groundwater

Among others, over-pumping is remarkably observed in the aquifers lying in the lower watershed basins in Tafilalet, Tinejdad and Boudnib located in lower basin of Errachidia, Rich and Gourrama. Increased pumping has caused the following outcomes. It is generated by the both natural and man-made effect including time-sequential trend of drought, over-pumping and expansion of irrigation command. The consequences of overexploitation of groundwater beyond the capacity of groundwater yields include the following:

- Depletion of groundwater resources
- Incapability of the supply to traditional irrigation systems including Khattera and potable water supply systems
- Invasion/ contamination of chemical fertilizer / agrochemical gradients, and increase in water salinity into the aquifers lying beneath farmland
- Increased pumping expenses due to lowered groundwater levels at the sites of over-pumping

- Other inconveniences such as longer intervals of pumping waiting for recovery of groundwater level


Drip Irrigation for Date & Olive by Pump in Mallab

3) Watershed erosion and sand sedimentation

Erosion and sand sedimentation have caused vulnerability of eco-system, poor vegetative cover, high degree of rainfall intensity, deforestation. It has been led by expansion of farmland and housing quarters, and steep topography in the upstream of watershed basin in contrast with gentle slope in the downstream etc. It is noteworthy that annual volume of sedimentation in Hassan Addakhil Dam and small-scaled barrages reaches 4MCM/year.

4) Droughts and floods

Though damage of flood has been observed in the watershed of Ziz River where the dam for flood control has been constructed, flood has taken place every year in the watersheds of Guir River, Ghriss River and Maider River. It has caused such damages as loss spoil / inundation of houses, loss of farmland, and scoured erosion of river-banks etc. Coupled with floods, occurrence of severer droughts will also be forecast by various factors including global warming. To cope with the issue, it will be imperative to promote efficient water management through employing aggressive strategies accompanied with water resource exploitation, rational water economy, and diversion of water resources to other watersheds etc.


Kaddousa Barrage and Paved road in Ouued N'aam Commune Damaged by Flood in 2008

(2) Development Potential

1) Expansion of water availability and alleviation of flood / drought damages by a comprehensive water management with the existing facilities

Hydraulic structures in watershed of Guir-Gheris-Ziz Rivers and Maider River consist of Hassan Addakhil DAM and 9 small barrages including 246 intake weirs/ diversion weirs. Out of intakes, 25 are used for dispersion of floods and 77 are casual and removable type.

Timkid Dam Site to be scheduled the construction in Oct. 2009

According to the following table, the total storable quantity amounts to 333.6 MCM, adding quantities storing directly from the streams. The total available volume amounts to 352 MCM. Since period of floods varies in watersheds, it is manageable to expand available quantity of water as well as mitigation of drought damages through adequate water management with facilities for diversion to other watersheds etc.

2) Further exploitation of water resources by currently planed barrages

16 barrages have been studied and designed in the basic plan for comprehensive water development in southern watershed of Atlas mountains (étudiés et programmés dans le cadre du Plan Directeur d'Aménagement des Bassins Sud-Atlasiques). Storage capacity amounting to 139 MCM/year and flood control equivalent to 118 MCM/year will be procured by constructing these planned barrages. Besides, 15 MCM/year will be envisaged through elevating intake gate level of existing intake weirs. Beside, similarly 4 MCM/year will be created by constructing new gates

3) Risk management of natural disasters: countermeasures against floods and droughts

In 15 areas in the watershed of Guir-Ghéris-Ziz that are liable to flood damages, 13 areas have already been listed up in the national plan for flood protection. Project cost amounting to 265 MDH has been allocated in this plan in which comprehensive water development is also covered.

4) Watershed conservation / improvement

Soil sedimentation and degradation within watershed, especially in the part of higher elevation, have threaten water use facilities and structures. To cope with the threatening, the time has come to urge taking sustainable measures by soil erosion controlling plan according to priority of implementation. Triggered by reforestation proposed in QP, it will be possible to realize erosion control plans involving communes through coordination among related ministries.

5) Exchange of information with inhabitants, education and awareness improvement

It is the inhabitants who is directly suffered from floods and droughts. Many houses, irrigation facilities and farmland have been damaged by floods in 2008. However, Office of Commune does not actually have any information on these planned in the ministries concerned as disclosed in WS for the formulation of PCD. Moreover, creation of awareness to the importance of water and watershed conservation for people will be lacking on the ground. In that sense, the formulation of PCD and introduction of SIC in communes would offer a good opportunity to mobilize the inhabitants to tackle programs for conserving natural environment with their own initiative.

1.2.4.2. Irrigation

The command area of irrigation in the watersheds of Guir-Gheris-Ziz and Maider is estimated as 68,923 ha (of which 40,732 ha is in Erracidia Province) in total. Out of this area, an area of 27,900 ha is covered

with gravity irrigation while the rest 41,023 ha are irrigated by pumps. The average annual volume of irrigated water amounts to 572MCM/year, which consists of:

- 352MCM/year sourced from surface flow. Out of which 84 MCM/year is fed by gravity from Hassan Addakhil Dam, and the rest is directly taken from streams for use of irrigation.
- 220MCM/year sourced from groundwater. Out of which round 30 MCM is drawn from fountains while the rest is taken from shallow wells and deep wells.

(1) Constraints of development

1) Low utilization of water resources

Loss from irrigation canal networks and loss from evaporation

As for actual discharge amounting to 626 MCM/year, water utilization rate is 90% if direct intake from streams is included. However, due to conveyance and evaporation losses, actual rate of water use reaches as low as 60%. In particular, in the watershed of Ziz River, since the released water from the dam is conveyed into the river itself in the section of conveyance from Hassan Addakhil Dam to the terminal beneficiaries for 75 km, loss of water in this section comes to 30% ~ 40% of the conveyed amount.

Decrease of water use by dilapidation of the facilities installed for the beneficiaries located at the downstream of the intake barrages. Particularly, weirs located in Akerouzu, Boutaarid and Douis, decrease in water use due to sand sedimentation and dilapidation of intake facilities. Just as stated above, the cumulative quantity of water loss reaches 179 MCM/year compared to the amount of water taken from its sources, 572MCM/year, i.e., with the rate of water loss amounts to about 30%.

2) Damages from floods and droughts

The following table gives command area of surface water utilized for irrigation including fountains (usually distributed through khettaras), canal networks using seguias, and dams/ weirs etc. Seguias are usually utilized with intake facilities at the point in the natural streams and seguias. Accounting for over 90% of the total command areas, where inundation damages in the beneficiary commands from collapse or spilling overflow of canal banks by floods often happen. This also makes water intake unusable during drought period.

Irrigation facilities and command areas utilizing surface water

Circle/Commune No.		Surface Water (ha)						
		Spring water		Canal / Seguia		Dam/Headwork		Total Irrigation area
		No.	irrigation area	No.	irrigation area	No.	irrigation area	
Rich	7	38	755	61	4,427	1	0	5,182
Imilchil	5	11	465	6	2,095	0	0	2,560
Assoul	3	9	481	0	0	0	0	481
Errachidia	5	6	0	29	6,364	2	0	6,364
Goulmima	7	2	19	36	2,346	5	1,861	4,226
Erfoud	7	0	0	4	860	1	0	860
Rissani	5	0	0	14	11,765	0	0	11,765
Urban Commune	8	0	0	29	18,588	0	0	18,588
Total	47	66	1,720	179	46,446	9	1,861	50,027
Total in Rural Commune		66	1,720	150	27,858	9	1,861	31,439

Source: ORMVA/TF in 2004

3) Contamination of groundwater and lowering groundwater levels

Appendix5 Table 1.2.35 shows facilities and command areas utilizing groundwater. 9,024 wells have been constructed in the Study Area and most of which are scattered in rural areas Currnetly following issues are arized.

i) Abusing of chemical fertilizers has led to permeating leakage of residual gradients into the ground resulting in augmented extent of contaminated areas under farming pollution around the command areas of irrigation.

ii) Lowering of groundwater levels due to over-pumping is observed in some areas. Besides, in many places water lifting has become difficult owing to high pumping cost.

iii) Border irrigation which has been practicing has come to switch into drip irrigation, but in some areas salinity hazard occurs by upward capillary movement of saline soil water.

4) Malfunction of khettara facilities

Since khettara systems have provided an environment friendly way of irrigation and well utilizing hydrological circulation, which being precious and important facility not only for irrigation but also for potable water and other domestic water. However, many of khettaras ceased their function due to depletion of water sources and choking by earth flown into vertical pits as the result of influences of consecutive 6 years droughts from 1999 to 2005, in 2006 and in 2008. Only 48% of the existing 359 khettara systems, or only 176 systems now remain functioning. Rehabilitation schemes are implemented through non-reimbursable funds by Japan called “grass root funds”, but the rehabilitation has been retarded by shortage of budgets in the related agencies etc. (Refer to Appendix5 Table 1.2.36.)

(2) Development potential

Total command area of irrigation in the Study area will be forecast at over 75,000 ha, increasing from current 68,923 ha. Prospected demand for irrigation water in 2020 is, therefore, estimated at 676

MCM/year augmenting from current 572 MCM/year.

1) Promotion of introducing water saving irrigation techniques

As a strategy of promoting modern irrigation techniques, ORMVA/TF has already implemented such measures as new way of collecting water tariff (though this method is not yet implemented in the Study area). In addition, method of water amount consumed by individual users, improvement on operation and maintenance of irrigation water facilities etc has been engaged by ORMVA. In particular, introduction of drip irrigation has subjectively been encouraged, which a subsidy equivalent to 60% of the invested capital after installment has been provided. Water saving can be expected from the application as for cultivation of vegetables, alfalfa, date palm, apple, almod etc.

2) Vigorous activities of associations for Seguia facilities

About 180 irrigation sites use seguias. Associations have been organized for utilizing canals with many beneficiary users as observed in Outerbat Commune where one of QP site and the members collaborate in such activities as routine O.M. and regular repairs. With regard to provision of materials for repairing that the Study team finds difficulty in follow-up care, members' own devices are also allowed to apply. In that context, strengthening of users' organizations can be anticipated.

3) Introduction of "Flood Water Harvesting"

Water harvesting can be introduced aiming at alleviating flood damages as well as expanding outputs of agricultural products for the rain-fed areas (Bour).

4) Rehabilitation of khettara systems

Rehabilitation of khettara systems has been driving forth by ORMVA/TF, and from now on O.M. of the systems can be counted by self-help efforts of the beneficiary farmers. Besides, the systems are environment friendly, and will be made use of as en element of tourism sites.

5) Stable water use by means of planned irrigation facilities (measures against floods and droughts)

ORMVA/TF schedules to plan and implement 5 irrigation systems by the targeted year of 2015. By these irrigation system, increase of irrigation water by around 65 MCM/year can be expected by 2015. The project cost of these projects is scheduled by MCA and FIDA with estimated breakdown cost including 5.4 million Dhs for project study and 139 million Dhs for project implementation. In that project, following benefits can be expected (refer to Chapter 2 (2)).

- Improvement of water use: Water use will be improved through rehabilitation of weirs coupled with adequate water management, so that the basic surface flow amounting to 4 MCM/year as initially planned can be maintained.
- Rehabilitation of date palm orchards: Supply of the total 4,000 m3/ha/year as supplemental irrigation to date palm orchards can be realized, thereby enabling to recover around 1,000 date palm orchards.

- Improvement of irrigation efficiency: Irrigation efficiency will be raised from 50% to 75% through improved water management of irrigation facilities and lining of existing canals etc. Likewise, flood damages taking place in the watershed of Guir River will be mitigated through diverting flood water from Guir River to Ziz River. As a result, ncreased water use amounting to 40 MCM/year will be possible in Tafilalet Plain.

1.2.4.3. Rural infrastructure

(1) Development constraints

1) Road

- The Province of Erracidia has a vast area where villages are scattered and this makes the cumulative length of road networks very long, while the cost effectiveness remains low due to less vehicles on the networks.
- For the inhabitants living in remote villages, insufficient access, so-called road networks, to education or health/ medical facilities, marketing of their products and procurement of daily requirements, has become eventually a crucial issue to keep them behind the current developmental process.
- Most of local roads except some trunk roads have still been left unpaved. Further, the widths of roads within villages are too narrow for vehicles to pass, and often traffic on these roads is intercepted by inundation during flooding period. Thus, making access to hospitals, others difficult and impeding timely collection and marketing of farm products, would result in the mitigation of sick or injured people.

2) Electricity/ Communication

- Remoteness as well as less populated communities has tendency with less distribution in promoting electrification programs. In un-electrified villages inhabitants are obliged to rely on diesel oil as energy source of pumps for water rifting and of simple agro-processing kits, leading to increased cost for the operation which implies the increase at the rate of around 30%.
- Communicating situation in a part of remote communes including Sidi Ali and Oued N'aam is not favorable and this often leads to failure to keep correspondence or to exchange information. As a result, it lets them finally miss the opportunities of receiving support on capacity building.
- ONE implemented a project on solar generation system in a ksar belonging to Sid Ali area, but it was stolen and resulted in loss of solar panels that made ONE discontinue it.
- 45% (out of which 20% is charged to the beneficiary and the rest 25% is financed by the commune concerned) of the installation of the distribution system should be paid by the beneficiary. Since the commune itself does not have its own budgetary resource, the implementation of electricity distribution at the level of ksar would result in a reduction of its

budget that can otherwise be appropriated for other development projects.

3) Water supply and sewage water drains

(a) Tap Water

87% of the households in rural areas have received water supply, and the rest 13% of them rely on other water sources such as fountains and wells. Women are engaged in fetching water for the purpose of preparations of meals and taking care of children, which makes them difficult in participating social activities, for instance associations/ cooperatives.

(b) Sewerage drainage system

a) General situation

The issue of unconsolidated sewerage drainage has been raked at three major prioritized issues in 18 WS out of 46 WS (23 ksarsx2(male/female） in the WS (for problem analysis) held at ksar level in August 2009, thus identified as the items of inhabitants major concern. As the outcome of unconsolidated sewerage drainage system, (i) prevalence of contagious diseases and (ii) environment pollution (water quality pollution, vile odor) have been pointed out.

Although drainage water/ sewerage water has partially been treated through drainage pipe systems and septic tanks, most part of them is directly drained into streams, water channels, ground surface etc. Consolidation of drainage system by ONEP has been subjectively implemented in urban areas all right, but the rate of consolidation remains at only 1.2% or less in 29 out of 39 rural communes, at 2 to 5% in 7 communes, at 5 to 10% in 2 communes (Kheng, Gourrama) and at 10~15% in a commune (H’saya), thus for the most part left unconsolidated (according to Haut Commissariat au Plan, RGPH, 2004).

Amidst the retarded consolidation for drainage water system, many households utilizes septic tanks for treating their own sewerage water drained from toilets. « types of septic tanks have so far been employed, one consisting of burying a plastic container as a tank into the ground waiting for vacuum cars for regularly collecting stored sewerage and the other consisting of a hole dug into the ground with a depth of 7~8m with stone wall around it for letting sewerage water infiltrate into the soils. The latter is generally covered with soil so that it is concealed from above the ground. When the hole get filled with sewerage water, whether waiting for the collection by vacuum cars or digging another one near the previous hole is chosen. In rural areas, inhabitants employ in most cases the latter type, digging another hole when it is filled out with sewerage.

b) Environment pollution attributable to unconsolidated sewerage drainage system

(Use of septic tanks)

Little influence is concerned of the use of septic tanks because the sewerage water is drained out when the tank is filled with drainage water. However, in so far as drainage treatment by hole-digging type is concerned, there is risk of polluting groundwater when drainage water is infiltrated into soil. In fact,

many inhabitants utilize shallow wells dug near the septic holes. Increasing number of septic tanks has become a source of vile-smelling odor where flies and mice are thriving and proliferating, thus concern arises from possibility of fostering endemic diseases. Coping with such concern, the commune of Ghriss Ouloui has some future vision to provide a vacuum car, undertaking sewerage evacuating work. This program provides beneficiary with cheaper service, at the same time it leads to public revenue to Commune.

(Drainage water from washing)

According to a member of JOCV who has been continuing activities in Ghriss Ouloui Commune, inhabitants used to wash cloths with synthetic detergents in seguias constructed in each ksar, so the drained washing water is flowing into crop fields. In a part of ksars, people use well water inside their homesteads, not usually using water flowing in seguias, but when they wash large sized washings such as carpets and mats, they also utilize water in seguias. In such cases, people living in downstream side often uses drained water from the upstream side, thus increasing possibility of detrimental influences to their health conditions.

(2) Development potential

Besides the development potential identified as the current status of provision of rural infrastructure mentioned above, it seems that there are numbers of households to which supply of water or electricity has not been supplied owing to their lack of budget for payment of water/ electricity rate, according to the survey of the Study Team. This year, the regional government decided to bear the cost share to be hitherto held by the beneficiary, equivalent to 45% of the total electricity distribution cost. Since the provision of basic infrastructure is interpreted as a provision of BHN, it should be basically promoted by the initiative of government concerned. As stated in Chapter 2, although ONE/ ONEP etc. that are responsible for rural infrastructure development have been promoting in rural areas, large number of population are still under the shortage of BHN. In this context, civil society, so-called associations or cooperatives, could, instead, play significant role for rural development.

In order to make plans for improvement of distribution and marketing, construction of cooling system, water resources development, development of tourism and so on, integration of rural infrastructure is crucially essential sectors. Strengthening of transversal cooperation and harmonization among agencies concerned with rural development, becomes one of the high potential.

1.2.4.4. Limiting factors and potentials on the development of farming, livestock and inland fisheries

(1) Inhibiting factors /constraints and potentials found in farming

As mentioned above, farming activities have been controlled either by natural conditions, or regulated

by socio-economic and other conditions. Among natural conditions, water availability for local people is the largest factor, while among artificial conditions diminishing size of farming by demographic pressure is the largest constraint inhibiting development farming activities.

70% of exploitable has already been exploited, irrigation water from dams has also been utilized at the maximum extent. Here, constraints arise from absolute waer shortage in drought years, water loss by leakage from canals and abusing water on farm. In future, when a dam construction is completed in the upstream of Gheris River, there is a risk of draw-down of groundwater currently used along the stream.

Small scale of farming per household, brought about by population growth and hereditary farmland parcellation may become an inhibiting factor against agricultural development where all the products are home-consumed, leading to lack of cash income by selling harvests.

The small-holding and vulnerability of coping with natural calamity have made farmer's ability to provide farm managing funds and procurement of living expenses, coupling with issues of capacity acquired by human resources, leading to exacerbated trade-off strength with other industries and aggravating chronicle deficits in economic transactions as well as "terms of trade" with other areas in the country. Interrelationships between limiting factors and yielded constraints as well as between man-made efforts and their outcomes are listed in the Annex I Table 3.4.3.

In Morocco, associations and other organizations have recently been built by national efforts that positively serve as a driving force for mitigating poverty, however, traditionally the base of peoples' activities has still been placed at person or family unit, while economic activities through grouping or collaborated practices have not universally been popularized except in cooperatives or in the maintenance of khettaras. Unless this traditional character is renovated, all the efforts to get rid of poverty would become invalid. Constraints on farming also stem from lack of joint control of crop pests and diseases, joint use of farm machinery, joint sale of farm produce or few cases of collective use of groundwater by joint pumping.

nstead of relying on labor contribution or sub-contracted labor services for wealthy people in villages, poor farmers living in the Study Area will be advised to realize advantages of organizing groups for jointly performing a part of farm practices and to put them into practices. This is really a first milestone to overcome poverty.

(2) Items of improvement responding to constraints on farming practices

- Rehabilitation of irrigation canals: Fairly amount of water has been lost from currently utilized earthen canals for irrigation (seguias, khettaras) on account of either leakage or percolation from their sides and bottom, making non-arable land marshy or growing weeds (mostly reeds) before water reaches standing crops, thus arising real waste. Such loss can be reduced only by matting vinyl sheets beneath channels and again covering clay over them. Permanently, however, it will be

needed to make radical repairing by concrete lining of dilapidated seguias and khettaras from the upstream side through the collection of canal maintenance cost from the users according to their irrigating acreages. Traditionally used khettara can minimize evaporation loss from water surface, prevent leakage and water stealing and also contribute to groundwater recharge, thus providing an ideal way of irrigation. However, recently they have been out of function and abandoned on account of negligence of proper care and management, thus only around 30~40% of the inventory remaining in function. It is advised Potential of restoring to rehabilitate all the existing khettara systems may be found if their water sources are still available/ functioning to feed water to them.

- Weeding of nuisance herbs from farm plots and nearby surroundings: Since useless weeds thriving in and around farmland, that livestock cannot feed on, consume precious water, allowing them as it is would be almost equal to abuse irrigation water. Therefore, if cultivators should always and repeatedly clear eliminate them by removing their roots before they bear seed, potential of water-saving will generate for more efficient use of irrigation water.
- Cereal sowing with differential time intervals: With a view to dissipating and minimizing drought damages, cereals can be sown with differential time intervals, for example, by dividing scheduled plots into 5 plots, where seed can be sown at the doze of 1/5 on 2 weeks before, on 1 week before, on just on the forecast optimum period, on 1 week after, 2 week after the forecast period, thereby minimizing risk of drought damages. This method can serve as a potential for effective cereal cultivation on bour.
- Adjustment of seed sowing density：In the case of relatively short drought, probability of survival and fruit bearing of cereal plants will be larger if they are planted with wider intervals or larger density. According to this principle, in case of cultivating cereals on rain-fed field like bour, it will be possible to alleviate damages by sowing them with variable intervals of seed holes on the ridges. Similarly, farmers can only one grain per sowing hole, and if some holes lack germination at the sprouting period, they can again sow in the vacant sowing holes, so that they can save quantity of seed as well as raise the rate of survival, serving as a potential even if droughts happen to hit the field.
- Advice on pruning of fruit trees: The Study Team have often observed that apples and olives. in particular, have not adequately been pruned so far, but have left as they grow in an entangled way. As a result, numbers of fruit do not increase even tree ages grow older. In the case of apple which was introduced into mountainous communes a few decades ago, it was observed that trees had been planted too densely and freely grew up in a way that branches of a tree and those of its neighbor were crossed one another. Under such conditions, healthy growth environment is not realized with poor light penetration as well as poor ventilation that make trees susceptible to pests and disease infestation, or photosynthetic capacity is not fully functioning. If the trees are pruned

in a proper way after harvesting by distinguishing and discerning what are fruiting branches and what are only elongated during next season, thus potential can be discovered for improving both quality and yield.

- Earlier and accelerated cultivation of cucurbitaceous: Watermelon and melon are usually seldom marketed to large markets until around mid July, and this scarce supply keeps their unit prices at higher levels during early summer. This can provide farmers with a good opportunity to make windfall earning only if they cultivated them in vinyl sheet tunnels in earlier and accelerated way coupled with the application of drip irrigation or furrow irrigation. Likewise, on the contrary, cucumber and squash (=zucchini) cultivated in delayed off-season and marketed in late fall may enable cultivators to make lucrative margins with high unit prices. If easy access to metal road and availability of transport means can be procured, this way of farming can become a potential.
- Provision of hay-lage: During the hibernating period of barnyard feeding, farmers often find difficulty in procuring feeds for their livestock, because feed prices tend to rise during winter as production of feeds declines. As an improved method for winter feeding of livestock, cultivated fodders like alfalfa, berseem etc are conditioned into haylage as illustrated in the Annex FF, it give a potential of improving livestock feeding. However, things are ot going so well because poor farmers are not easily accustomed to newly introduced techniques, so repeated demonstrations are necessary to persuade them.

(3) Potential of improving arable soils and other cropping environment

Soils found in the Study Area scarcely contain organic matter owing to lack of vegetative cover. Besides, they have lost surface layer after being exposed to wind erosion. As a result, they have become futile except alluvial deposits over riverbed and banks of almost perennial streams carried by flood water. Soil organic matter or humus can adsorb and retain plant nutrient minerals but if its content in the soils is low the nutrients readily leaches away before they are absorbed by crops, reducing the rate of absorption as compared with fertile soils that are rich in humus.

Further, since water retentive capacity of the soils with very little organic matter is low, irrigation efficiency of such soils is lower than organic soils, meaning that irrigated water percolates beneath or removes out of the arable soil layers before it is absorbed by the crops. Most effective and costless method of enriching soil organic matter lies in utilization of cut reed collecting from densely thriving reed colonies on the borders of farm parcels or river-beds. Mixing chopped reed stalks with compost or carpeting them over livestock yard, farmers can increase quantity of farmyard manure to apply to crops, thus generating new potential for more crop harvest.

Soil salinity is not only actually spreading over a wide range in the Study Area, but also serving as a bursting negative potential in near future.

Salinity is found in and around Erfoud, the further we go toward the south, the more degree of salinity becomes severer. Salt-contained water as much as 700 ~ 2,000 ppm is still used for irrigation in some khettaras found in Gourmima ~ Tenjdad. As seen in the above table 6, a number of water sources supplying khettaras along the way Alnif ~ Erfoud have reached the limit of tolerable salinity. The rate of salinity rise depends on water sources and sites, reaching at maximum 60% in around 2 decades, or annually equivalent to 2.6%. In Sidi Ali, salt crusts are observed on soil surfaces a few days after rainfall and water from shallow wells also tastes slightly salty. Around this desert area, soils alkalinized with sodium bi-carbonate/ carbonate is accounted as a cause of hazards inhibiting field crop production.

Desalinization of saline farmland : In plain area, abandoned farm plots are observed in some places because crop cannot any more cultivated through a salinity process by irrigation of saline water or by natural floods. However, restoration of such degraded soils can be amended by manual desalinization if the salt content in soil layers at the surface 20cm stands within 2,000 ppm. The method consists of; make the soil surface cultivate in high ridges, then after irrigation or rainfall surface salt crust at the top of ridges is harvested in a wheel barrow with soil and cast it in riverbed of the downstream of oueds. At the same time, in between the high ridges so-called halophytes (Mesembryanthemum nodiflorum, Artemisia herba-alba, Hyoscyamus muticus, Calotropis procera, Tamarix aphylla, etc.) that suit saline soils accumulating salts inside plant tissues can be sown and harvest them after their growth to waste with absorbed salts in the same way as above. Also, in the case where salt accumulation is found at the level of subsoil layers, there are two ways of prevent salinity damages. One is to continue leaching irrigation (but much water is required) and the other is to remove and collect top soils by a bulldozer and cover the surface of saline subsoil with vinyl sheets, then again put back the top soil as before by the bulldozer on the surface of the sheets (but construction cost is inevitably incurred). Though desalinization by weeds takes long time, it can serve cost-dispensing measures against salinity for poor farmers.

As to value addition to farm products by agro-processing, it is generally applicable to cash crops as described in Monograph of Errachidia 2010. Especially, such specialty products in oases as henna and cumin, high potential has been found, though it is not so effective as poverty reducing measures. This is because the poor lacks investing capacity to introduce and utilize processing facility, they have to sell their cash crops soon after harvesting them at cheap prices to middlemen for sustaiing livelihood. Few cash crops are only available for processing to add value due to the prevalence of Bayoud disease in date plantation etc. and idling processing / storage facility installed in the past implies this fact.

(4) Constraints found in nomadism activities (transhumancy)

As nomadic population are engaged in immigrating grazing depending whole of their life on wild grasses, they are readily affected by climatic vagary. Thus, major constraints in their life/ activities are

found as drought (depleted wild grasses lead to starvation of livestock herds, also elevated salinity causes hypertension among their herds), floods (their herds are drawned in floods or wells for watering them are curried with sand carried by floods, immigration of herds is blocked by floods) resulting in inhibiting factors affecting their livelihood. Also, in their hunting activities, climatic anomality reduces victim herds, or many wild beasts fell down with diseases/ parasites, thus increasing risk of infection to livestock herds.

Artificial inhibiting factors include deterioration of grazing land owing to overgrazing by heavier herds as compared with carrying capacity thereof on one hand, disputes caused by the invasion of immigrant herds into arable land of settled villagers or harsh competition on firewood collection, on th other. On te occasion of droughts, activities of settled people and those of nomadic population take place side by side, thereby apt to appear artificial inhibiting factors.

INRA recently carries out a trial of introducing a salt tolerant browsable shrub tree “Atriplex” trying to adapt it to arid condition prevailing in Merzouga. If grazing rotation is realized with mutual collaboration between nomads and farmers, this shrub can be planted in wider area for enriching natural grazing resources. This may offer a potential of restoring degraded grazing land.

1.2.4.5. Tourism

Morocco has various tourism resources, which include history, nature (mountain, sea, desert), exotic life and culture. In addition, it is very close to the European market. Foreign visitors counted 6,720.000 in 2007. Official statistics of 2008 shows that Errachidia province received 70,000 foreign tourists, however in fact, it may have received several times more than this. Tourism is an industry, which has a great potential in this province. Constraint and potential of tourism in this province are as follow;

(1) Constraints of tourism development

Tourism should be examined from two directions, if it is attractive enough from tourists, and if it contributes enough to the regional economy and society. Judging from these two points, the constraints and issues can be summarized as below.

(a) No Integrated Tourism Development Plan for the Province

There is no integrated tourism development plan for the whole province; consequently, there is no strategic budget allocation for tourism. Even if each project makes some achievement, synergetic effects cannot be expected. Stakeholders of the tourism industry do not share the future vision. This disturbs allocation of development budget allocation and private investment from outside of the province.

(b) Low Activities of Tourism Relevant Organizations

There are enough number of organizations for tourism, such as Provincial Tourism Association, Hotel Association, Orberge Association, Tour Guide Association, Tourism Transporter Association, etc.

however, they are not active with very limited budget, in general. Registered hotel should pay tourism tax to the government, and government should use it for a budget of various projects, subsidies and promotional activities, though, in reality, things are not going in that way. It is preferable for the tourism relevant organizations to jointly elaborate an integrated provincial tourism development plan with specific indicators. There should be a mechanism that all the relevant organizations actively collaborate to achieve the tourism development plan.

(c) No Diversification of Tourism Products

It takes 10 hours by bus form Errachidia to Casa Blanca, which is an entry point of foreign tourists. Tourist destination in this province for the foreign tourists of the package tour is solely the desert at the Merzuga. According to the tourism statistics of 2008, the average stay over nights of foreign tourists is just 1.23 nights. Many tourist buses pass the national main road as a part of round tours of “Morocco highlight in 8 days or 10 days”. They spend many hours to come to Errachidia province and just see desert. This is not attractive destination at all. Preparation of diversified tourism programs and response to varied market are essential in order to make Errachidia province an attractive destination. This makes tourists stay longer, and tourist agencies can send much more tourists to here if there are many things to see and enjoy.

(d) Not Well Developed Tourism Resources

Other than the desert of Merzuga, this province is rich with tourism resources such as ruin of Sijinas (an ancient trans-Sahara trading basement), mausoleum of Ali Cherif (direct ancestor of the current King Mohamed V), conventional Ksar housing, traditional life of Berber people, well maintained oasis, cool and beautiful mountain area, lakes, hot springs, etc. However, they remain as tourism “resources” and have not been processed to tourism “products”. Good tourism product development would be able to spread tourism destinations to every corner of the province. It would have a big economic effect and increase the employment including people in poverty.

(e) Little Linkage to Relevant Industries

Other industries than tourism in this province are irrigation farming with Khettara system, livestock, fruit farming in the mountain area, fossil mining and processing, handicraft, etc. Products of these industries are consumed or purchased as souvenir by tourists. Though, these industries are not used as tourist programs. Activities of harvesting and milking activities, processing fossils, making handicraft can be sold if they are appropriately organized as experience programs.

(ｆ) No System of Tourism Promotion

Even though a Provincial Tourism Association has been organized recently, they cannot make enough promotional activities to attract tourists because of shortage of budget. Big hotels with star rating are negotiating with domestic or international tourist agencies for sending tourists to their facilities.

However, there are few activities that appeal this province as a whole. It is necessary to appeal that Errachidia province has many attractions other than Merzuga desert and increase presence in the tourism market.

(2) Potential of Tourism Development

Tourists can be classified into several categories. Leisure, excursion, academic survey trip, business trip, visiting relatives and friends, pilgrimage, medical treatment with hot spring, participation to events, all these tourists contribute to the regional economy. Leisure tour has the biggest potential in Erachidia, followed by academic survey tour for geology and fossil, hot spring, events, etc.

Activities of the packaged tour sold now are almost fixed; tourist groups stay one night in Erfoud and visit the desert at Merzouga. Adventure group tours that go through the off-road in desert are also popular in the southern part of the province. On the other hand, there is significant number of individual or group tourists without arrangement by tourist agencies. Backpackers who travel by public bus, motorbike riders who enjoy touring, family tourists, who drive car by themselves, are the example of these individual or group tourists. They have diversifies interests and tastes. If they like the place they visit, they extend their stay and even repeat visiting the same area. Since every zone has tourism resources in Errachidia, tourism has considerable potential if these resources are developed into tourism products with initiative of the local stakeholders.

Advantages of tourism development in Errachidia province are as follow;

(a) Well Improved Infrastructure

Mountain Zone in the Atlas has improved its infrastructure (road, electricity, and telecommunication) in these years, and enjoys easy access now. This contributes a lot to the wedding festival event in Imilchil Commune. Main roads to Ouarrzazate and Mekness are well maintained and used for packaged bus tours. Besides, services of omnibus and taxi are well operated, which are convenient for the budget tourists. However, further enhancement of infrastructure is necessary for some mountain area and desert area. The main road in the Atlas Mountains is closed because of snowfall in winter; this problem should be improved soon.

(b) Good Security

As is common with all the areas in Morocco, there are few serious crimes such as terrorism, robbery, accordingly, visitors can travel without big security problems. At least tours to Errachidia are not canceled because of security problem. This good security is a significant property for tourism promotion. This situation should be kept to the future by all means. Generally speaking, local population is friendly to tourists. Medical facilities are relatively well developed and can be used for emergency cases of tourists.

(c) Substantial tourism Activities

There is significant number of tourists visiting Errachidia province already. Other than the package tour tourists moving with buses, this province receives many individual tourists. Accommodation facilities such as hotels and auberges as well as restaurant are available reasonably. This is a huge advantage comparing with a case to start tourism in an area that has received very few tourists. There is a good possibility that well prepared tourism products can be sold immediately. Therefore the issue is how to extend stay nights of the tourists, make them repeaters, and grow the size of tourism industry.

(d) Unique Local Life and Culture

Beautiful canyons in the Atlas Mountains, wide expanse of desert land, beautiful green oasis, design of traditional ksar houses, dresses of local women, these are all exotic to the foreign tourists. In addition to those, busy local weekly markets, public bath called Hamam in each town, local meal served four times a day, farming activities, handling of livestock, the local life itself is a magnificent tourism resources. Tourism products would be much diversified if experiences of these life activities are programmed with proper guides.

(e) Capable Community Based Organizations

In order to develop tourism products with topics of local life and culture to receive tourists, there should be a capable management body at community level. Fortunately, there are some 1,300 associations active at commune or ksar level in Errachidia province. Fields of activities of these organizations are diversified and include agriculture, livestock, social welfare, education, vocational training, etc. It is possible to start community tourism by selecting some associations that are motivated for tourism development and give them technical supports.

1.2.4.6. Education

(1) Constraint

In this section, the analysis will be made based on the analysis of the situation of education in the target communes and the result of Ksar level workshops during the PCD formulation.

Summary of Education Related Problems Identified in Ksar Workshops

Category	Identified Problem
Basic Infrastructure	- Insufficient classrooms and school space - Insufficient equipment and materials - Lack of sanitation block - Lack of fence for schools
Access	- Lack of Pre-schools - Lack of school transportation - Remoteness from high school - Unsafe street condition - Lack of boarding at the major school
Quality	- Shortage of teachers in the major school - Insufficient teachers in primary school

	- Absence of director at schools - Lack of leadership in ICT in schools - Lack of support in studies - Low education attainment - High drop-out - Inadequate English study - Lack of school maintenance

1) Gender Disparity in Primary Schools

Gender disparity is a serious concern in the rural schools of the province. Among the above identified problems, "Lack of sanitation block" and "Unsafe street condition" directly contributes to fewer enrolments of girls. In addition, some head teachers in the interview pointed out that in some rural areas people are still trapped in the traditional way of thinking that does not always value the education for girls, and also that poor families with many children often have to make a choice as to which children of theirs to be sent to school, and tend to choose boys over girls because girls are more helpful for household chores and also are likely to have less return on investment. The table below shows the breakdown of the Gender Parity Index (GPI), which is a ratio of female student against male student, according to the Study's zonings of the Study Area.

Gender Balance in Primary Schools by Zone (2008)

Zone	# of female students 2008	Total # of students 2008	Gender Parity Index
Mountainous	7687	17,123	0.81
Intermediate	16662	34778	0.92
Plain	13113	27976	0.88
Total	37462	79697	0.89

Source: Delegation of Ministry of Education (2008)

It is obvious that the Mountainous Zone is in a far worse condition than the other Zones. Their GPI is 0.77, which means that there are only 77 female students for every 100 male students. The causes for this condition are not immediately known, but possibly the traditional way of thinking and difficult road conditions are to be blamed. It was also pointed out that the heavy snowfalls in the winter season play a role in discouraging students from going to schools (JICA, 2006).

The schools in the Intermediate Zone tend to have a more gender balanced condition, and on average have the almost equal number of male students and female students (92 female students against 100 male students). The commune president of Ghriss El Ouloui, one of the communes in the Intermediate Zone, has proudly said that they are making sure that every 6 year old child be enrolled in school every year.

It came as a little surprise that the schools in the Desert Zone, Sidi Ali and Taouz, have almost equal number of male students and female students, despite their challenging educational conditions, such as remote schools, poor infrastructure, shortage of teachers, and so on.

2) Gender Disparity in Lower-Middle and Secondary Schools

Gender inequality grows even worse at lower-middle and secondary education. Among the problems identified during the workshops, “Lack of school transportation”, “Unsafe street condition”, “Lack of boarding at major school”, and “Remoteness to secondary schools” are directly negatively affecting girls’ enrolment in lower-middle and secondary schools. Generally many parents in Morocco are still reluctant to send their female children to a distant school or to allow them to stay in school dormitories even if the school has one.

Gender Balance in Lower-Middle Schools by Zone (2008)

Zone	# of female students 2008	Total # of students 2008	Gender Parity Index
Mountainous	1713	4881	0.54
Intermediate	7190	15893	0.83
Plain	3337	8629	0.63
Total	12240	29403	0.71

The provincial total GPI in lower-middle education is 0.71. In the Mountainous Zone, their GPI in lower-middle education takes a nosedive from the level in primary education, and stands at 0.54, meaning there are only as few as 54 female students against every 100 male students in those schools.

In both the Mountainous and Plain Zone, the GPI becomes far worse than their respective figures in the primary education. In the Intermediate Zone, the situation is somewhat better off. Their GPI, though drops slightly from the primary education, still remains relatively high at 0.83.

At the secondary education level, the gender imbalance grows even worse. The provincial total GPI in secondary education is only 0.68. The GPI in the Mountainous Zone drops to 0.59. The Intermediate Zone still retains a good figure, way better than other zones, of 0.78. As a result, there is a concentration of female students in the Intermediate Zone. About 60% of all the secondary students and 65.2% of all the female secondary students study in the Intermediate Zone.

Gender Balance in Secondary Schools by Zone (2008)

Zone	# of female students 2008	Total # of students 2008	Gender Parity Index
Mountainous	868	2343	0.59
Intermediate	4201	9620	0.78
Plain	1375	4022	0.52
Total	6444	15985	0.68

3) Geographical Disparity in Access to Education

From the statistical point of view, lower-middle schools are distributed more or less proportionate to the size of their demand or in other words, primary student population. For instance, in the Mountainous Zone, the percentage of their primary student population against the total primary student population in the province is about 9.4%, and they have five lower-middle schools, which constitute 9.1% of the total

number of lower-middle schools in the province. However, even if the schools are established according to the student population sizes, the distances from a student's house to the nearest lower-middle school tend to be much greater in rural areas. To ensure the equal accessibility to lower-middle schools, extra efforts are required in the disadvantaged areas to make commuting to schools easier for students living afar.

Distribution of Lower-Middle Schools by Zone (2008)

Zone	% of primary students against the total number of students	The number of lower-middle schools	% in the total number of lower-middle schools
Mountainous	21.5%	11	20.0%
Intermediate	43.6%	28	50.9%
Plain	33.2%	15	29.1%
Total	100%	55	100.0%

4) Quality of Education, High Repetition and Drop-out

The factors that often contribute to low quality education and insufficient educational attainment in Morocco include, among other factors, overcrowded classrooms, double shift, multi-grade teaching, the Berber-Arabic language issue, teaching skills, and so forth. High repetition can be deemed as a manifestation of the quality problem of education and of low educational attainment.

Although it can not yet be generalized, it was observed during the interviews of head teachers that the sense of emergency and awareness among them on the current condition of high repetition is rather not sufficient. One head teacher in an interview described the success rate of about 85% (that means 15% of repetition rate) as a good result. Also, another head teacher refused to acknowledge the issue of quality of teachers after one of the commune members identified it as a problem, saying all teachers are well qualified and have good teaching skills therefore there exist no teacher quality problem. This possible lack of awareness or sense of emergency among educational stakeholders on the quality issue of education can be an obstacle against the educational development effort and can also lead to underestimating the priority of needs to improve the quality of education.

Area	Repetition rate in primary education	Drop-out rate in primary education
Urbain	13.7%	0.54%
Rural	25.6%	1.91%
Average	21.5%	1.46%

5) Other Constraints of Education

Multimedia/ ICT Integration in Education: As part of the Government's effort to improve the quality of education, computers were brought into schools. Teachers have been given training, and are expected to

utilize computers in their teaching. The reality has been, however, that in large part the computers set up in multimedia rooms are not being well utilized, and often just left unused or severely underutilized.

(2) Potential

1) Expansion of Pre-School Services

The Government has been making an intensive reform effort to make pre-school service available for every child in Morocco. There still is a very long way to go to accomplish the goal, but quality pre-schooling is known to have a very positive impact on smooth transition to primary education and on overall educational attainment. INDH Program is making the fund available for the establishment or equipping of pre-schools.

2) Effort for 100% Net Intake

The Government has been stepping up effort to effectuate the objective of registering every 6 year old in primary school. This type of national campaign can be exploited as a good opportunity to convince community and change the traditional view about the importance of educating children especially girls. In the case of the Errachidia province, more focus should be given to the population of the Mountainous Zone.

3) Expansion of Lower Middle Schools

Responding to the growing demands, INDH Program has been supporting lots of projects of the construction or rehabilitation of student houses in lower middle schools or secondary schools. Expansion of the availability in lower middle or secondary schools does not only promote improved enrolment in those schools but also have a positive impact on the students' motivation during primary education by offering them a better hope of continuing their education.

4) New pedagogical strategy

One of the recent teacher training programs (in-service) provided by the Ministry of National Education was about how to teach in the new pedagogical strategy. It focuses on adopting more class activities and student involvement (generally known as a student-centered teaching and learning methods) moving away from the traditional chalk-and-talk teaching method. It will probably take a good deal of time until the transition to the new teaching strategy has been successfully accomplished, but it could offer a valuable opportunity for teachers to review their way of teaching and ultimately improve their teaching quality.

5) Literacy classes in schools

Illiteracy is a source of grave concern in Morocco. To tackle the issue, non-formal education has an

important role to play. Literacy classes can be offered in school premises and can be taught either by teachers or members of local associations. By providing literacy classes, schools can promote the literacy skill among people of the community and sensitize the importance of education at the same time. The sense of trust and ownership nurtured by literacy classes can be an asset when schools need the mobilization of human and financial resources.

1.2.4.7. Public health/ hygiene

The Study Team conducted an inquiry survey on the state of public health / hygiene in WS at ksar level for the formulation of PCD held in August 2009, also in the interviews targeting major respondents at stakeholders (health department ((DS)), mobile medical services department ((SIAPP)), care-managers in the clinics etc.).

Based on the results of this survey, constraints factors and development potentials in the field of public health/ hygiene are considered on the following items taking consideration of state strategies thereon and action plans of the Province (DS). Each issue will be discussed in the following section.

i) Problems on environment hygiene; Prevalence of pandemic diseases under an exacerbated hygienic state
ii) Insufficient medical services for maternity
iii) Shortage in medical servicing facilities and their staff

(1) Problems on environment hygiene

It has been revealed that in 18 WSs equivalent to 40% or so of the entire WSs scheduled（46WS）poor hygiene state and the resulted incidence of pandemic diseases accounted for the equal to or higher than the 3rd rank, suggesting that there are many inhabitants who have a growing grave concern on the issue of environmental hygiene. As a generally observed causes that aggravate the state of hygiene, unconsolidated sewerage disposal systems and illegal waste of litters/ wastes. The following gives general discussions on the hygiene problems arising from these two causes.

1) Hygiene control and unconsolidated states of sewerage systems)

Though the number of septic tanks has rapidly been augmented as population increases, no public collecting system of wastes and sewage has been provided. For this reason, whenever the installed tanks are filled with night soils another tank is attached by digging another vertical hole beside the filled one. In such rural communes where sewerage system has not yet consolidated, wells for lifting potable water have quite often been found side by side with installed septic tanks, and such unhygienic states not only causes water pollution but also fosters occurrence of vile-smelling odor, diarrhea and other contagious diseases. Likewise, home waste water after washing containing chemical detergents has directly been

drained into water channels and streams. Moreover, recent changes in life style have brought about increased volume of litters/ wastes as well as kinds thereof. It is felt that human consciousness and pattern of behavior can hardly be catch up with an accompanied, fast and drastic change in living environment with ever-changing current of human society (refer the detail of sewerage disposal system to "3.2 Rural Infrastructure").

In WS at ksar level unconsolidated sewerage drainage system has been pointed out as a major cause of poorly aggravated state of environmental hygiene. The following table shows a summary of the rates of coverage in sewerage drainage pipes as well as domestic water supply systems in the Province and the correlation between these rates and the rates of consolidation in toilets/ kitchens/ baths that are required for hygienic home management (data referred to in "Haut Commissariat au Plan, RGPH, 2004"). As a result, it has been revealed that the correlation between the rate of installment with sewerage drain-pipe system and installment of toilets/ kitchens/ baths remains insignificant (refer to the following figure). A positive correlation is recognized between the rate of consolidated domestic water supply and toilets/ kitchens/ baths but this does not give a fully significant result. On the other hand, Correlation between the installment of toilets and that of kitchens is fairly high, showing a tendency that the households installed with kitchens also have toilets.

Correlation coefficients between two hygienic facilities

Kitchen/Toilet	Toilet/Bath	Kitchen/Domestic water	Bath/ Domestic water
0.734027489	0.560859813	0.468281774	0.411283396
Bath/Sewerage pipe	Kitchen/ Sewerage pipe	Toilet/ Sewerage pipe	Septic tank / Toilet
0.181768596	0.328593411	0.200652605	0.383620021

The above tabulated result implies that as far as the issues on hygienic state are concerned the consolidation of sewerage drainage system is not at all a panacea of hygienic improvement. Further, even if the sewerage drainage system were consolidated, state of installment of toilet, place for cooking, hand washing faucet, bath etc is predicted to give another issue. For this reason, it seems effective for improving hygienic environment to make assistance on providing sensitization of inhabitants including education on hygiene management as a package with the consolidation of domestic water / sewerage drainage system.

As a reference, a figure for the state of consolidating toilets in the Province (by Haut Commissariat au Plan, RGPH 2004) is shown in the Appendix5 Figure 1.2.18. The rates of installment with toilet in mountainous zone, plateau/ piedmont zone and Sidi Ali commune are low. Also, from the above table it could be predicted that the households not installed with toilets do not have kitchens. This is why it is considered effective to provide specified education on hygienic management particularly concentrated on installment and usage of toilet/ kitchen and instruction on proper treatment of waste drain water etc.

In this connection, infrastructural consolidation including installation of sewerage drainage system makes human life convenient all right, but it cannot provide solutions for all the confronted problems. For instance, as encountered in the installment of domestic water supply system, installment of sewerage drainage system incurs, after its consolidation, additional burden of individual payment for the cost of piping work from main pipe to individual residences and that for individual monthly tariff. This is an economic reason why the system remains unimplemented with other reasons than economy.

Besides, what should be kept in mind is that the rate of tap-water diffusion and the rate of actual use thereof should be separately considered. There might be many inhabitants who are left un-benefited from tap water because they cannot afford to pay the tariff. In the case of an interview study in Ksars in Tadighouste commune, the mean annual farm-household income amounts to around 800 ~ 1,000 Dh, while the tap water tariff is averaged at 30 to 70 Dh/ month or equivalent to 360 ~ 840 Dh/ year though the amount depends on family members and usage. The households that cannot afford to pay this amount cannot help utilizing fountain or well water, thus they live on a state without guarantee in terms of hygienic safety.

2) Environmental hygiene and Problem of litter scattering

In the Province, trachoma, leashmaniasis, sistozomiasis etc have been major contagious diseases. All of these diseases stem from the poor state of hygiene with parasitic roots of intermediate hosts including domestic insects as flies, fleas, cockroaches and such domestic animals as dogs, sheep, goats, cats etc. Out of these, leashmaniasis has been identified as a target of 6 diseases for which urgent treating measures are called for. This disease is said to get infected through the mediation by a stingy fly, dog and rats.

The geographic distribution of the above referred leashmaniasis (SIAPP, 2008) is shown in Appendix5 Figure 1.2.19. In this distribution map, one of the communes where cases of infection by leashmaniasis is most abundantly found, Ghriss Ouloui, is coincided with the commune where the problem on environmental hygiene has been selected as high ranked issues within the three major priority to be tackled in the WS held in 8 out of 9 Ksar. The state of infection on leashmaniasis in this commune was asked to a nurse working in this commune, and according to her information, a family brought the disease after they visited a place of contamination in the Province and this is the source of wide prevalence inside this commune. The affected patients count over 200 as of 2008. As the route of infection, it is considered that dogs and rats serve as intermediate hosts, in addition night soil and drained water, scattering litters were also pointed out as the problems aggravating hygienic environment.

According to a member of JOCV who works on the issues of waste disposal and improvement of living environment, she extends cleaning activities n 2 ksars in collaboration with the associations in the

commune. Just after the cleaning works the environment is made clean, but later it is again aggravated to the original, dirty state, thus repeating such a cycle. The result of WS implies high consciousness of the inhabitants on this issue, but in real life roadside ditches are served as litter wasting trashes where rats, homeless dogs, cats grazed donkeys, sheep and goats seek for feeding (refer to the photo in the right). The scenery shows us how difficult it is to orient the inhabitants to a direction "sensitization → putting into practice.

Also, Oued N'aam is one of the communes with abundant cases of infected leashmaniasis where the inhabitants discussed on the problem of environmental hygiene in their WS followed by Ghriss Ouloui. In WS with nomads in this commune participants also took up the prevalence of leashmaniasis as a serious problem in terms of public health. This case of leashmaniasis is nothing but an example, but it shows a close relation between infectious diseases and hygienic environment in this province.

As coping measures towards improving hygienic environment, it can be advised that at the first place sensitization to the inhabitants, then in the case that they have been sensitized but their sense is not yet put into practice, tracing and identification of bottlenecks (for example, waste disposal spot is not available) and to make it sustainable, creation of attitude/ organization/ system to sustain the established actions are recommended.

(2) Issues on medical services for maternity

There are provincial hospital, 4 local hospitals, and 14 health centers attached with delivery facilities in the province. The table below indicates the rate of delivery in public facilities in the Kingdom as well in the province in 2006 and in 2007. The rate of delivery in the facilities in the province stood below the average of the state in both of these years, thus how to lower the mortality rate of pregnant women and infantry has been deemed as a priority target. Home parturition is very often encountered in rural areas where delivery is attended by traditional midwives without qualification of medical cares.

Rate of delivery in facilities	Year	In the province	Average of the Kingdom
	2006	42.82	58.19
	2007	44.74	59.07

Source; *Delegation de Santé, 2009*

In the participants' discussions in WS, health issues have been ranked at the highest three in 30 WS out of 46, showing the deep concern of the inhabitants. Out of these, 14 WS accounting for around a half, have dealt with shortage in medical facilities for maternity women and delivery assistants as a core

problem. The problem arises from the remoteness of the existing facilities for the pregnant women and hesitation to be assisted by male delivery assistants. In Morocco, many delivery assistants are male, but according to the opinions presented in WS, the pregnant women hesitate to accept their assistance for delivery, the family members of the pregnant women do not feel it comfortable. Male delivery assistants themselves have the similar opinions to those presented in WS, agreeing that it leads to lowering the rate of accepting male' care for their delivery.

During the interview in Oued N'aam with the inhabitants in Ksars, such opinions were heard as they cannot go out of their ksars because road has been closed due to lack of bridge that has been swept away by a flood, they feel difficult in terms of both time availability and physical limitation to commute to remote hospitals and to engage in household chores in the state of pregnancy. Similarly, in an interview at the Office of Commune in Ghriss Ouloui Commune, the participants have appealed calling for circuit visiting of medical care because it is difficult to come to Ghiss Ouloui for the inhabitants living in remote ksars where transport means are poor although they are sometimes deemed happy because Ghriss Ouloui is located in the vicinity of urban commune Goulmima with a sufficient medical facilities.

As stated above, there are several reasons why an expected mother doesn't visit regularly held health consultation or pregnancy diagnosis. It is important to clarify the reason to provide coping measures, whether she cannot come because of her physical difficulty, or she does not come deliberately attributable to certain reason because relevant measures to facilitate her to accept services are different case by case. If the real reason is resided in the former case, provision of circuit, itinerant medical consultation or procurement of transport means should be reviewed. If it is in the latter case, activities supporting better sensitization of the inhabitants through health education and maternity school etc. should be examined.

(3) Shortage in medical facilities and their staff

In terms of statistics it can be said that number of medical facilities and of staff engaged in medical services in Errachidia province are in a favorable environment as compared with the mean of the Kingdom or of the region. Consolidated facilities are counted as the strength in terms of internal environment in the Action Plan of the HD of the province.

On the other hand, at the level of the front-line, fewer chances of health diagnosis is a task to be solved in rural commune in short of medical facilities. To make the matter worse, difficulty arises from realization of medical consultation in remote areas due to lack or need of transport means as well as ambulances. In each section of health, efforts have been made including mobile health care (open-sky diagnosis) held a few times in a year, however, this is far from being satisfactory.

Also, shortage in those who are engaged in medical services has become a serious problem in rural areas. Cases of health centers are often observed where only one nurse manages it otherwise a doctor and two

nurses should be assigned for normal staffing. In other cases, although some nurses are willing to participate in educational activities on hygiene and health, or to practice circuiting medical services, actual participation in such activities would be physically difficult for them. The result of hearing from the health department of the province (SIAPP) revealed that even though sufficient numbers of nurseries are available in the entire province, they are reluctant to get assigned to communes with poor living environment or under unfavorable climatic conditions, and even if some of them are actually assigned to such communes, they would soon resign from the services, and the department encounters difficulty in solving these bottlenecks.

With regard to personnel affairs, staff of medical services can apply for their desired servicing places but they are as a rule possibly dispatched to any places throughout the Kingdom. Such an uncertainty on the servicing places constitutes an issue of personnel affaires because no one know where they are assigned to. As an example, just as only Berber language is spoken in some regions in Errachidia province, so is the regions in other provinces. Regardless of the differences in culture, tradition and thought of valuation, they are assigned to strange places where they don't understand language spoken therein, posing a basic issue prior to be solved before discussing medical services.

Also, lack of consciousness on the side of inhabitants towards medical services is posed as an issue. For instance, the target children do not appear on the day of scheduled vaccination or on the reserved date and time for the following diagnosis and treatment, while they come again several days after the reserved date. Such happenings are getting accustomed, affecting efficiency of medical services. Likewise, pills for birth control are distributed in the public clinics but problems arise from their use, recipients often stop taking administered tablets, or give or share them to others, then such self-regulated administration makes the effect of pill invalid.

(4) Development Potential

While the above paragraph has posed major problems prevailing in rural areas and proposed their improving measures, here, development potentials are debated.

- Low awareness; while need of inhabitant's sensitization including hygienic as well as environmental education has been reiterated in the above section, it can be said that already a number of inhabitants are aware of various issues acutely feeling as their own problems in respect that actual definitions of issues have been made in WS. In WS, insufficient awareness on the side of inhabitants has also been pointed out, and as regards shortage of medical facilities, some participants have self-criticized in a way that it is partly a result of insufficient initiative by the inhabitants (including associations) Only if people are aware of problems, voluntary participation can be expected when a hygienic education is programmed, thus it is anticipated that awareness gives positive effects on the attitude of approaching to the proposed

activities, on their effects and sustainability.

- Approach by HD; the provincial HD has formulated an action plan (2008-2012) in compliance with the state 5-year strategies (2008-2012). In this plan, internal environment of the provincial HD and external one concerning health in the province are analyzed, then by categorizing sectors roughly into hospitals/ health in rural areas/ medical care for maternity/ measures towards important diseases (diabate, tuberculosis etc)/ collaboration with NGOs etc, an action plan has systematically been provided covering 268 individual actions including action targets, contents, indicators, action areas, implementing years. Programming of this plan into implementation will serve as a base map in promoting the activities of HD for coming 4 years, thereby playing an important role in pushing development forward.
- Diffusion of maternity class; the maternity class has been introduced since 2007 to Errachidia province by the initiative of JOCV, developing in 9 facilities in the province. Amidst that shortage of medical facilities and staff of medical care specialized in ginechologic and ovactomy sector is called for, education for maternal women provides precious forum for information exchange as well as opportunities of receiving nutritional instruction and medical check. If this class can be extended further into local areas, it would lead to alleviating spiritual as well as physical burden suffered by women in pregnancy in rural areas.

1.2.4.8. Livelihood & Living Condition Improvement

(1) Constraints

(a) Unstable Agricultural Production due to Unstable Rainfall

Agricultural production in Errachidia province heavily depends on amount of rainfall, which fluctuates greatly with years. Instability in agricultural production also affects all other agro-related industries, where around 80% (including farming) of rural residents engage in, and makes them difficult to supply agro-related products to market constantly, hence difficulty in entering into long-term contract with steady buyers.

(b) Limitation in Land Utilization

Comparing with farm size in the coastal areas where commercial scale agriculture is dominant, individual farm plot in the inland area, including Errachidia province, is quite small. One of the reasons might be its environmental conditions, which limit cultivable area and available water resources. Another reason must be a long-established division of succession, which makes farm plot smaller and smaller as the years rolled on. As a result, production scale of individuals becomes small which in turn makes difficulty in promoting commercial-scale agricultural production.

In addition, common land in the province is traditionally under the management of traditional authority, and nobody can utilize the common place without any approval of Jmaa. This is a desirable system, on one hand, in view of environmental protection, since even national government cannot force their intention without agreement with local residents. On the other hand, however, the system causes many difficulties in implementing land-use projects, including IGA of a certain association and even inter-regional project for example.

(c) High Transportation Cost against Coastal Regions

Inland areas including Errachidia province face difficulty in transporting commodities from and to coastal areas since Atlas Mountains lie between the both areas. The long distance transportation passing over the mountains as much as 2,000m high increases transportation cost, and makes it difficult to export agricultural products from Errachidia to other large markets, such as Casablanca, Rabat, and Fes, which in turn result in comparative disadvantage in price setting of local products.

(d) Weak Bargaining Power of Farmers

Since farm plot of most farmer in Errachidia is quite small due to mainly the long-established division of succession, their volume of agricultural products is limited. As a result, their farming activities have no other choice to only meet their home consumption. Under this condition, only a few farmers have an experience to sell their products at local market, and bargaining power of small-scale farmers is extremely weak in general.

(e) Lack of Post Harvesting Facilities (Apples and Dates)

One of reasons that the farmers in Errachida province have to sell their apples at cheaper price is lack of post-harvest facilities. Usually, apples keep good quality for 6 months if storage condition is appropriate. Farm gate price of apples at harvest season is around 4-7 DH/kg on average, but increases until 8-11 DH/kg after four or five months, January and February. Some farmers in Midelt, a production canter of apples and so-called “a kingdom of apples”, own cooling facility of apples and sell their products at higher price based on the marker trend. Therefore, if the farmers have their own cooling facility, they can be a price maker of apples, and gain more profit from the products.

Date also requires cooling facility to maximize profit from its marketing. Date consumption increases particularly during Ramadan period in accordance with the Koran's teachings. Harvest season of date in Morocco is between September and October, and had been before Ramadan practice period until recent years. So, it has not been necessary for the date farmers to stock their products for long period, since light after the harvest they could meet the best consumption season of dates. However, now Ramadan period already sifts before the harvest season, and the date farmers cannot make profit as was before if they do not have cooling system to market at an appropriate time. Most date in Errachidia for consuming throughout Ramadan comes from abroad such as Tunijia at the present day.

(f) Lack of Processing Technology

As an example of on-farm IGA, Olive is one of dominant agricultural products in Errachidia province, and the self-sufficiency rate is 92%. Usually, olive farmer bring their products in nearby traditional or sometimes modern manufactory to extract oil mainly for home consumption. However, there is no pickles (salted olive) industry in Errachidia province, and most pickles sold at local market are imported from outside provinces including Meknes, Marrakech and Fes. That is to say, farmers in Errachidia province once export olive products to outside province for processing, and import the final products (pickles) for their home consumption. Therefore, farmers in Errachidia province lost an opportunity to make more profit from their locally specialized products of olives. Some farmers want to run processing factory of olive pickles.

In the case of off-farm IGA, to improve processing technique is also inevitable issue, which need to be supported. For instance, fossils, the area in and around Erfoud is world-famous for mining where such archeological fossils as trilobites, ammonites and nautiluses are mined out. In Errachidia, mining and reshaping/ polishing of fossils are performed in small-scaled workshops, with the handling techniques much lower than those in Western world. In Europe, the mined fossils are reshaped into a three-dimensional object by using microscopes and sandblasters, but such an accurate processing is not yet available in Morocco. This lack of modernized technical process has led to a situation where miners ought to sell their fossil ores by dumping sale with reduced prices and processing is made in the importing countries, thus failing to maximize the gain from really rare resources that can otherwise result in much more export earnings.

(g) Lack of Transportation Means

Lack of transportation means including packing materials and vehicles are also constraints on products marketing. Particularly, post harvest losses increase if packing material is not appropriate. For instance in Northern communes in the Mountainous region, many farmers still use woven sack for products transportation, and post harvest loss accounts for around 30% at present. To decrease the post harvest and transportation losses, improvement of packing materials including wooden or plastic box is necessary.

Also, vehicles expand target market dramatically and help to establish new marketing channel in remote areas. However, some cooperatives and associations in Erracchidia do not have the transportation mode, which in turn entail in limited marketing activities in and around their communes.

(h) Small Number of Associations and Cooperatives for Craftwork Industry

Craftsmen/ women tend to work individually or at family level in Province. In particular, in remote areas, although people are skilled and experienced, marketing is bottleneck for goods to be sold out of village. Moreover, for instance, individual work makes craftsmen/ women difficult in dealing in

mass-production, purchasing large amount of row materials, and exporting to goods to bigger market places. If they formed association/ cooperative, they could solve these issues and make their work more commercialized, assured and competitive in larger region. In addition, it enables association/ cooperative to be platform in order to apply for the financial support to public/ private agencies, such as Commune, INDH, ADS, and DPs.

(i) Lack of Technical Support

Traditional skill is remarkably precious and, in many cases, has been taken over for generations. Many craft goods are timeless and traditionally valuable, which people regard it as their strength shown at Table in previous section, (7). Moreover, raw material, such as wood, leather, wool, mineral and fossil, are appreciated as gift from God. In WS, people in Ksar which practice craftwork mentioned it as potential and advantage.

On the other hand, it sometimes seems that the goods are not wide variety of choice and of characteristic in a sense of shape and design. At the interview with associations/ cooperatives and craftsmen/ women, many people were interested in taking training to skill up. Although making much of traditional value will be important, technical support would be necessary for people to learn the different kind of technique, by workshop, training, or study tour. Beside, not only technical but also business training would give people professional way of thinking about 'business' theoretically and practically. It will also bring confidence to people as professional. To mitigate the issue on shortage of training, training of trainer (TOT) to local people would be also effective. In particular, since the locations of activities are separately spread out there and here at remote areas in Province, many trainer will be needed. If trainees who are trained by TOT become trainer in their own region, these trainers could conduct training with same language sharing same cultural norm and locality of the training site. It will help the training adaptable to the region, and, furthermore, follow-up support and monitoring of the activities might be carried out easily.

(j) Lack of Official Support

One of cause of lack of technical support to craftsmen/ women as discussed in (h), shortage of training to provincial office, such as DA and ORMVA/TF, are taken up. In most case of other countries, staffs at Provincial level have opportunity to be trained by regional / national responsible body in a framework of Ministry. It also happens that other developmental agencies, such as DPs or NGOs, also assist the additional training. Technicians/ Engineers of provincial office are responsible for craftwork industry, as their knowledge and technique are directly passed on and affect people. In this context, training of provincial staffs is to be importance. Including the issue on the training of local people discussed in previous paragraph, holistic training system will need to be established in Province.

(k) Lack of stable financial status

Since craftwork is micro-business and, in most of case, individual work, financial status tends to be weak. In order to make activities bigger and commercial, assuring financial source need to be taken into consideration. As one of way out of this issue, micro-finance can be considered. According to DA, in fact micro-finance was introduced in ‘90s in Province, however it did not work well. One of reason is the lack of assurance on people to pay the credit back. As for activating/ establishment of the local bank or micro-finance system, bottleneck in previous experience should be carefully investigated not to repeat same history. With lessen learned of it, it would be the engine for craftwork industry to step forward, while enhancing economic capital of local people.

(l) Poor Infrastructure in Remote Areas

Poor conditions of basic infrastructure, including road network and communication facilities in remote areas, cause lots of difficulty in view of personal exchange, trading, and other activities to satisfy BHN. For example, poor road network in the Mountainous zone makes its communes isolated during flood season, and causes less personal exchange and commodity flow. Also, poor road condition in the Desert region including Sidi Ali commune causes the same problems throughout year. Due to the isolated geographical and socio-economical condition, neither market facilities nor active CBOs exist in Sidi Ali commune.

Unstable supply of electricity is also one of considerable constraints when we establish cold chain for agricultural products including date and apples and develop food-processing industry, since interruption of electric service causes serious damage on perishables and problems in term of food safety. For this purpose, a milk-processing factory in Errachidia municipality installed power generator, and such safety-net measures would be inevitable in the province.

In addition, many of craftwork activities are practiced in remote area in rural Communes far from the city having bigger market, such as Rissani, Errachidia, Tinjded, and Erfoud. In that case, people have to transport the production to the market. Additionally, small amount of production do not interest middleman to come over for commerce. With regard to going to the market, in many cases, rough road condition makes people difficult to carry large amount of goods by public transportation. Moreover, due to characteristic of craftwork with sever financial condition, holding vehicle by themselves would not be easy. In some Ksar of Sidi Ali, weaving carpet has been practicing among women traditionally. However, since public jeep to Rissani are too small and drives for once a day, people never come across marketing with carpets. As a result, difficulty of participating in the market has become obstacle for craftsmen/ women to make business bigger and profitable. One of solution would be, as mentioned above, to work collectively such as association/ cooperative in order to strengthen bargaining power.

(2) Development Potentials

(a) Surplus of Agricultural Production (Dates, Apples, Olives, Potato)

Despite of severe environmental condition for agriculture, produced quantities of some products exceed total consumption demand in the province. For instance, Errachidia province produces dates more than ten times as much as its total consumption, whereas self-sufficiency rate of apples is 114% and their surplus is exported to other provinces. In addition, some other producing places are observed to have similar situations of regional disparity of agricultural production; potato in Northern communes in the Mountainous zone and olives in the Intermediate and the plain zone. These figures imply a possibility to develop production areas for locally specialized agro-products.

(b) High Demand on Date in Whole Country Basis

Moroccan people have preference on dates because of their high calorie and sweetness, with its demand traditionally and dramatically increasing during Ramadan period. Dates are chief products of the Errachidia province, and its amount of production is enough to meet total consumption in the province. Major production areas of dates are Errachidia, Goulmima, and Erfoud circles, and dates produced in these areas are exported to other provinces.

However, year-round shipment of dates is quite difficult for farmers in the province, due to lack of cooling storage facilities. Some date producing farmers in Erfoud, the most famous production area of dates in the province, try to market them for year round, but their quality deteriorates during the period from March to May, which in turn lowers their selling prices. During this period, most dates in the local markets are imported from other regions, including Meknes and even Tunisia, where date traders own and manage cooling system. If farmers in the province had their own cooling facility, they could have gained more profit from their only promising agricultural products of dates.

(c) Existence of Unutilized Resources

There are some resources, including natural plants and tourist resources, which is not yet fully developed at present. Some plants are naturally grown in the province, but not fully developed to gain benefit from them. For example, caper is a common plant at rocky area, but nobody utilized it in his or her economic activities. Since demand for caper increases particularly in Western countries, and it will be a good business opportunity if rural residents cultivate and process it on a commercial basis.

Cactus is also common in the province and its fruit is transacted at market in summer season. However, there is still a room to develop cactus commercially, since its oil is traded at higher price among foreign customers.

In addition, undeveloped mining resources such as fossils in Sidi Ali and other scenic resources in the Mountainous zone have potential to develop on the basis of tourism. In participatory WS at Ksar level, people stated existing resources, such as not only physical material; leather, mining and wood, but also traditional technique and knowledge taken over from their ancestor, as the strength of their communities. People desire taking advantage of their skill for commercialization.

(d) Periodical Visit of Foreign Tourists

Errachidia province is located in the middle of tourist route of inland Morocco, and has periodical visit of foreign sight-seers whole year round. Tourists tend to seek locally made souvenirs for their trip memories or gift to their relatives. If quality and volume of products meet tourist's demand, locally made products can be an income source of rural regiments. Even desert sand in a small bottle can be a good souvenir for foreign tourist in memory of desert tours. Therefore, foreign tourist can be a good target under the marketing strategy of the provincial residents.

(e) Enhancement of existing craftwork activities

Berber women have traditionally succeeded weaving skill from their mothers to make woolly carpets for family. Compared to sales carpets, their products are more familial and less sophisticated for commercialization. However, they brew a warm feeling stemming from their distinctive designs and manual works. Likewise, on the one hand craftwork have been practicing for self-consumption at home, on the other hand, it could be IGA for supporting livelihood. In Province, there are around 7,500 people who deal in craftwork. Many have been using traditional methods and material. This knowledge and practice are the gift and inimitable.

In terms of IGA, if they came to produce the goods with consumers' preference from commercial point of view, it would become substantial source of income. Moreover, business chance will bring confidence and empowerment of vulnerable population, such as poor people and women. In that sense, the industry could generate positive impact socially as well as economically.

1.2.4.9. Capacity-building of local government and local organization

(1) Constraint and Potentials for Development

In the trend of decentralization and people-centered development, PCD is the first experience for many Communes to formulate developmental plan officially at Communal level. Since this is the first trial, many challenges can be seen for Commune to cope with in the process of formulation of PCD. When the technology transfer is considered in the field of governance, good governance, public financial management (PFM), and decentralization are difficult for people from outside to intervene, as this is not the matter of competence of staffs, but the one of governmental system itself. It is, therefore, difficult for entrance point of intervene to be identified.

In response to the situation mentioned above, the issue of system is avoided to discuss, and only the point which could be dealt with by Commune in the course of formulation of PCD intend to be discussed. On the basis of, in particular, financial issue facing Commune, the agendas are presented as below, which will become potential or constraint for development.

(a) Assurance of budget resource;

Communes have to manage their developmental activities with limited budget. In the context, PCD is expected to play as platform for the budget to be efficiently used. Assurance of budget resource is significant in terms of helping realization of PCD in practice. The point to make sure the budget resource will be;

(Within the Communal budget)

- To increase investment budget; saving expenditure of operational budget, and increasing revenue of operational budget
- To apply for VAT, subsidise or FEC for new projects

(Outside of the Communal budget)

- To apply for the budget resource to developmental budget, such as INDH、ADS、DPs etc
- To apply for the project to Ministry

(b) Project implementing capacity of communes

As regards what is stated above, applications must be submitted clearing the following procedures: In case of application of VAT for investment funds, commune council is the applicant who should provide the application with the results of feasibility on the applied projects through prior surveys in collaboration with the delegations (provincial offices of related ministries) concerned, division of technique in th Provincial office and also with consultants etc as need arises. If the project's feasibility and expectable benefits can be verified in these prior provisions, possibility of acquiring approval would be enhanced. To this end, it will be important key factors for the acquisition of approval to appraise whether the commune takes initiative for the application of a project, whether it has capacity of implementing the project including establishment of project objectives, clarification of needs from target beneficiaries, procedures to complete application etc. The similar requirements can be applied to the application of outsourced funds other than the budget of communes.

In addition to the procurement of budget, Commune is expected to cope with financial management and project management. In both cases, skills of analysis, planning, implementation and monitoring are expected. In terms of the capacity, for instance, the skills of management, analysis, implementation, accountability, negotiation, and accountability and communication are appreciated.

(c) Procurement of tax revenue and self-help by commune

Rural communes have less vigorous economic activities in marketing (souk), public baths (hamam) and retail shops (dukken) as compared with those observed in urban ones, leading to less scale of tax revenues in their operation budgets. It entails in a tendency of dwindling commune's own financial sources in investment budget. It would be important for rural communes to consider how to expand their

revenues (tax revenues). To expand their tax revenues, it would be required to activate inhabitants' economic activities, but additional investment for constructing commercial buildings etc is also required. Hence, it would be a nerve-lacking bottleneck for many rural communes to seek for the survices of these funds in preceding their development activities.

(d) Effectiveness of INDH

Since 2005 with initiation of INDH, participatory and people-centered development has come to be paid attention to. The policy of INDH has brought large amount of support for association, decentralization, and legal decision of PCD formulation. After 2005, it seems that participatory development of local people has become mainstreamed in external governmental services/

(e) Communication skill

In some Communes, difficulty in communication within Communes and between Commune and external organization is claimed. There is the case that it creates misunderstanding. On the other hand, good communication leads to trust and strong solidarity, which will become the potential of community development.

(f) Human resource

Since officers of local administration works more closely to local people, they are expected as conversable, familiar and professional community worker rather than as formal, reserved and indifferent governmental officer. In the case of some Communes, what needs to be done is not really clear yet for formulation of PCD. On the other hand, there are Communes that create many different kind of new idea to develop communities for future generation. It is people that become main driving force of community development. It can be considered that National government is responsible for strengthening the capacity of local government, and local government are responsible for developing local society.

(2) Local organization

Association and cooperatives have come to be focused as beneficiaries by the policy of INDH. On the basis of the current situation of association/ cooperatives, some constraints and potential for community development intend to be discussed.

(a) Influence of INDH and support for associations

The policy direction of INDH has been enormous push for association to move forward. This is the good opportunity for local organization in civil society to make foundation for community to be mature and be developed. However, the issue is that it is not ease for communities under poverty to start up association/ cooperatives. Even established, the associations tend to be shortage of competence and

human resource. Because of lack of accountability and legitimacy, these associations cannot obtain financial support form INDH. In order to improve this situation, empowerment of local people and association will be crucial.

(b) Organization issue of association

The management staffs of association should be voluntarily engaged in association activities, which is regulated by law. Therefore, in most cases, the management staffs have main job, and association activities are the second. In consequence, in the busiest season of management staffs for main job, involvement in association becomes difficult to cope with. This can be one of constraint for association to be bigger and sustainable

(c) Management skill of association

Low management skill of association is often remarked. In order to strengthen skills in planning, financial management, administration, accounting, reporting and so on, some trainings are carried out. However, association staffs who has proper job cannot always participate in it. It is also the case that after the training staff is transferred, or feedback of training is not shared among association staffs. For the training, the timing, period, contents and monitoring of effectiveness after the training, should be taken into consideration. In the association's side, system on information sharing, accumulation of knowledge in organization should be established. These efforts would make association more active, reliable and accountable.

(d) Poverty and maturity of civil society

At the series of workshops, in the Ksar, which active associations exist, people tend to be more active, enthusiastic and positive to community development regardless of the member of association. On contrary, in the community that few associations exist, people tend to have the mind for relying on assistance from outside, claiming the responsibility of government.

It is, to some extent, normal, as there would exist many difficulties, which cannot be solved by people themselves. Moreover, in the communities suffering from poverty, civil society tends to be weak and which resulted in difficulty in finding people who can be engaged in association voluntarily and continuously. In rural areas, in particular, in poverty area, whether person who can take initiative be found or not, will be the key issue.

(e) Communication and partnership

Since many associations exist here and there in Province, one of option will be to organize group by area or domain to make information sharing and collaboration smooth and easy. By means of strengthening inter-relationship among association, it will become potential to scale up the impact and benefit.

Moreover, establishment of network with Province and Commune will be also advantageous for association in showing transparency in their activities. If the association is acknowledged in a sense of reliability, accountability and legitimacy, it will bring the support by INDH, Commune or developmental agencies.

1.3. Zoning of Rural Communes and Selection of Target Communes for PCD

1.3.1. Basic Principle

INDH promotes national programs aiming at reduction of poverty and disparity gaps among regions and societies. In order to achieve these aims it is inevitable to adequately allocate limited resources and utilize them effectively. Therefore, the Study Team gives the following as main prerequisite condition when the Study Team selects the pilot communes in this survey: poverty reduction would contribute to improvement and narrowing of the economic and social disparity among urban and rural areas.

The Study Team prepared two steps before the consultation with relevant institutions in the course of selecting target communes for PCD formulation; 1) Zoning of 39 rural communes in Errachidia Province, and 2) Selection of one commune from each zone as pilot area. Poverty indicators are used to compare the communes in each zone. The following is the steps for selecting communes.

1) Zoning of 39 Communes into 5 zones
2) Selection of 2-3 target communes at high poverty level for PCD
3) Consultation with relevant institutions such as CPDH, DAS, DAT/POT and ORMVA/TF etc or target communes for PCD and determination of target communes for PCD with consensus of relevant institutions

As for zoning, at first the Study Team classified communes into 5 ranks based on their values of indicators as shown in the following table. After that, an indication map for each category was prepared by indicators. The 5 ranks were determined by means of standard deviation on the mean basal values of indicators. The rating was, then, applied to each commune in an order from good to bad condition. Detail of zoning based on the indicators at each category is shown in Annex VI Zoning of Rural Communes and Selection of Target Communes for PCD.

Indicators for Zoning

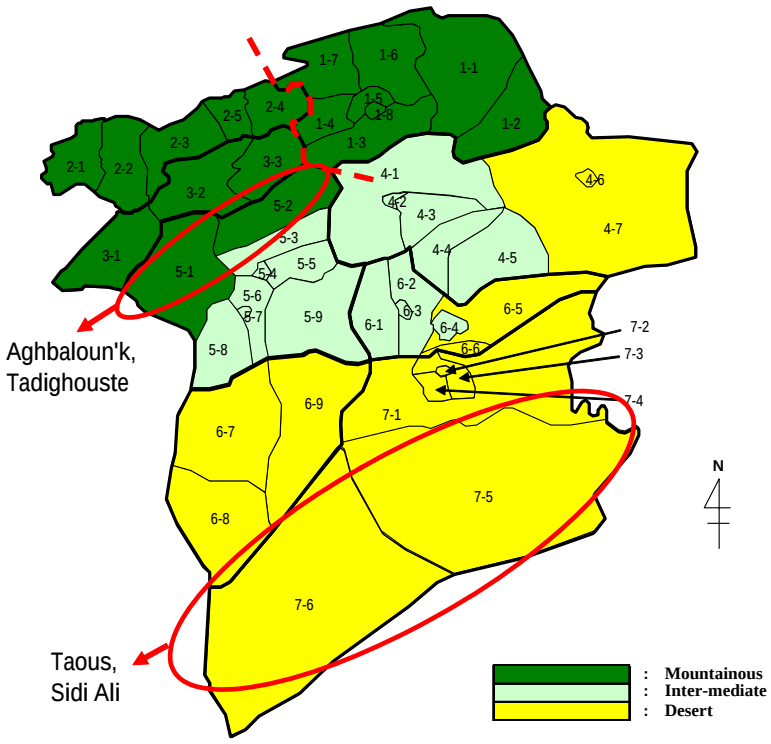
Category	Indicators
Socio-Economic Condition	Electrification, Water Supply, Fertility Rate, Illiteracy Rate, Female Employment Rate, Population Density
Agriculture & Livestock	Agricultural Land, Irrigation Area, Grazing Land, Livestock Production, Land Tenure Rate, Command area of Khattara
Market and Organization	Market Access, Self-consumption Rate（Potatoes, Date, Olive, Apple, Wheat）、Number of Community Organization, Investment budget by Commune

1.3.2. Zoning of Communes

As stated above, after developing the indication maps by indicators, the unification of the maps was tried from comprehensive viewpoints of rural society, crop and animal husbandry, marketing, inhabitants' organizations and so forth, thus finalizing categorization. The agro-ecological zoning has already been established by ORMVA/TF and utilized in the formulation of plans for various activities on agriculture and environment (in some cases a single commune is categorized into plural zones). Hence, whatever development plans or measures may be formulated, it is almost impossible to categorize an area regardless of this zoning. Taking such a background into account in finalizing the categorization, the established agro-ecological zoning by ORMVA/TF was first of all paid respect of (3 zones including mountainous, intermediate and plain). This basic concept was agreed on as a basal understanding among development partners including DAS. The following gives a summary of process of finalizing categorization.

Step 1: Verification of agro-ecological zones by ORMVA/TF

In bird-eye watching the entire province of Errachidia, its diversified topography can be counted as a character at a first glance. Variable conditions in climatic and hydrological environment prevail in mountainous area with an altitude of around 2,000m, in intermediate area with a range 1,000 ~ 2,000m and in plain area with 1,000m or lower. Such differences in topography and climate never fail to function as limiting factors towards agricultural production and agro-based industries, thus forming an area differentiation. In other words, the existing agro-ecological zones by ORMVA/TF has been served as an inter-related parametric division in industrial zoning on several elements of agriculture including crop and animal husbandry, commerce and other inhabitant's routine activities. For this reason, it has been adopted as a basic element of this zoning.



Step 2: Verification on socio-economic indicators

In terms of socio-economic dimensions, the province can be zoned into 4 categories as shown in 4.2, (namely western and eastern mountainous zones and middle and southern plain zones). A typical

difference between this zoning and agro-ecological one resides in that northern mountainous area is divided into two, i.e., eastern and western parts. This division can be interpreted from various indicators such as number of children a mother bears in her career, illiteracy rate and state of social infrastructure (domestic water and electricity supply) etc. indicating that the eastern side of the province nearer to Errachidia City and along the national highway of No.13 has more advantage in terms of socio-economy than the western side. Lately, as rapid progress has been brought in electrification and coverage of domestic water supply, this disparity has been narrowed. However, a result of the socio-economic survey made by the Study Team has revealed still higher illiteracy rate existing in the western mountainous side thereof, Because such a difference can exert as a constraint on area development, it has been decided that the mountainous area is divided into eastern and western parts.

Step 3: Verification on development potential

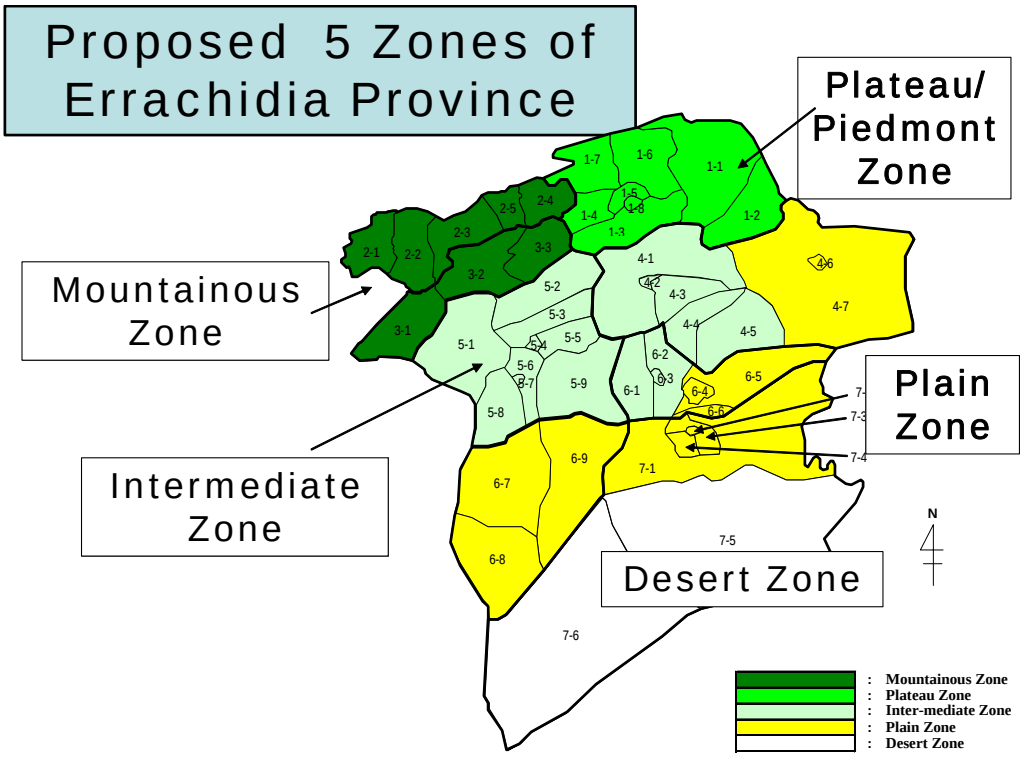
From the standpoint of economic state given by such indicators as household income from agriculture and livestock, distinct disparity among areas can be identified in the state of demand and supply of agricultural commodities, though such differential characters are difficult to grasp due to a tendency of overestimation for annual household income in thinly populated communes. The demand and supply state of agricultural commodities suggests a potential of forming production area indicating the direction of promoting agricultural activities. For instance, apples and Irish potatoes are considered having potential to develop their production in mountainous areas, while dates and olives can be promoted as specialty crops in intermediate areas. In this case, producing surplus of date is stored in Aghbaloun'k and Tadighouste Communes that are categorized in mountainous zone by the agro-ecological zoning of ORMVA/TF, accordingly, it is more relevant to classify these communes into intermediate zone as far as potential of forming producing area is concerned. From this aspect, these communes have been categorized into intermediate zone instead of putting them under mountainous one.

On the other hand, basic infrastructure has not well been consolidated in Taous and Sidi Ali Communes under the limiting conditions of rigorous climate where potential of farm production also remains at a low level. However, there found a high potential of tourism development including desert exploration tours that has become popular among European tourists. For these reasons, these communes are categorized into an independent zone separating from other communes located in flat or plain zone where development approach mainly with tourism development as a desert area.

Step 4: Consensus building among development partners

Founded on the result of examination cited above, a draft of categorization was prepared and finally determined through the consultations with DAS, ORMVA/TF, DAT-POT and other stakeholders to reach a consensus. As the result, an agreement has been concluded with development partners and DGCL on the categorization of the Study Area into 5 zones, namely Mountainous Zone, Plateau/ Piedmont Zone,

Intermediate Zone, Plain Zone and Desert Zone. The following figure gives the result of zoning and nomenclature.



1.3.3. Characteristics at each zone

The area, number of communes, number of ksar, population and others are shown in the table below. Intermediate and Plains Zones are highly populated, but in terms of population density Mountainous and Plateau/ Piedmont Zones have higher population density while Desert Zone has the lowest level thereof.

Zone Name		Area (km^2)	Commune	Ksar	Population	House Hold	Pop. Density
Mountainous	I	3,393	8	80	54,239	9,001	16.0
Plateau/Piedmont	II	4,800	8	144	72,644	13,086	15.1
Inter-mediate	III	25,647	17	168	256,809	42,850	10.0
Plain	VI	16,147	12	248	162,220	23,252	10.0
Desert	VI	15,800	2	19	8,388	1,205	0.5
Total		65,787	47	659	554,300	89,394	8.4

1.4. Direction of the Rural Development Plans at Each Zone

1.4.1. Basic Approach

Based on the study results on local people's needs, constraints and development potentials and result of the zoning in the previous chapter, development direction at each sector is proposed in this chapter. In order to formulate the development direction, final goal is to be achieved poverty reduction in rural area through improvement of the livelihood standard for local people. Especially, the main targets are placed on increasing local people's income through adding high value to the products and activating the socio-economic activities through improvement of distribution and marketing system in the Study Area. To achieve the targets, solutions will be searched and be identified through implementing the Pilot Project. And also strengthening plans for the local administration, association and cooperative, fighting against the poverty reduction in frontier line of communal level will be proposed.

Main components of the development plan are dominated by agricultural aspect because almost all of the livelihood means of people is agriculture. Taking due consideration of above mentioned point, cross cutting issues arisen from rural communal PCDs and the transversal projects which are going to be planned by related ministerial agencies.

1.4.2. Water Resources and Irrigation

(1) Water Resources

95% of available and usable water in total is utilized in Ziz river basin having 14,606 km^2 catchments area due to construction of Hassan Addakhil dam. Due to this dam anymore water development possibility is little in future. Because of the construction of this dam, on the one hand, flood damages have been reduced, on the other hand, soil runoff with erosion still occurs remarkably in the upstream of the dam because of a little vegetation cover. Introduction of small scale soil erosion control measures to the mountain slope and reforestation are necessary to prevent soils into the reservoir.

Rehabilitation and expansion of the flood control, and irrigation facilities are essential, as effectiveness of storage capacity of these facilities have been lost by sedimentation as well as these deteriorated facilities. Furthermore, improper water control have caused flood damages and loosing a lot of water in downstream of the dam. Due to the construction of the dam, recharge water into the underground has been decreased remarkably in the downstream of dam, then, negative impact is appeared.

85% of water against available and usable water in Ghris river basin is used and possibility of

development water has become very low, as catchment area having 12,412 km^2 is relatively narrow compared to the other 2 river basins. Proposed 2 major dams, one of Tadighouste dam was already constructed, while the other Timkit dam will be scheduled to commence the work in October 2009. Accordingly reduction of flood and increase of the available water will be expected. Soil runoff with erosion occurs remarkably as same as Ziz river basin. It is, therefore, introduction of soil erosion control measures to the mountain slop and reforestation should be implemented. Low-lying area in the middle part of Gheris river coming close to Ziz river has high potential of groundwater and so many shallow wells for the purpose of rrigation and domestic water have been used so far. Decrease of groundwater recharge will be anticipated as in Ziz river if dams are constructed in upstream area.

Guir river basin has been lagged behind other 2 river basins in the water resources development and only about 37% of available water resource in total is used up to now. Catchments area for 19,476 km^2 is the biggest in the Study Area and potentiality of water resource development would be the highest in the future. Serious damages such as collapse of homesteads, roads, irrigation facilities, erosion of river banks, and washout of cultivation land occurred due to heavy flood in 2008 in the downstream of the basin. In order to mitigate damage by flood, construction of dams and diversions for the purpose of flood control and of irrigation should be given as the first priority. Construction of Kaddoussa diversion dam for diverting flood water occurring in Guir river to Ziz river, has been planned so far.

Regarding groundwater as described later, although there are 9,024 numbers of wells in the Study Area, almost all of wells are used in Inter-Mediate Zone and Plain Zone. Recently lowering of groundwater level and salinity problems have been arisen. It will be necessary to establish sustainable monitoring system to control excessive pumping and to observe groundwater level. As for the Desert Zone, surface water use is difficult but flood occurring several times per year is available to use efficiently. It is recommended that small scale flood water harvesting measures such as harf-moon method, counter band, and gabion in order to infiltrate flood water into ground should be applied and also shallow well irrigation for small scale vegetable garden will be introduced.

Conservation of soil runoff caused by flood is also essential. Forestation around the reservoirs and mountainous slope, and introduction of soil erosion control measures to the mountain slope are urgently to be promoted, as sedimentation is estimated at about 4 million ton per year in Hassan Addakhil dam and small scale barrages.

HEFLCD has actively prompted the reforestation to around the reservoirs and has released alevin into reservoirs to conserve national environment but forestation in mountainous slope is

little. In this regard, environmental education for reforestation and conservation of soil runoff by HEFLCD and ORMVA/TF to the rural people should be promoted. Because reforestation should cover vast area and participatory approach of local people will be essential. At present, formulation of PCD in 46 communes is in progress by development partners. Indeed, forestation should be involved as a component of PCD.

(2) Irrigation

Following tables show number of irrigation facilities and these irrigation areas at each zone. Based on the tables, direction of irrigation development at each zone is proposed.

Summary of the irrigation facilities using by surface water at each zone

Zone Name		Spring		Canal/ Seguia		Dam/ Headworks		Total (ha)
		No.	Irrig. Area (ha)	No.	Irrig. Area (ha)	No.	Irrig. Area (ha)	
Mountainous	I	20	946	6	2,095	0	0	3,041
Plateau/Piedmont	II	38	755	61	4,427	1	0	5,182
Inter-mediate	III	66	1,720	68	12,251	6	1,861	14,131
Plain	VI	4	0	44	27,973	2	0.0	27,973
Desert	V	0	0	0	0	0	0.0	0
Total			3,421	179	46,746	9	1,861	50,327

Source : Socio Economic Survey by ORMVA/TF (2006) and Socio Economic Survey done by the Study Team (2009)

Summary of the irrigation facilities using by groundwater at each zone

Zone Name		Well		Khettara			Total
		No.	Irrig. Area (ha)	No.	Irrig. Area (ha)	Functional	Irrig. Area (ha)
Mountainous	I	147	66	12	344	12	410
Plateau/Piedmont	II	688	900	5	0	0	900
Inter-mediate	III	3,172	2,188	183	3,130	144	5,318
Plain	VI	4,709	2,180	160	1,042	48	3,221
Desert	V	308	0	7	0	0	0
Total		9,024	5,333	367	4,515	204	9,849

Source : Socio Economic Survey by ORMVA/TF (2006) and Socio Economic Survey done by the Study Team (2009)

1) Mountainous Zone and Plateau/Piedmont Zone

Flooded irrigation for fruit trees, such as apple, olives and almond, is mainly applied in this area using spring water or groundwater as supplementary irrigation water. Conveyance loss of irrigation water such as leakage from the earth canal and overflow from the canal during rainy season due to not enough capacity of canal is remarkable. Improper water control without irrigation at an appropriate times and a proper water volume use at on-farm level has been also problematic. Drip irrigation system as one of the saving water measures has been, therefore, introduced and expanded recently. To save irrigation water properly, rehabilitation and

expansion of seguia/canal, and saving irrigation water technology should be introduced in future.

2) Inter-mediate Zone and Plain Zone

Dates, secondary olives are mainly planted in this zone. Conveyance loss of water at existing irrigation canal network is reached between 30% and 40% due to deteriorated irrigation facilities and improper water control technique. Rehabilitation of existing facilities should have been continuously carried out. Additionally saving water technology should be introduced because flooded irrigation as traditional method needs much water that is incontinent to the downstream.

In order to increase agricultural products, floods occurring several times per year will be introduced to the rainfed-farmland (Bour) of wheat, barley and maize. It is, therefore, flood harvesting/spreading facilities/system should be applied. And also saving water technology for shallow well irrigation have to be introduced. To prevent roads and irrigation facilities from moving sand dune and shifting sand, forestation for sand protection and construction of sand protection hedge using by palm tree leaves, etc have been applied continuously.

As for Khettara system, 144 systems against 183 ones in Inter-mediate Zone and 48 systems against 160 ones are only functioned at present. Diagnostic function study for the system will be examined to select necessary rehabilitation systems among them. Irrigation using the ground water is the most active in these area but underground water becomes lowering. As another problem, salinity problem has occurred at some places. Proper pump discharge will be therefore examined and then countermeasures to control groundwater should be taken into account.

3) Desert Zone

In order to increase agricultural products, floods occurred several times per year will be utilized as much as possible to the rainfed-farmland (Bour) of wheat, barley and maize. Flood harvesting/spreading facilities/ system should be applied also saving water technology for shallow well irrigation have to be introduced.

To prevent roads and irrigation facilities from moving sand dune and shifting sand, forestation for sand protection and construction of sand protection hedge using by palm tree leaves have been applied continuously

4) Direction of Water Resources and Irrigation Development at Each Zone

Based on the results mentioned above, direction of water resources and irrigation development at each zone is summarized as below.

Direction of Water Resources and Irrigation Development at Each Zone

Zone Name	Commune Name	Direction of Development
Mountainous Zone (8 Communes)	Imilchil, Bou Azmou, Outerbat, Amouger, Ait Yahya, Ait Hani, Assoul, *Amelagou*	Water Resources Environmental education for reforestation applied by Quercus rotundifolia, *Cedrus Atlantica*, Pine, Caper, Cactus, Pistachio, etc.) Irrigation Rehabilitation/ Expansion of Seguia Introduction of saving water technology for Irrigation
Plateau/Piedmont Zone、(7Communes)	*Gourrama,* Guir, Guers Tiaalaline, M'zizel, Sidi Ayad, N'zala, Zaouiat Sidi Hamza	Water Resources Introduction of soil erosion control measures to the mountain slope Educational campaign for Reforestation to the grass root level Construction of observation well for monitoring and control groundwater level Irrigation Rehabilitation/ Expansion of Canal/Seguia Introduction of saving water technology for Irrigation
Intermediate Zone、(13Communes)	Kheng, M'daghra, Aoufous, Aghbaloun'k, Tadighouste, *Ghriss Ouloui*, Ghriss Soufli, Ferkla Soufla, Ferkla Oulia, Melaab, Fezna, A.Sebbah.Ghriss, Jorf	Water Resources Introduction of soil erosion control activities to the mountain slope Construction of flood control diversion dam Management of integrated water with existing irrigation facilities Construction of observation well for monitoring and control groundwater level Environmental education for reforestation Irrigation Introduction of saving water technology for Irrigation Integrated water management of existing irrigation facilities Rehabilitation/ expansion of main & branch irrigation canal and seguia Rehabilitation/ construction of flood harvesting/spreading facilities/systems Rehbilitation of khettara system
Plain Zone (9Communes)	Alnif, H'ssia, M'ssici, Rissani, Bni M'hamad Sijilmassa, Sfalat, *Oued N'aam*, Arab Seb.Ziz, Sifa	Water Resources Construction of flood control diversion dam Integrated water management of existing irrigation facilities Educational campaign for reforestation Construction of observation well for monitoring Irrigation Introduction of saving water technology for Irrigation Integrated water management of existing irrigation facilities Rehabilitation/ expansion of main & branch irrigation canal and seguia Rehabilitation/ construction of flood harvesting/spreading facilities/systems Rehabilitation of khettara system
Desert Zone (2 Communes)	Taous, *Sidi Ali*	Water Resources Promotion of the groundwater use by shallow wells Construction of facilities to recharge groundwater Construction of observation well for monitoring and control groundwater level Irrigation Introduction of saving water technology for Irrigation Rehabilitation/ construction of flood harvesting/spreading facilities/systems Planting Acacia raddiana, Tamarix, Atriplex, etc against the protection of facilities from the sand dune and shifting sand Construction of hedge using palm tree leaves, etc for protection against the sand

1.4.3. Principles of Formulating Infrastructure Consolidation Plan

As to consolidation of facilities in terms of social infrastructure for which the Province of Errachidia is responsible, they are to be consolidated according to the improvement plans that the Provincial offices of the related ministries have. On the other hand, those under the jurisdiction of Communes are consolidated in line with the action plans by year, also within the fiscal budgetary appropriation of the communes concerned. The following gives the principles to formulate the consolidation plan for major social infrastructure.

(1) Road improvement plan

As regards improvement of national highways including N.H.13 running at the section of Meknes~Rissani, and N.H.11 of Oujouda~Agadir will be maintained in accordance with the National Highway Improvement Plan by DPET (Provincial Office of the Ministry of Roads, Electricity and Equipment Tafilalet). Similarly, it maintains road attached to Moulay Ali Cherif Airport in Errachidia City. The maintenance of the paved primary roads with an extension of 426 km or 17% of the roads in the Province with a total length of 2,520km is maintained by the Province, and that of the paved secondary ones with an extension of 479 km or 19% thereof are entrusted to each Circle. Pavement of other un-paved roads will be planned and implemented in DPET according to their priority determined by the current state of traffic frequency.

As to bridges traversing major streams where flood damages often take place, it is planned to gradually replace current overflowing type of road floor with permanent pier-bridges. Also, road sections running along mountain slope where collapse of rocks and earth frequently occurs are planned to construct tunnels or shifting routes to wider cut passages. DPET has already provided around 68 million Dh as the project costs of repairing current bridges.

Because farm roads in oases or farmland tracts in rural areas are exclusively used by the inhabitants in ksar, users have to maintain them. New construction and repair of farm roads have been included in Commune Development Plan (PCD) as an important project component. Henceforth, it is proposed to utilize maintenance/ management roads attached to the rehabilitated seguias and khettaras as farm roads. At the same time, plans for improving marketing and tourism promotion have been provided by the Provincial offices of other ministries than DPET, rational road development plans have to be formulated through the strengthened coordination among these offices.

(2) Electricity Distribution plan

Electricity sources in the Province are fed to Rich~Errachidia grid through a high-voltage line via Meknes ~ Midelt, from where power is further delivered to the west to Goulmima to the

south to Erfoud as well to the east to Boudnib. The extent of availability of 3 phase alternate current is limited to these cities. In the meantime, rural electrification has covered 93.5% of the households in the Province as of 2008, while solar energy generation covers 2%. However, electrification has retarded in the section grids in Sidi Ali, Guir, Melaab, Ettaous, Assoul ~ Imilcil, Alnif and its surroundings, Aghbalou Nkeradous, Nzaala, Zaouit Sidi Hamza etc, where about 2,402 households still wait for electricity. Out of these, 1,164 households (52 %) are planned in the target coverage scheduled in 2010 (refer to Appendix5 Table 1.4.1). Besides, about 5,300 MW has been annually generated in 2007 by hydro-power generation facilities of home-size that make use of water head of water intake facilities, thus feeding a third of electricity consumed by enterprises, implying that there remains some room in small-sized power generation.

(3) Domestic water supply plan

Domestic water has already been supplied to 87% of the households in the Province, yet water supply in mountainous as well as in plateau-piedmont zones remains behind the plan because there are difference in altitude between the level of water sources and habitat areas that makes installation of water pipe difficult. Electrification in these areas is also retarded because of higher cost of creating electric grids and also water supply networks. The extent of difficulty in procuring stable water sources that enable to regularly supply domestic water also affects the creation of network. Though cities and places where commune administration offices are established has almost accomplished domestic water supply networks, water yields from aquifers locally available in plain and in desert zone are not stable, while supply from remote water sources incurs high construction and maintenance expenses, thus regular water supply is difficult even though domestic water network were webbed. Under such circumstances, the most readily applicable, conventional measures comprise a method of regular water supply from nearby local towns by a tank-lorry. In mountainous zone such abundant water sources as fountains are easily available, but the maintenance thereof is difficult and bulky expenses would be required for taking measures against sand sedimentation or water leakage of the created network. After all, whether facilities should be installed or not will be decided by the choice of users or cost-bearers. In the case where water delivery to individual household is found difficult, the plan should be replaced by conventional domestic water supply with public taps for use of inhabitants' groups.

Further, in these mountainous as well as plateau-piedmont areas with low rate of domestic water supply, domestic water supply projects have been implemented through the assistance of associations and NGOs etc. Hence, communes and the province should subjectively support these organizations to improve water supply.

Access Rate of Drinking Water at each Zone by ONEP

Zone Name	Population in 2007	Association	ONEP	Total	Association	ONEP	Total
Mountainous	55,823	62%	0%	62%	34,439	0	34,439
Plateau/Piedmont	51,850	61%	5%	66%	31,760	2,700	34,460
Inter-Mediate	156,049	12%	82%	94%	18,709	128,328	147,037
Plain	111,620	38%	60%	98%	42,152	66,915	109,067
Desert	8,412	31%	52%	83%	2,606	4,379	6,985
Total	383,754	34%	53%	87%	129,666	202,322	331,988

Source: ONEP in 2009

(4) Sewage plan

Construction of sewage networks has been the most backward field with the introduction of lavatory system in the context of social infrastructure. Especially, drainage of sewage water becomes difficult in the central part of rural villages during rainy season due to water submersion. Concrete plan for drainage facility consolidation has not been provided at the provincial level, the sewage plan has been left for the matter of local communes. Generally, favorable areas for water supply conditions tend to have poor drainage conditions due to flatness, thus making simultaneous consolidation of both domestic water supply and sewage system.

As far as comparative priority is concerned, drainage of rainwater through side ditches of roads and buried culvert should be given priority to solve water submersion in habitat areas. Accordingly, projects of consolidating toilets in individual household and treating sewage in water drainage network must follow the antecedent area-drainage project.

If sewage disposal happens to be delayed amidst densely-populated areas, the delay threatens to induce contamination of groundwater, thus plans should be formulated taking recent trend of demographic rate into account. In particular, due to an increasing trend of annual precipitation during these couple of years, water submergence taking place within villages during rainy season in the communes in Errachidia, Goulmima and Erfoud lying along major streams or in lower altitude areas has been escalated making the areas in unsanitary state. This has lead to pressing need for laying and installing ductile or vinyl chloride pipes with large diameter as well as drainage pumps for village-wide drainage. In this connection, sewage slurry generating from the treatment of drained sewage can be treated in fermentation ponds and it can be utilized as organic manure for sale to those who are engaged in horticultural activities after thorough fermentation.

1.4.4. Improvement on farming and livestock

1.4.4.1. Farming

(1) Constraints related to low productive and way of raising productivity of crop

1) Coping measures with Small-holding: Arable land area per existing household is too small to subsist it only by farming activities. In so far as measures of expanding arable land are not available, there is no concrete means to cope with other than promoting off-farm shifting policy with poly-technique education as other countries follow to minimize surplus farm population. No substantial effect will be able to expect in improving crop productivity so far as there is a limit in mobilizable resources like water.

2) Coping measures with low yield levels; Yield levels of crops are variables of many yield determining factors including climatic environment, crop hazards, cropping techniques, farm input levels and adequacy of current input contents etc. Effective solutions to rectify low crop yield can only be extracted from proper evaluation on current cropping situation. Diagnosis by extension staff on the evaluation of these factors by farm household is desirable though number of staff at the Commune level is too few to cover all the farm households. Individual farmers can evaluate themselves if they are trained how to carry out own diagnosis on their own crops they are now cultivating.

3) Coping measures with lack of basic knowledge and information on agricultural production; Most of farmers have learned their farming techniques through only experiences handed down from their parents and neighbor-farmers and nothing more than that. It is therefore difficult for them in introduce new techniques unless intervention by outsiders is made to solicit or advise them. Study tours are useful and informative to rectify such narrow scope of sedentary farmers, but such tours cannot be planned and arranged individually. Besides, there are a number of bottlenecks in obtaining access to new information, new techniques and knowledge including literacy, sectionalism of rural societies etc.

4) Establishment of group to solve problems by farmers themselves; After all, the only way of solution they cannot help choosing is to organize themselves by their own initiatives in a group, association or cooperative so that the members share obtained information on crop/ livestock production, climate and other farming environment, marketing intelligence etc. or plan and arrange a group study excursions, or a group training by an extension staff, or a group discussion on how to avoid and ease damages by natural disasters and hazards. Activities that can be improved through group-orgnization include a) to share or distribute available resources existing in the area, prevention of or protection from disaster damages etc. b) in cases where

objective-oriented groups are organized by the inhabitants who have the same aims, such as farmers keeping the same species of livestock, cultivating the same crops who take concerted actions in order to pursuit common interests on their production/ sale., c) water user's association managing an existing irrigation facility.

5) Premises for smooth and sustainable group activities

It is firstly prerequisite providing all the members opportunities of participating to group activities and presentation to keep solidarity in the group activities. At the same time, duties should be imposed while rights should be vested to the members in a way as equitable as possible among them, also interests are distributed according to the contributions by each member are preconditions for maintaining and developing group activities.

6) Promotion of group organizing by zone (according to the zoning of this Study)

As contents of agricultural activities suitable to individual zone vary with natural as well as socio-economic conditions therein, it is required to plan group activities and to put them into concrete actions in conformity with the conditions on local industrial development. Common conditions on local industrial development to individual zone are tabulated as follows:

Commonly observed conditions on agro-related industrial development by zone

Zone	Climatic/ Vegetation	Topographical	Water availability	Infrastructure
Mountainous Z.	Cold but humid/ dense	Valley with steep slope	Considerably available	Very poor, land-locked
Plateau/Piedmont Z.	Mild semi humid/ medium	Undulating	Mostly in short	ditto
Intermediate Z.	Mild but dry/ sparse	Undulating ~ flat	Short and declining	Higher availability
Plain Z.	Hot and dry/ sparse	Flat ~ gently inclined	Scarce	Medium availability
Desert Z.	Hot, dry, windy/ arid	Flat with some hills	Very limited supply	Sparsely located
Zone	Agricultural activities	Livestock activities	Agro-marketing business	Processing business
Mountainous Z.	Orchard with intercrops	Small, barnyard-fed herd	Temperate fruits, meats	Lack of materials
Plateau/Piedmont Z.	ditto	ditto	Temperate fruits, honey	Olive oil but limited
Intermediate Z.	Dates/olives with cereals	Grazing cattle & shoats	Dairy, vegetables, dates	Dates, olive oil
Plain Z.	Dates with intercrops	Mostly grazing shoats	Dates, olive but very few	Henne, cumin
Desert Z.	Cereals/ cumin/ fodder	Grazing shoats, camels	Lack of commodities	Lack of materials

Source: JICA Study Team

The above table indicates that the most suitable situations for organizing group activities are found in intermediate ~ plain zones and this is also observed in the number of established organizations by zone in the following table.

Among these organizations some has already been liquidated or dormant but such figures have not been available. If all these organizations are active, the rate of household (assuming a rural household participates as a member of organizations) participation is 17% for cooperatives, and 28% for associations. However, there found a conspicuous bias in the distribution or the rate of affiliation of households to cooperatives and associations. As shown in the below table, the rates are high in mountainous and plateau/ piedmont zones, particularly the rate reaches 57% in plateau/ piedmont zone, implying that more than half of existing households have already been organized. In contrast, the rate of affiliation has a tendency of descending down as the location of areas shifts to further south. The rates are less than 10% in intermediate and plain zone, while no organization has been reported in desert zone. As concern numbers of organizations per commune, intermediate zone has the highest number per commune, while other zones except desert zone have similar density thereto with less population/ commune.

This difference among zone is partly attributed to the density of population or villages because the more sparsely inhabitants dwell the less mutual collaboration in economic activities is possible. Another reason may be rooted in lack of infrastructure including road and water network in the south in comparison with that created in the north. As observed in the below table, a larger percentage of organizations is occupied by irrigation related ones, i.e., above 50% of the cooperative members and 80% of the members of associations are engaged in group activities related to irrigation water management, but in the south, such facilities are rarely found. Numbers of farm-related organizations and their affiliants are given in AnnexEE.

7) Rational and intensive utilization of local resources and measures against disaster damages

The available amount of resources in the Study Area, such as land, water, vegetation etc. is scanty as compared with the scale of local population that tends to degrade and deplete year by year, as typically observed in the case of serious depleting symptom of groundwater resources in plain zone. For instance, inhabitants used to plant reed for fencing, which develops roots deeply and laterally, thus thriving into a colony and robbing incessantly soil moisture. Along streams, huge colonies as tall as 3m or so develop stealing moisture and nutrients from nearby orchards and cereal plots. Effective measures to ease drought damages include the procurement of supplemental watering sources such as digging wells, while countermeasures of controlling wild mice include simultaneous crushing mice sheltering holes by all the farmers in a tract of farmland. Averting floods can be achieved to construct a long flow conducting wall while pests and diseases control also needs joint fumigation for make it effective. In short, these measures are difficult to realize in villages where no farmers have so far been organized.

Frequency of major agricultural disaster/ damages (unit：annual rate of occurrence for a decade)

Zone / Item	Drought	Flood	P & D**	Others
Mountainous Zone	0	0.1	0.2	1
Plateau/Piedmont Zone	0.2	0.7	0	0.6
Intermediate Zone	0.4	0.1	0.1	0
Plain Zone	0.6	0.1	0.2	0
Desert Zone	0.8	0	0	0.5
Total Erracidia Province	0.4	0.2	0.1	0.4

Source: Socio-economic Survey * Others include damages by desert hoppers, invaded livestock

** General pests and diseases except desert grasshoppe

Salinity, commonly found in many countries in African continent is induced by both natural and artificial causes, giving damages to crops. In the Study Area, the severer salinity takes place the more areas are located in the south, in an increasing order “intermediate zone, plain zone and desert zone”. The incidence of salinity becomes frequent as annual rainfall becomes scarce, and the places with frequent occurrence of salinity are concentrated in: i) farmland with saline soil layer(s) lying near the ground surface, or ii) that irrigated with saline water (often it arises from irrigation by saline groundwater or salts dissolve in irrigation water when it flows in earthen canal).

Preventive measures from escalation of salinity damage in already saline areas, in the case of the above i), it is essential to refrain from expansion of farmland area that can foster higher requirement of leaching water for desalinization, as well from crop intensification that tends to augment evapo-transpiration from the ground surface leading often to the acceleration of surface salt accumulation. In the above stated 3 zones, great possibility of salinity appearance exists, even though it were not yet currently visible, whenever wells are dug or to increase frequency of pumping from the existing ones. In the case of the above-referred ii), finding countermeasures is awfully difficult other than switching to another salinity-free water source or shifting farmland to less saline land. Since most part of African continent including northern had once been under an ocean for millions years, later it was elevated to the current state, there remains such salty areas both in coastal and in inland parts as saline wet land called sabkha, salty lakes and salt ore deposits have been formed. Judging from this reality, it can be concluded that it is difficult to find arid area free from salinity problem. Even if new farmland were reclaimed with new wells salinity would sooner or later emerge only if over-pumping is continuously practiced. Once salinity emerges, a long period with much labor and cost would be required for desalinization or insulation from salt sources. In such a case, there would be no other way than

continue onerous efforts of desalinization by switching crops according to the degree of salinity into tolerant crop species/ varieties already explored in such arid zone agriculture research institutes as ICRISAT (Institute of crop research in semi-arid and arid tropics), by adopting such cultivation methods as high-ridging specially applied to saline areas.

Water harvesting is a versatile method of preventing occurrence of salinity hazard in potential salinity areas, of retarding floods, of facilitating recharge of groundwater etc. This is realized artificially by innumerable small water basins that intercept rainwater draining channels over ground surface inside and around arable land. These basins are effective in temporarily storing rain water and let it permeate into the ground during and after rainfall on gently sloped land. To provide basins, the ground is partitioned and surrounded with ridges and stone-hedges called cordon-pierre where pebble and stone are piled /heaped in a row and choked cavities with clay smearing. Similar water storage and permeating effects can be expected by creating weirs inside the flow beds of small oueds/wadis with stone piling in a traversing way and such water harvesting can provide higher effect in plain zone and desert zone where annual precipitation is low but torrential rain would take place.

Such fundamental edaphic improvement as listed below is worth considering though the choice of crop species is eventually at the hand of individual farmers and also depends on their marketability or is determined whether consumers including farmers themselves demand for the crops. Therefore, crop diversification is closely related with diversification of foods on consumer's table, of farming activities etc;

i) Application of crops with short growth duration resistant to drought: sesame, garlic,
ii) Summer fallow planted with wild shrub "*Atriplex*" followed by animal grazing,
iii) Crop diversification with leguminous species such as berseem clover, ground nut, as well with annual crop species that can be repeatedly cropped in the same plots, like onion, henne, cumin, rutabaga etc.
iv) i) of the above can be applied in the case where use of irrigation water is tight, ii) is useful when soil fertility is not suitable to try crop diversification, while iii) can be introduced to remote areas where farmers can hardly count on variable seasonal market demand.

All the issues and measures stated in the above paragraphs can be zone-wise categorized into 5 zones as in the following table.

Proposed improving measures versus tasks on farming by Zone

Zone	Mountainous Zone	Plateau-Piedmont Zone	Intermediate Zone	Plain Zone	Desert Zone
Problems of too narrow farmland size	Too scarce land available to expand size	The same as in the left	The same as in the left	Size may be expanded, but water isn't procured	The same as in the left
Measures against the above	As an alternative, yield can be improved by increasing manure, roration with fodder etc	The same as in the left	By yield improvement, shift to more suitable species/ varieties, crop diversification etc	By yield improvement, also with diversifying by species of drought or salinity tolerance	The same as in the left
Prob. of water sources	Hard to procure sources	The same as in the left	Variable availability	The same as in the left	Short in surface/G.W.
Measures against the above (G.W.= ground water)	Providing many small scaled multi-purpose dams with flood control	The same as in the left plus rehabilitation of existing seguia/ khettara	Flood harvesting canal to divert into Bour, re pairing seguia/ khettara	The same as in the left	Application of water harvesting introducing legal control of well use
Problems of farming environment	Frequent flood damages on farm in narrow gorge	Water facility dilapidated thriving useless weeds	The same as in the left	Escalated saline areas, increased water salinity	The same as in the left
Measures against the above	Flood protection wall for farm liable to damages, shift farm to higher land	Repair intakes, provide recharging dams, weed control to widen space	The same as in the left	Control of over-pumping, creating recharging dam, applying desalinization	The same as in the left
Farm technical problem	No pruning for apple	Aged olive orchards	Short livestock feeds	Prevalent date disease	mono-cropping hazard
Measures against the above	Thinning of densely planted trees, also pruning & reshaping	Regenerated planting of suitable varieties for planned harvest usage	Crop rotation improved using such fodder crop as rutabaga, berseem	Promotion of making use of anti-Bayoud ORMVA/TF varieties	Diversify with salinity tolerable crops or free from mono cropping h.
Prob. of crop diversity	Limited fruit varieties	The same as in the left	Low oil content in olive	Diversified date vars.	Few crop availability
Measures against the above	Diversify varieties with those of different maturity	Use walnut & pistachio for nut diversification	Introduce high oil-content Euro-varieties	Replace infected trees with tolerant varieties	Use drought resistant ones like sesamum
Prob. on pests/diseases	Attack by desert locust	Escalating rat damages	Esc. Termite damages	Esc. Bayoud damages	The same as in the left
Measures against the above	Forecasting /joint spray are timely applied	Joined eradication of proliferation habitats	Basin I. around injured trees by repelent liquid	Replace crop species, or other resistant vars.	The same as in the left
Problem on soils	Disaster-urged erosion	Futility by over-drying	Intesive cropping hazard	Gradual salinization	The same as in the left
Counter-measures	Create masonry protection walls	Apply heavier organic matter to dried field	Recover fertility with rotation with forage crops	Take measures to block salinity intrusion by sheet	The same as in the left
Tasks on water saving	No particular problem	Saving at intakes	Groundwater saving	The same as in the left	The same as in the left
Measures against the above	No particular measures required	Equitable gate operation by hired third party	Use of groundwater be liable to pay tax by Vol.	The same as in the left	The same as in the left
Issues on extension (ORMVA coordibation)	Extension useless in rectifying present disparity	Staff never visits due to lack of service depot	Too many target farmers even if 2 depots available	Extension useless in rectifying present disparity	Staff never visits due to lack of service depot
Measures against the above	Install diffusion target on poor farmers levels	Intensify itinerant service with increased visiting	Organize farm groups for facilitating training	Install diffusion target on poor farmers levels	Intensify itinerant service with increased visiting

1.4.4.2. Livestock

Issues and principles of development plan in livestock sector at each zone are summarized as below.

Summary of issues and principles of development plan in livestock sector at each zone

Zone	Issues on livestock
Mountainous zone	Short feeding resources for grazing by nomad invasion, drying of grazing land and poor supply of cultivated and self-supplied forages Diseases and parasites often affect livestock herds No preventive measures are taken with seldom visit of veterinarians Few heads of dairy cows with scanty lactation, consumed only at home Apiary has so far been least modernized Lower share of livestock in farm economy than in other zones, with lower synergic effect by combination of farming with animals
	Less fodder crop is incorporated in crop rotation Less draught cattle/ horses are utilized in farming practices

Plateau and piedmont zone	Narrower grazing land is available for villagers No itinerant visit of extension staff and veterinarians Fewer nectar flowers are available for bee-keepers
Intermediate zone	Declining acreage of fodder cropping in rotation Due to limited processing capacity, marketing loss of animal products result Diseases and parasites often affect livestock herds Itinerant visiting services of extension staff and veterinarians are seldom made Degraded grass on grazing fields
Plain zone	Prevalence of arid climate limits development of grazing resources Due to poor environment, very few heads of cattle are fed by fewer households Poor natural environment has kept vegetative cover as low as 30% or less Commercial meat production has been concentrated on camel grazing, while very few heads of beef cattle are fed for cash income. Poor supplying base for feed resources has kept livestock herd size undeveloped
Desert zone	Prevalence of desert climate as well as over-grazing checks development of grazing resources Soil salinity has limited growth of grazing grass, affecting also animal health Shortage in self-supplied fodder to keep desirable herd size

The following includes proposed measures by zone to cope with issues constraints in each zone.

(1) Measures proposed for mountainous zone:

As Saharian grass resources has gradually been depleted by increased drying in recent years, nomads increasingly have invaded into this area accompanied with their enormous livestock herds, thus causing conflicts on farming and grazing. The zone has comparatively stable feeding base with rotational cropping of alfalfa followed by the most stable intermediate zone, however, it is forecast that the above-stated change in grazing pressure would inevitably lead to absolute shortage of livestock feeds. With a view to augment yield levels of fodder crops, it is proposed to regenerate currently cropped alfalfa every two years.

(2) Measures proposed for plateau-piedmont zone:

Feeding base of livestock kept in this zone has been vulnerable because of less fodder crop in crop rotation. Hence, it is proposed to increase fodder portion in rotation cycle, that is, relay crops such as rutabaga and rape with very short growth duration can be sown during the period of snow thawing in early spring. Also, hay-lage processing in autumn with maize stovers just after its harvest is recommended for winter feed.

(3) Measures proposed for intermediate zone:

This zone is characterized with a little wider arable acreage per capita than that in other zones, but annual rainfall is scarce with great variability. Feeding base of livestock has been most stable among 5 zones partly because fodder crops are employed at higher rate in crop rotation. Since the mean yield of alfalfa remains in low levels, it is proposed trying to diversify fodder

crops, with simultaneous yield improving measures of preparing and applying farm-yard manure. Though the zone has poor specialty crops but it has larger acreages such leguminous crops as broad bean, thus it is desirable to promote leguminous crop production also for providing residue for feed that has higher feed value than other crop species.

(4) Measures proposed for plain zone as well as desert zone:

As a local issue, depleting trend of water sources for khettara has become serious. Livestock has not been much engaged by farmers in this zone, and particularly bovine cattle are seldom fed due to poor feeding environment. Over-grazing is another serious issue in this zone because both settled villagers and visiting nomads utilize grazing area in this zone. Accordingly, planting of browsing trees is proposed in order to mitigate over-grazing. As relevant browsing shrub specie, Atriplex is under trial in INRA that is highly resistant both against drought and salinity, so it will suit the prevailing conditions in this zone. At the same time, it is proposed for transhumant livestock to provide herd watering wells and installation of dip tanks to prevent parasites and control contagious animal diseases.

(5) Proposals without specifying particular zone:

Promotion of AI: Short human resources are considered as one of the reasons keeping the Study Area backward in introducing selected high-performance livestock breeds. Hence, it is proposed to nurture and train technicians making use of such opportunities as training courses or OJT. AI should cover not only for cattle or cows but also for sheep.

Model center of livestock feeding: The climate of the Study Area has a large variability including semi-arid, semi-humid and Saharian desert climate in the south, but varieties of livestock suitable for these climatic conditions have not necessarily been introduced and utilized in conformity with these climatic characters. Thus, it is proposed that through the establishment of model centers of livestock feeding in each of these areas with different climatic character efficient feeding management can be practiced by adopting suitable feeding and fodder cropping practices.

1.4.5. Tourism

Current tourism in the Errachidia province has two core destinations. First one is the desert tourism in the south area, Merzouga in Tauos Commune. The target market is foreign package tour tourists. They have short stay over nights. The other one is Imilchil commune in the northern mountain area, which is famous for its wedding festival and cool summer good for

resort. An important tourism development policy is that to further develop these cores and make other cores in various places in the province, so that many local populations can receive income from tourism industry.

The Study Team proposes the following basic strategies for tourism development,

- Development of community tourism which does not require any big investment (for example, accommodation shall be "bed and breakfast" which uses existing private houses instead of big hotel facilities)
- Development of local-life-experience type of tourism with programs of ordinal local activities rather than conventional pleasure trip
- Tourism that offers second income to many local households rather than small number of full time workers
- Local associations shall take initiative in tourism development as regional development activities rather than profit seeking tourism businesses lead it.

Frameworks of tourism development in each zone are as follow;

(1) Mountainous Zone

Imilchil Commune did have neither paved roads nor electricity when it started wedding festival in 1990s. However, infrastructure has been much improved in recent years, accordingly, the festival become bigger and bigger. Now it is a huge summer events with music concert and other programs. Imilchil has as many as 10 orberges (simple restaurant and accommodation for tourists) and active in tourism. Morocco has hot summer; therefore, the cool atlas mountain communes are good for summer resorts.

Geography of the mountain gorges

A direction of tourism development is to make the mountain area an all-year-around destination with many tourist programs in the communes around Imilchil, which has a good advantage of tourists mobilization power. Tourists programs may include sport oriented ones such as trekking, agro tourism such as apple harvesting, research tours of geology, etc.

(2) Plateau Zone

The main road that connects Meknes and Errachidia passes plateau zone, therefore, this zone has better access than the mountain zone. There are almost no inbound tourists to this area, comparing mountain zone. It has some potential of small scale tourism development for agro tourism. For example some farmer's houses may accept tourists as "bed and breakfast". During day time, tourists enjoy experiencing life of local farmers such as apple and honey harvesting, milking cows and goats, shopping on the back of donkey, etc. However, in order to make this happen, a series of well organized activities are required, which include improvement of houses

(clean toilet and bedroom, enough capacity of water boiler for hot shower), training on cooking and hospitality, planning of experiencing programs and promotion. In addition to that, the plateau zone has hot springs and grottos; therefore, programs of 3-5 days can be easily prepared.

(3) Inter-mediate Zone

This zone has good access road both west to east and north to south with rich tourism resources, however, tourism has not much developed here. Secenery of oasis, appearance of ordinal buildings and people are very exotic to the eyes of visitors from Europe, America, and Asia. A series of programs to stay in traditional ksar or kasba houses and experience oasis agriculture, hamame, local foods, and local dressing can be potential products. This is a kind of dissemination of what Japanese Volunteers are implementing (home stay in local Berber house) in a small scale in Ghrris Oluoui.

Oasis in the Inter-mediate Zone

(4) Plain Zone

A tourist hotel in Erfoud

Tourism resources in the Plain Zone are oasis, traditional ksar houses, etc which similar to the Intermediate Zone. Local population are more conservative therefore, they may not easily receive tourists to their houses as business activities. Because equipment of toilet and shower may not be accepted by foreign tourists and male tourists might disturb the privacy of the female family members. However, there is a concentration of tourist hotels around the town of Erfoud. Development of diversified tourist programs as optional tours for the visitor to these hotels is an important strategy. Tour idea includes historic tours that visits Sijilmasa ruins and mausoleum of Ali Sherif (the ancestor of the royal family), Fossil tour that visits fossil mining sites and processing workshops, visiting local family tour that includes lunch in traditional house and shopping in the huge Rissani market.

5) Desert Zone

This zone has huge desert with little vegetation cover which discourages agriculture and livestock, thus, anticipation to tourism business is rather high potential. There are many small touruism businesses around Merzouga in Taous Commune. Even in Sidi Ali, which is regarded as a very isolated part of the country, there are some auberges (simple restaurant and accommodation for tourists). Small group safari tours that travel in the desert with 4wd vehicles

are popular. Tour products are sold as “Club Cameleon 4X4”, “Tundra Adventure”, etc. The tour route is a trail that starts from Merzouga in Taous Commne, passes Taferaute in Sidi Ali Commune and leads to Zagora. Trail is not a paved road but just wheel ruts.

A methodology of tourism development is to make the stay of safari tourists longer. They just make one night stay in each village. Their stay can be longer with appropriate programs. Taous should develop variety of tourist program upon the existing desert tourism. On the other hand, Sidi Ali should sustain the periodical events such as rally race and desert marathon events. Also it should be developed as all year around destination of the safari caravan style tourists who come with group of 4wd vehicles. Promotion to motor-bike tourism groups, movie shooting groups, academic groups of geography and geology may make effects also. However, tourism development need well organized promotion, therefore, the local government together with local tourism business persons should set up a tourism organization or at least tourism committee.

A tourist camp of Berber style in Sidi Ali

Directions of the tourism development in each

Zone Name	Commune Name	Direction of Development
Mountainous Zone (8 Communes)	Imilchil, Bou Azmou, Outerbat, Amouger, Ait Yahya, Ait Hani, Assoul, *Amelagou*	Tourism resources Clear air, Cool weather in summer, snow in winter, beautiful canyon along Agouri river, rocky hills, Isli lake, Tislite lake, events such as weddingnfestival and music concerts, caves, orchards, live stock, apiculture, traditional ksar houses Direction of Tourism Development ・Improvement of road and access from wounding areas ・More events for fame ・Development of ・Development of mountain related program such as trekking, rock climbing, cave exploration ・Agro tourism program such as apple harvesting ・Promotion of academic tours such as geology
Plateau/Piedmont Zone 、 (7Communes)	*Gourrama,* Guir, Guers Tiaalaline, M'zizel, Sidi Ayad, N'zala, Zaouiat Sidi Hamza	Tourism Resources Hot spring of Hamat my Ali Cherif and Hammat my Hachem、Handicrafts, traditionla ksar housing, ordinal life culture of local peopele（food, hamame, language, religion,, hennna body painting, celemonial events, Dirention of Tourism Development ・Improvement of hot spring facilities ・Development of agro tourism program such as vegetable and fruit harvesting ・Experience program of local life such as donkey back riding, taking care of livestock, etc.
Intermediate Zone、 (13Communes)	Kheng, M'daghra, Aoufous, Aghbaloun'k, Tadighouste, *Ghriss Ouloui*, Ghriss Soufli,	Tourism Resources Oasis, irrigation agriculture, traditional ksar houses, local life and tradition, handicrafts Directon of torism development ・Agro touruism in osis (harvesting and packaging of olive and dates)

	Ferkla Soufla, Ferkla Oulia, Melaab, Fezna, A.Sebbah.Ghriss, Jorf	・ Preservation of traditional ksar housing and diversion to tourist accommodation ・ Program development of handicraft workshop for tourists
Plain Zone (9Communes)	Alnif, H'ssia, M'ssici, Rissani, Bni M'hamad Sijilmassa, Sfalat, *Oued N'aam*, Arab Seb.Ziz, Sifa	Tourism Resources Fossil, Rissani market, Sijilmasa ruin (ancient town), mausoleum of Ali Sherif, oasis, irrigation farming, handicrafts, traditional ksar housing, life and tradition of local population, Direstion of Tourism Development ・Development of fossil mining and processing ・Programs of local life experience such as home stay, shopping in local market, public bath, cooking ・Agro tourism program in oasis ・Program of memorial day for Ali Sherif
Desert Zone (2 Communes)	Taous, *Sidi Ali*	Tourism resources Desert, camel, various race event, scenery of rocky hills, foccil, life and tradition of local population Direction of touism developemtn ・ Develop tours concerning existing Paris-Dakar car race and desert marathon, Conduct another races. ・ Promotion to movie shooting teams, academic groups of geography and geology. ・ Various program with theme of desert (sand-ski class, flying balloon, para-sailing, observation tour of fauna and flora in desert, star wayching, camel cuisine) ・ Improvement of road and telecommunication infrastructure, for motorbike tourism groups

1.4.6. Education and Health

1.4.6.1. Education

Based on the analysis of the situation of education in Morocco and in the Errachidia province, and on the analysis of constraints and potentials based on the Zoning, the following priority areas of development in the education sector can be proposed. The summary of the priority areas is shown in Appendix5 Table 1.4.2. Most of the proposed interventions are feasible under the purview and capacity of school level administration, communal administration, or provincial educational administration. Resources that can be tapped into would include the funds from INDH Program, the budget of the education delegation, commune development budget, local associations, women's associations, school fee collection from parents, contributions solicited from neighboring community, parents and guardians of children association, school committee, and so forth.

(1) Achieve gender equity in primary education

This priority area focuses on promoting an equal gender balance in primary education enrolment. Gender imbalance is more acute in the Mountainous and Plateau Zones, and should be given special attention. Most of the activities are possible by the communal or school-based effort in partnership with local associations, and without much external support. Sensitization of

commune members and the follow-up of unregistered children can be planned and implemented under the commune's development plan. These activities are particularly important since it directly contributes to the achievement of the Government's 100% Net Intake policy. Accurate population and schooling information in SIC database will provide valuable information as to how many school-age children are in the commune and how many are actually studying in their schools. The provision of literacy classes is generally in high demand in rural areas, and provides female adults with a unique opportunity to be familiarized in the school environment and then become supportive to girls schooling. School premises offer an ideal environment for literacy classes. The external support from INDH Program or the Education Delegation should be applied for the construction of toilets and the construction of pre-schools.

(2) Achieve gender equity in lower middle and secondary education

This priority area's interventions tend to require larger financial resources. The fund from INDH Program should be actively sought out by the communes to facilitate the construction of dormitories or purchase of school buses. Along with those fund raising activities, effort should be aggressively made by school stakeholders to encourage parents of female primary graduates who passed the national exam to allow them to go to a lower-middle school. The target indicator should be set on the transition rate from primary education to lower middle education, which is the rate of successful primary education graduates continuing on to lower middle education. A rough calculation by the Study Team based on the 2008 statistical data estimates that the current total transition rate in the province is roughly around 87% - 89%, and the female transition rate is roughly around 84%-85%. There seems to be, however, a large regional variance across communes. The national total transition rate from primary to lower middle education in 2005 was 77% (UNESCO, 2009)

(3) Raise quality and reduce repetition in primary education

This priority area requires a set of different interventions that are catered to and responsive to different environments and needs of each school. In order to tackle the issue, it is firstly needed that all the teachers have a good awareness that the current situation of repetition is indeed a big problem. Then an intensive investigation should be carried out as to what the causes of repetitions are. The provincial education delegation and communes should step up the effort to raise the sense of emergency about the repetition issue among school stakeholders as well as among parents, and urge schools to make extra effort to reduce repetition. Since this is such a complex issue, research and technical assistances might be needed to design and pilot effective countermeasures to raise the quality of education, improve educational attainment and hence reduce the repetition rate.

(4) Eliminate drop-outs in primary education

Primary education is mandatory and rights for every Moroccan child. Schools and communes should follow up on the cases of long-term absenteeism, and encourage them and their parents to come back to school. Continuous close follow-up and encouragement can often succeed in keeping students in school. However, in some cases of remote schools or harsh environment, extra measures may well be needed. The target indicator for this issue should be set as zero drop-out in primary schools. (*exclusion is a different concept. exclusion from a primary school happens on the fourth repetition.)

(5) Raise quality and reduce repetition in lower middle and secondary education

From the perspective of educational economics, repetition in lower middle or secondary education can be deemed more damaging because in these two stages of education the annual cost per student is generally much higher than in the primary education stage, and extra years students have to spend due to high repetition means a large quantity of resources lost that otherwise could be used for other urgent educational issues. In case of exclusion at the final year, the educational wastage would be the greatest.

The same kind of approaches as tackling repetition in primary education would be needed.

(6) Improve school management capacity

Improvement of school management capacity is an essential, indispensable element for school improvement. Promoting the community participation in school improvement process is especially of great importance as a driving force of school improvement because it will hold school management more accountable for their educational services, and also can contribute to raising the fund for activities and to sensitizing community members. Good school management capacity serves as a solid foundation that all the educational interventions must rely upon and be built upon if they are to be effectively implemented.

Until 2006, JICA had had a pilot project that focuses on improving school management capacity at the school level as well as at the provincial and regional level. Re-activating the project in a larger scale in primary education or lower-middle education would likely create a very unique opportunity to build schools' capacity and place schools as one of the key powerful development players under the synergy effect with the communal development plan and strategies.

1.4.6.2. Health and hygiene

Each priority area (strategy) is briefed in the following where, as basic direction, all the stakeholder

agencies (province, delegation offices, communes, inhabitants, development partners etc) should closely coordinate one another so that efficient actions can be developed in terms of fund utilization and technical application, thereby envisaging creation of supporting systems by the collaboration between official and private sectors. Priority areas and possible activities in health and hygiene sector are described in Appendix5 Table 1.4.3.

(1) Improvement of environmental hygiene

The entire rural areas in the province are selected as targeted areas for this improvement with the priority attached to mountainous as well as plateau/ piedmont zones where modernization of kitchen and toilet has been delayed. The contents of this activity include campaign for raising awareness and enlightenment of the inhabitants targeting all generation, hygiene education especially targeted at women dealing with health care for family members and environmental hygiene also targeted at men. In educating hygiene, instruction should include how to arrange toilet and to install kitchen, further introducing routine cleaning of toilet and kitchen in the activities of hygiene education. At the same time, targeting at children who will become leaders in the next generation, hygiene/ environment education is carried out in a school curriculum and hygiene/ environment club is established. Also, it is recommended to associations and cooperatives to extend their activities of environment and hygiene.

(2) Improvement of medical care for expected mothers

It envisages capability of inhabitants concede and deliver with ease. In the first place raising awareness of women on the importance of family planning and regular medical checks for maternal women are pursued. Besides, in rural areas, itinerant, circuit medical services are recommended so as to create favorable environment for expected mothers to get medical consultation. Also, lateral expansion of the maternity class that JOCV of JICA introduced is called for to SIAPP.

(3) Capacity building of human resources

Under the current conditions where shortage of human resources has led to depleting number of doctors who are engaged alone in public clinics and medical centers, the staff of medical services is obliged to send life in a close society amidst a closed environment. To cope with it, advanced areas should be visited and seminars should be held among stakeholders of medical services where cases of disease infection are introduced and regular forum for information collection on up-dated medical techniques and exchange opinions are made. Besides, the forum gives at the same time capacity building for CBOs including associations that render activities in the field of maternal medical services thus empowering civil society.

(4) Improvement in the effects of medical services

Awareness of the inhabitants has to be raised so as to avert their self-adjustment on the treatments of sicknesses or on preventive vaccination, to make it a rule to visit clinics on the pre-determined day and to recognize importance of consulting with doctors. Also, circuit medical services should be introduced so that as many inhabitants can receive medical services.

(5) Consolidation of medical facilities and equipment

Since HD of the province has already been implementing the plan in line with its action plan (2008－2012), it continues to proceed the program in compliance with the direction of the action plan in closer collaboration with development partners.

1.4.7. Livelihood and Living Condition Improvement

Development strategies for livelihood activities in entire Errachidia province and each zone are drawn up and the results are summarized in the table below.

(1) Entire Errachidia Province

Strategies in the table below indicate policy level requirement for livelihood enhancement at the provincial level. Under the limited condition of development budget and human resources particularly in the rural areas, selective and intensive support to the locally specialized products is inevitable to enhance people's livelihood activities effectively. For this concern, appointment of production place of the locally specialized products, establishing support policy to the producers and development of support program are required. In addition, collaboration and harmonization among developmental agencies would be essential in aiming at enhancement of efficiency and effectiveness of intervention.

Development Strategy for Livelihood Activities in Errachidia

	Strategy	Project
1	Selective and intensive support to the locally specialized products	- Appointment of production place of the locally specialized products and establishing support policy to the producers - Development of support program to the production place (technical support, quality improvement, financial support) - One commune one products movement
2	Promotion of food processing industries using locally specialized products	- Development of support program for processing industry - Development of processing method for light weight and compact, but high-value-added products at research institute
3	Establishment of marketing channel to both external and internal market	- Organizing fair for the locally specialized products at provincial level - Advertisement of the locally specialized products at national level - Development of support program for sales center
4	Enhancement of production environment	- Development of support program for community based disaster prevention/ mitigation activities
5	Enhancement of private sector and	- Development of entrepreneurial education policy (curriculum,)

	CBOs to increase competitiveness	- Promotion of entrepreneurial education (business skill improvement, financial support, overseas training, study tour, TOT, organization enhancement)

(2) Mountainous Zone

Climate condition of the mountainous zone is suitable for apple production, and the total production volume exceeds total consumption of the province. Therefore, selective and intensive support of apples enables farmers in the mountainous zone to increase more income from their sole profitable products. However, apple farmers in the region tend to sell their products at cheaper price before harvest, since they do not have marketing channels, facilities, and experiences, hence leaning heavily upon outside traders. In this regard, establishment of cooling system for apples, enhancement of collective marketing of CBOs to outside province, and development of processing technologies of apples are ideal project component of the IGA in this zone.

In addition, honey is one of potential products of this zone, since honey from Thyme is transacted at high price in coastal regions, and many household in this zone have experiences in apiculture traditionally. Therefore, honey can target the external market in addition to the internal market. Potato is also dominant products in Imilchil circle, and promotion of its production targeting domestic market such as Rich and Errachidia is effective to increase farmers' income in this zone.

Moreover, promotion of the small-scale processing industry utilizing comparative advantage of the region, fallen apples and honey products for example, expands economic activities of rural residents in the zone. Also, utilizing caper and cactus, which are naturally grown in this area, into value-added industry enable farmers to increase their income. For this purpose, institutional research at INRA for example is necessary.

In terms of off-farm IGA, traditional weaving is well-known as specialty in and around Imilchil and Assoul. To maximize profit, establishment of marketing channel to external market is quite important. For this purpose, improvement of marketing means, such as collective shipment of producers, improvement of packaging material to reduce post harvest and transportation losses is necessary. Also, sales promotion of the locally specialized products, including tie-up with tourist industry, participating agricultural fair in Meknes for example, and aggressive advertisement to the urban consumers is quite important.

Furthermore, enhancement of private sector and CBOs are necessary to strengthen their competitive power in the external market. For this purpose, promotion of entrepreneurial education, which includes business skill improvement, financial support, overseas training,

study tour, organization enhancement, and Training of Trainer (TOT) are ideal and effective project components. In should be noted that illiteracy rate in this area is quite high, and consideration to the drawback of rural residents is inevitable when entrepreneurial education is delivered. Summary of development strategy of livelihood development in the mountainous zone is shows in Appendix5 Table 1.4.4.

(3) Plateau/ Piedmont Zone

Same as the mountainous zone, apples and honey are dominant products in the plateau/ piedmont zone. In addition, almond, caper and cactus are promising products in this zone, and promotion of its processing activities targeting both external and domestic market is effective to increase farmers' income in this area. In respect of off-farm IGA, traditional weaving, carpentry and woodwork, and iron processing are the specialty in and around Rich but the number of association/ cooperative on craftwork is limited in this zone, compared to other zones. Therefore, organizing and assisting their capacity-building would be another candidate of intervention.

Establishment of marketing channel to external market enable farmers to gain more income, and improvements of marketing means, including collective shipment, improvement of packaging material, and provision of market information to materialize timely shipment of apples are the basic requirement in this zone. Also, sales promotion of apples, including tie-up with tourist industry, participating agricultural fair, and aggressive advertisement to the coastal areas are quite important to establishing marketing channel to external markets. One of strength of peoples in this zone is proximity to the provincial capital and Rich market. Therefore, they can also target these internal markets to supply apples and other products produced in the zone.

Same as mountainous zone, enhancement of private sector and CBOs are also necessary to strengthen their competitive power in the external market. Summary of development strategy of livelihood development in the plateau/ piedmont zone .

(4) Intermediate Zone

As for IGA of agro-product, dates and olives are dominant products in the intermediate zone, and selective and intensive support to these products is essential to activate economic activities in this zone. However, due to lack of cooling facility of dates, farmers have to sell it at cheaper price, and their products have to have disadvantage in terms of quality in the competitive market, where high-quality dates from foreign countries are transacted throughout year. Also, most olives produced in the province once exported to outside province to be processed in pickles and imported again due to lack of processing facility. Therefore, establishment of cooling system for dates, and development of processing technologies of olive pickles are ideal project component

in this zone.

Dates and olive products can target external market since demand for these products are quite high in Morocco as FAO food balance sheet indicated. Establishment of marketing channel to external market is necessary to gain more profit from dates and olive products, and improvements of marketing means, including collective shipment, improvement of packaging material are the basic requirement in this zone. Also, sales promotion of dates and olives, including tie-up with tourist industry, participating dates festival in Erfoud, and aggressive advertisement to the coastal areas are quite important to establishing marketing channel to external markets.

Concerning off-farm IGA, this zone could be regarded as the most active region in terms of craftwork. There exist almost all activities in craftwork, for instance, traditional weaving, pottery, marble processing, jewelry, carpentry, woodwork, iron processing, and tannery. In addition to Errachidia city, Tinjdad and Goulmima region hold large number of population of craftsmen/ women. Each domain tends to be practiced individually in small-size. Therefore, at first, establishment of association/ cooperation will be assisted. Then, network among domains through association/ cooperative could be effective in strengthening their bargaining power and expanding their marketing channel.

In parallel, promotion of entrepreneurial education, which includes business skill improvement, financial support, overseas training, study tour, TOT and organization enhancement are ideal and effective project components. Summary of development strategy of livelihood development in the intermediate zone is shows in Appendix5 Table 1.4.5.

(5) Plain Zone

Same as the intermediate zone, dates and olives are dominant products in this zone.

With regard to off-farm IGA, in the case of craftwork, this zone has many different kinds of activities as well as in the zone of intermediate. For instance, traditional waving, pottery, fossil processing, jewelry, carpentry, woodwork, iron processing and tannery, are practiced in and around Rissani cercle and Erfoud. In particular, Rissani hold bigger market in Province and craftwork goods are also gathered here.

There is tendency that each domain tends to be practiced individually in small-size. Therefore, at first, establishment of association/ cooperation will be assisted. Then, network among domains through association/ cooperative could be effective in strengthening their bargaining power and expanding their marketing channel.

As the specialty in this zone, fossil/ marble processing is well-known. Number of associations has

established the marketing network nationally and internationally. While the popularity is already acknowledged, improvement of processing technique will enable fossil/marble goods more valuable.

Beside, likewise in other zones, promotion of entrepreneurial education, which includes business skill improvement, financial support, overseas training, study tour, TOT and organization enhancement are ideal and effective project components.

Summary of development strategy of livelihood development in the plain zone is shows in Appendix5 Table 1.4.6.

(6) Desert Zone

Reflecting severe environmental condition for agricultural production, it is difficult to find comparative advantage in agricultural field in this zone. However, henna and cumin can be candidates of appointing locally specialized products. Also, livestock production including camels, goats and sheep are possible livelihood activities since they can survive even in the severe climate condition in the desert zone.

There are two communes in this zone; Taous and Sidi Ali, and socio-economic condition of these communes has different characteristic. Taous has a famous tourist spot, sand dune in Merzouga, and accept foreign sightseers throughout year, whereas Sidi Ali is the most remote area in the province and poverty rate marks the worst even in the whole country. Therefore, tourism-based development is possible in the former, while attainment of BHN is required in the latter. Particularly, improvements of road network, including construction of main road, establishment of road traffic sign, are necessary to develop this area. Also there is no market in the Sidi Ali commune, but establishment of communal market is not realistic due to less transaction volume of commodities. Therefore, establishment of association for collective procurement of daily necessities from Rissani market, in addition to association for processing of agro-products (henna and cumin) are important.

Having cited above, Sidi Ali is located under severe natural and social condition. However, people points out the potential of natural resource to be developed, in terms of fossil/ marble processing and desert, panoramic view for tourism. Moreover, as social resource, traditional weaving is acknowledged. Summary of development strategy of livelihood development in the desert zone is shows in Appendix 1.4.7.

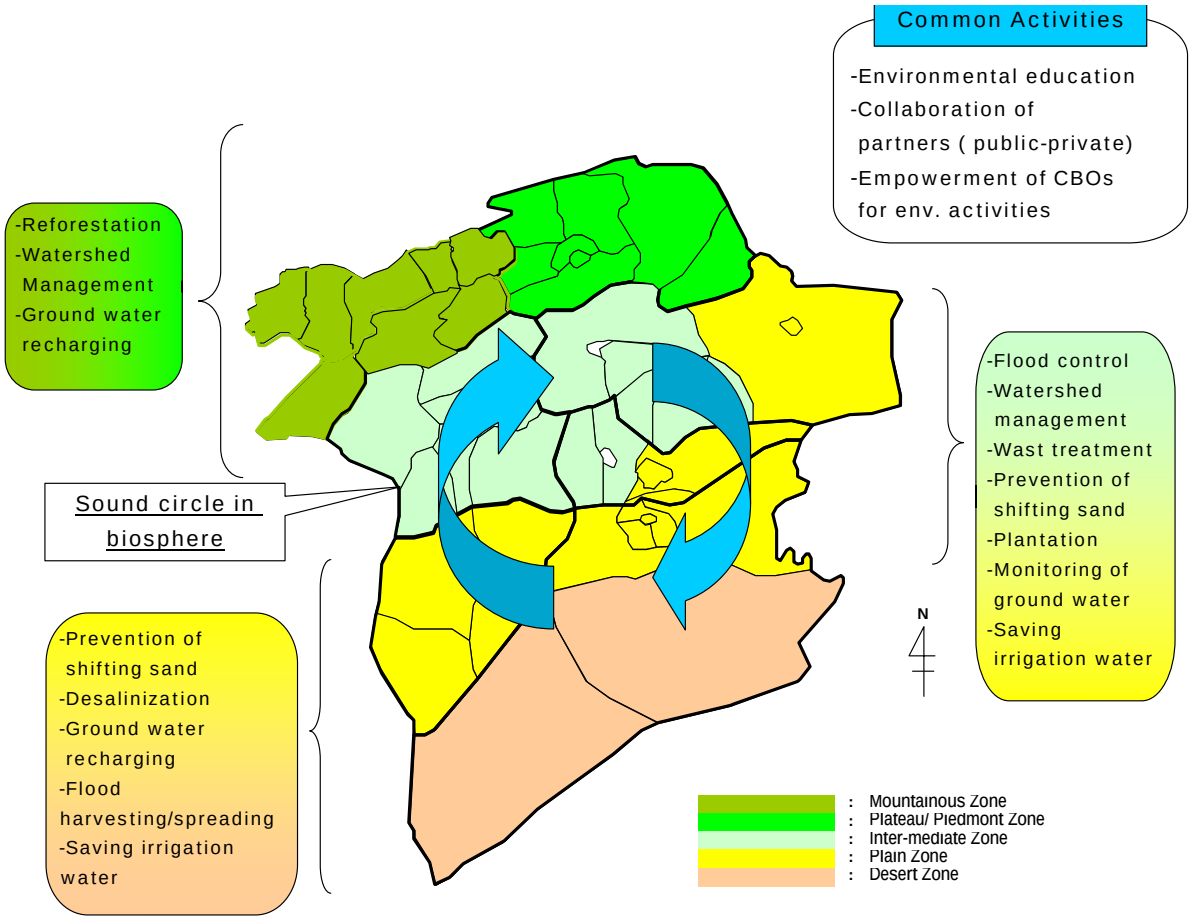
1.4.8. Environmental measures

(1) Principles of development plans by zone

Countermeasures to be taken in correspondence with the above-cited issues are summarized in the right figure. Watershed management, reforestation, activities for groundwater recharge etc. are necessary in mountainous as well as plateau-piedmont zones.

In intermediate and plain zones, such measures as flood control, measures towards sand-dune fixation, methods of waste treatments, reforestation, groundwater management, water-saving irrigation are to be proposed as their countermeasures.

In desert zone, desertification control, sand-dune fixation, groundwater discharge, water-saving irrigation etc. are considered important. Besides, as common activities to all the zones, establishment of such an organization as “environment approaching cell (for example)” that comprehensively and exclusively coordinates with all the agencies concerned on environment administration, provision of environment/ hygiene education, functional strengthening of environment associations, creation of a collaboration system between official administration and private sector towards environment issues etc. are proposed.



1.4.9. Capacity-building of local government and local organization

On the basis of discussion in previous Chapter, framework of the draft development plan will be proposed. Since this field is cross-cutting issue and which needs sector wide approach, the framework will be presented for whole Province regardless of region.

1.4.9.1. Strengthening of the local government

(1) Objective

1) Capacity-building of human resource in local government
2) Institutional capacity-building of local government
3) Strengthening collaboration among stakeholders

(2) Beneficiaries

Province, Ministries, Commune and other related governmental agencies

(3) Developmental program

Developmental program is proposed as below. The details are shown in Appendix5 Table 1.4.8

1) The strengthening of human capital

It aims at obtaining basic knowledge required for public officer, and at understanding the task expected.

2) The strengthening of social capital

It aims at sharing information and creates opportunity for communication, and strengthening the collaboration among stakeholders, such as Province, Commune, public service, association/ cooperatives and local people.

3) The strengthening of physical capital

It aims at improving facilities, transportation, and equipment for making enabling environment for public service to be functioned optimally.

1.4.9.2. Strengthening of local organization

(1) Objective

1) To develop human resource and organization which can take initiative and leadership for community development
2) Strengthening institutional capacity
3) Strengthening collaboration among stakeholders

(2) Beneficiaries

Basically, local organization implies association/ cooperative. However, groups which desire to

establish association and which deal with developmental activities, can be also benefited.

(3) Developmental program

1) Capacity-building of association/ cooperative

According to characteristic and maturity of association/ cooperative, the intervention is proposed as support for establishment of association/cooperative, series of trainings, seminars, OJT, TOT, workshop, and networking for association, cooperative, etc. at Table below.

2) Empowerment of civil society

It aims at supporting to enable local people to have owenership on community development with future vision.

The detaile of developmenmental program is shown in Appendix5 Table 1.4.9

Based on the above mentioned development strategies at each sector and zone, Development strategies with program/project at each sector are summarized as table below.

Development Strategies and programs/project by type of approaches

Development Strategies and programs/project by type of approaches (by sector)	Mountainous Zone	Plateau Piedmont Zone	Intermediate zone	Plain ZOne	Desert Zone
Water resources: Conservation of provincial area by water resources development and flood control					
• Water resources development and flood control of Ghriss River basin	○	○	○		
• Water resources development and flood control of Guir River basin, Promoting integrated water management		○		○	
Irrigation: Increased production of agricultural products by improvement of existing irrigation facilities and introduction of water-saving irrigation					
• Improvement of water use efficiency by repairing main/sub canals		○	○	○	
• Improvement of water use efficiency by repairing Seguias	○	○	○	○	
• Improvement of water use efficiency by repairing Khettaras	○	○	○ ○	○	
• Introduction of water-saving irrigation	○	○	○	○	○
• Construction/repair of Flood Harvesting/Spreading facilities for promoting groundwater recharge and preventing salinity			○	○	○
• Construction of shallow wells and small-scale pumps for irrigation small-scale vegetable gardens		○		○	
Strengthening rural infrastructure: improving access to social services and rectifying inter-area disparity through consolidation of basic infrastructure					
• Construction/ repair / consolidation of rural roads/ bridges	○	○	○	○	○
• Consolidation of rural water supply facilities	○	○			○
• Introduction/ diffusion of solar generating system	○		○	○	○
Agriculture, agro-processing: Raised income and promotion of					

ex-provincial exporting industries by processing/ marketing improvement of specialty products in compliance with zonal characteristics					
• Support for improving farming techniques, processing and marketing of apples, potatoes, almond and honey	○				
• Support for improving farming techniques, processing and marketing of apples, almond and honey		○			
• Support for improving farming techniques, processing and marketing of dates and olives			○		
• Introduction of Bayoud-resistant varieties of date into Bayoud infested plantation farms			○		
• Soil (salinity, water retentive capacity etc) improvement	○	○	○	○	
• Introduction of salinity-tolerant/ drought resistant crop varieties and crop diversification		○	○	○ ○	○
Livestock promotion: Establishment of livestock brand by improving quality of meats					
• Regenerative sowing of forage crops (alfalfa etc) for raising yield level of fodders	○				
• Incorporation of forage crops (rutabaga, rape etc) into crop rotation system		○			
• Increased yields by forage crop diversification and preparation / application of improved compost			○	○	
• Production of fermented fodders（Silage, Haylage）		○	○	○	
• Measures for preventing parasites and contagious diseases by consolidating wells, installing dip tanks				○	○
Tourism: Development of international tourism spots in coordination with local / indigenous industries					
• Support for developing tourism program on mountainous areas of summer-resort type	○				
• Development of small-scale tourism centered on spa and agro-tourism		○			
• Development of a tourism program in oasis of living experience type			○		
• Support for developing tourism program targeting foreigner-tourists				○	
• Support for developing tourism program of lodging type on a basis of off-road tour in desert areas					○
Quality improvement of social services (education and health/ hygiene),					
• Educati: Inhabitant's sensitization/ enlightenment on health/hygiene	○	○	○	○	○
• Improvement on medical care for maternity in remote areas	○	○	○	○	○
• Procurement/ deployment of human resources (medical doctors, nurses and midwives)	○	○	○	○	○
• Rectification of gender disparity on secondary education	○ ○	○ ○	○ ○	○ ○	○ ○
• Consolidating educational facilities in secondary schools and improved access thereto	○	○	○	○	○
• Improvement in high rated hang- over and drop-out	○	○	○		○
• Promotion of literacy education toward adult women					
Livelihood improvement: As to farming-related matters, described in agriculture, agro-processing and marketing Improved income by value addition to off-farm specialty products					
• Strengthening skill-training courses	○	○	○	○	○
• Empowering women through handicraft activities	○	○		○	
• Promoting processing/ marketing herbs		○	○	○	

• Rearing small-typed livestock		○	○	○	
• Support for processing /marketing of fossil				○	○
• Support for processing /marketing drought tolerant crops (henna and cumin)					○
Environmental conservation: Symbiosis between human and nature by forest conservation, water resource conservation and desertification control					
• Soil conservation by watershed management, construction of flood control walls, enlightenment activities for reforestation and actual reforestation	○	○	○		
• Refraining overexploitation of groundwater by excessive pumping through creation of observation well (prevention of abnormal lowering of groundwater level)			○	○	○
• Assures of solid waste treatment	○	○	○	○	
• Assures of disposed sewage treatment			○	○	
• Conservation of basic infrastructure and farmland by creating sand-dune trapping fences, reforesting sand-dune stabilizing forests				○	○
Human resource development: Nurturing leaders and organs who are actors of area development through close coordination between public/ private sectors					
• Strengthening local administrative organizations (Province, Commune)	○	○	○	○	○
• Strengthening / supporting organizing inhabitants' organizations (Associations, Cooperatives)	○	○	○	○	○
• Creation/ fortification of coordinating system between public/ private sectors	○	○	○	○	○

Appendix 2 Quick Project（QP）

2.1. Selection Criteria and Proposed QP Components

2.1.1. Selection Criteria

Above candidate list for QP includes those projects, which are prepared by associations or cooperatives, and submitted to DAS and ORMVA/TF to apply INDH project or other public subsidies. Based on the list, the Study Team made a short list using following selection criteria for the QPs.

- ✓ Local People‘s needs are strong, small scale & implementing cost is low and effect of project appears quickly
- ✓ Experienced project in Errachidia, easy to implement and extension to local people is possible.
- ✓ Entry point of the PP/Lessons learnt, could be fed-backed to the formulation of PP
- ✓ Continuous implementing/ learning/ training are necessary to local administration and people's organization.
- ✓ Cost sharing or work sharing is possible among stakeholders.
- ✓

2.1.2. Proposed QP components

Based on the above selection criteria, the Study Team selected following five QP components, through a series of discussion with DAS members. Following table shows summary of proposed five QP components, and their background information are also stated below. Location of the five QP shows figure above.

2.1.3. Component of the QP

Quick Projects	Component
QP1. Rehabilitation/extension of Seguia System with Improvement of Post Harvesting	Concrete Lining：1,000 m Plastic Box：1,000 Boxes
QP 2. Combat desertification using palm leaves	1.0 ha with 600 Tamarisk plantation.
QP 3. Reforestation of Caper in the rock surface area	0.5 ha with Caper, Cactus, Pistachio
QP 4. Establishment of marketing channel for Apiculture	1 vehicle (4WD Pick-up, rent-a-car)
QP 5 .Integrated Internet and Network System for DAS	Network System with 3 computers

2.2. Project Cost Estimation and Implementing Schedule

2.2.1. Project Cost

Project cost for each project component amounts to 496,971DH and supervision and monitoring costs 98,000DH, 594,971DH in total.

2.2.2. Implementation Schedule

Implementation of the five selected QPs was commenced in the beginning of August 2009. The implementation schedule of the projects including monitoring and evaluation is shown in table below.

Implementation Schedule of the Quick Project

Schedule	2009					2010			2011		
	8	9	10	11	12	1-4	5-8	9-12	1-4	5-8	9-12
A. Preparation of the Project Components											
B. Impementation											
1. Rehabilitation/Extension of Seguia System with Improvement of Post Harvesting											
2. Combat Desertification using Parm Leaves, etc											
3. Reforestation of Caper, etc. in the rocky surface area											
4. Establishment of Marketing Channel for Apiculture											
5. Integrated Network System for DAS											
C. Supervision and Monitoring											
1. Preparation (Workshop or Discussion)											
2. Supervision											
3. Monitoring											

Appendix 3

3.1. Selection Criteria of Project Site and PP Components

Prior to selection of the pilot project site, following 2 reasons are to be taken into due consideration;

- The Study Team will benefit from the series of tasks for PCD formulation in advance, not only for better understanding toward the target communes (such as natural/social background), but also for closer relationships with the stakeholders at the commune levels, which will result in much effective operation for pilot projects afterwards;
- Negative impacts would arise from the failure of implementing pilot projects that should be avoided for the future stage. Provided that no pilot project would be introduced to a certain communes where the series of workshop for planning were actually held, it may discourage the local population by not providing any support for the project implementation.

Accordingly, the basic criteria for the selection of pilot project site are as follows.

1. In principle, the pilot project will be implemented in the same communes that have been selected for PCD formulation and experienced the series of workshops.
2. In case any communes may have the pilot projects even without the PCD formulation workshop by the project, relevance of its selection should be verified based on the communal conditions and the components of the pilot projects.

Still however, as expressed in No.2 clause, other communes in which the PCD hasn't been formulated, can also be chosen as the targets of a pilot project. In that case, relevance of their selection should be verified based on the communal conditions and the components of the concerned pilot projects.

3.2. Determination of location and component of the PP

Regarding implementation of the PP, DAS (INDH project) proposed that they are ready to share the cost of PP by providing the same amount of JICA's project budget. Therefore, at the time of determination of the PP components, it is necessary to consider the work and cost sharing with DAS (INDH projects), ORMVA/TF (PDK projects), and DAT/POT (support project to Oasis regions).

3.2.1. Project of capacity building/ development for local administrative staff and inhabitants' organizations; transversal PP

The following five projects have been agreed with and selected as transversal project on February 25th and on March 5th 2010 by the participating organizations under the attendance of Provincial Division of Social Projects (DAS), General Provincial Division of Autonomy (DCL), ADS etc. In this connection, it has also been agreed that the final evaluation and follow-up of Quick Projects (QP) were excluded from PP but carried out at the occasion of monitoring/ evaluation that were to be separately arranged. Overall project cost has been estimated at about 1 million Dh.

Project name	Purposes	Agency concerned
(1) Improvement of Information Management of DCL	DCL takes responsibility to introduce/ follow-up PCD and SCI, but their information management is not well done due to inadequacy of information management system. Therefore, it is necessary to establish the DCL's system, just the same as QP for DAS, so as to materialize effective monitoring/ follow-up of PCDs, which will be developed by 46 communes.	DCL、DAS、ADS
(2) Supporting SIC Introduction	Basic information at rural communes, including number of population and household, has not been updated after the National Census Survey 2004. The basic information at commune level is indispensable to formulate practical PCDs. Therefore, support is urgently required for rural communes and provinces in order to introduce SIC.	DGCL、DAS、DCL、ADS、Sidi Ali and Oued N'aam Communes
(3) Capacity Development of People's Organizations	To enhance socio-economic and cultural activities at Ksar level in the province, establishment and enhancement of peoples organization, including association and cooperative, is necessary. The project supports the grass roots activities through enhancing a function of existing networks for development cooperation.	DAS、Network AS, 5 PP targeted communes
(4) Promotion of Health Service at Remote Areas	The project provides awareness training on maternal and child health, parturient training, family planning, and hygienic to rural residents. The project also aims at establishing a system for the health services to ensure spin-off effects and sustainability. These activities will be carried out through Community Volunteers (CV) adding their new tasks for hygiene and health education to school children, health training at community level, and environmental education which closely related to the health issues. The project will be carried out at Oued N'aam, Ghriss Ouloui and Gourrama commune as a pilot.	DPS、DPMEN、Amellagou Commune
(5)Hygienic Environment Improvement Project	The project provides education for hygienic environment improvement and instruction on living improvement targeting children, women and associations under the collaboration with Regional Health Section （SIAAP）. At the same time, synergetic effect is envisaged from the collaboration with JOCV.	SIAAP、JOCV、Ghriss Ouloui and Oued N'aam Commune

3.2.2. Pilot projects（PP）targeting Communes

(1) Sidi Ali Commune

Based on the following short-list, consultations were made twice on March 8th and 22nd 2010 at meeting hall of Sidi Ali Commune with the attendance of Vice Kaid、Commune Council members, representatives of association, staff of DAS, DCL,

representatives of Commune Development Program（ADP、ADS) and director of NA (under Ministry of Internal Affairs）on the selection of PP components.

Priority project list for PP in Sidi Ali Commune

Name of project	Contents	Implementing agency	Budget（Dh）	Cooperating organizations
(i) Improvement of Livelihood and Income Generating Activities Project	**Assisting women activities, handicraft, kinder garden, carpet weaving by supplying materials & equipment and construction of multi-purpose center**	**AS、Commune**		**JICA NA、DA**
(ii) Support for cooperative of henna/ cumin processing	**Support for establishment and consolidation of organizations, supply of materials and equipment, IGA**	**AS**		**JICA、DA ORMVA/TF**
(iii) D'man goat rearing	IGA	AS		Support by INDH
(iv) Cleaning and Marketing Promotion of Fossils	**Support of supplying materials and equipment, IGA**	**AS**		**JICA、DA**
(v) Tourist Optional Program Development	**Assistance for attracting tourists, IGA**	**AS**		**JICA DPT**
(vi)Drilling wells	For Nomad & watering livestock	AS		ORMVA/TF
(vii) Supply of trucks	Waste collection etc	Commune	490,000	INDH

7 associations have so far been established for area development in Sidi Ali Commune. Out of these, 6 were established in 2009 (and the rest in 2006). Yet, it has been found that they have only been set up but no actual and significant activities have ever been done. To cope with this situation, as a result of consultation with Communal Council, the Commune requested JICA study Team to establish a livelihood improvement project for the purpose of consolidating organization of the association and human resource nurturing/ capacity building as a PP. The result of this consultation is summarized as follows.

i) Sidi Ali Commune office has agreed on the implementation of living/ livelihood improvement project.
ii) To this end, a Network Association will be established consisting of representatives of these 7 associations to develop its full activities for promoting / materializing this project.
iii) (i), (ii), (vi) and (v) of the above table has been proposed as project components necessary for implementing this project.
iv) Based on this proposal, stakeholders of the Commune including representatives of these 7 associations (men and women) and the Study Team will consult, agree and make decision on such concrete items of activity plans and required support for accompanied establishment of women cooperative including necessary materials and equipment, scale of multi-purpose center, period of project implementation, cost sharing etc.

Accordingly, Sidi Ali people selected seeking alternative ways to increase household income

with maximum use of local resources under the rugged environments. In this connection, as for multi-purpose center, it'll be necessary to determine the scale of facility upon considerate consultation according to the contents of the planned activities in the center. Likewise, support for SIC introduction as well for consolidation of inhabitants organizations has been agreed as components of PP.

(2) Oued N'aam Commune

Priority components of PP were consulted and selected in March 9th and 26th 2010 at the meeting room of Oued N'aam Commune with the attendance of Vice President of the Commune, members of Commune Council, representatives/ members of AS, DAS, DCL, ADL and the Study Team based on the below tabulated priority PP components.

List of priority PP components in Oued N'aam Commune

Name of project	Contents	Implementing agency	Budget (Dh)	Cooperating organizations
(i) Construction of cooling storehouse for dates storage	Construction of cooling house with a dimension of 144m^3 (8m x 10m x 6m)	AS、Commune	1,500,000	INDH ORMVA/TF
(ii)Improvement of Khettare・Seguia	Rehabilitation of irrigation facilities damaged by floods	AS		ORMVA/TF
(iii) Introduction of olive processing facility etc.	Construction of agricultural center, supply of materials & equipment for processing/ treatment of olive and, dates		951,612	INDH
(iv)Purchase of school-bus for pupils	Support for materials & equipment, training	AS	510,000	INDH
(v) Solid Waste Management in Oued N'aam	Supply of truck for collecting domestic wastes with guidance of collecting methods, construction of waste treatment/disposal yard, installment of waste dumping site and its management, education for hygiene and sanitation, O & M of waste disposal facility	AS and Commune	870,000	JICA
(vi)Supply of ambulance	4-wheel driven automobile	AS		INDH

Out of the above tabulated priority PP components, concerning (i), the volume of cooling chamber reaches about 150m^3 for which the cost amounting to 1.5million Dh will be incurred. Accordingly, implementation of this storage facility was found difficult as PP component, and this was mutually understood by both sides. The project of (ii) covered specified area and thus it is difficult to realize benefit for all the inhabitants in the Commune, thus it was excluded. The projects of (iii) and (iv) were found that they had already been adopted by INDH. As to the project of (vi), it was excluded because the Commune already keeps one vehicle.

Therefore, it was unanimously agreed among participants that the project (v), namely, that for disposal and management of wastes was selected as PP component. In implementing this component, the Commune decided to establish an association including representatives of 8

concerning Ksar and the association should finalize its project plan as early as possible to submit to the Study Team. In this connection, support for introducing SIC as well for strengthening inhabitants' organizations has been accepted as PP components.

Dumping Site near River

Pamphlet for against Leashmaniasis

Dumping Site near Ksar

(3) Ghriss Ouloui Commune

The selection of PP components and related site reconnaissance survey have been conducted for 3 days, namely March 10th, 15th and 26th 2010, by Commune President, Commune Council members, representatives of DCL and ORMVA/TF, as well the Study Team.

List of priority PP components in Ghriss Ouloui Commune

Name of project	Contents	Implementing agency	Budget (Dh)	Cooperating organizations
(i) Rehabilitation works of headworks of Tamda N'massoud	Foundation treatment of the headworks, installment of gates and rehabilitation of Seguia	AS、Commune	4,000,000	ORMVA/TF
(ii) Increase of Agricultural Production in Mzel Aghad Seguia Area	Rehabilitation of Seguia, increased olive and dates production, farming improvement, introduction of water saving irrigation, support for establishing water users association (WUA)	AS、WUA	1,200,000	MCA、ORMVA/TF JICA
(iii) Construction of Integrated Culture Center	Support for materials & equipment, training, IGA	AS	510,000	Under application Commune Development Fund (FEC)
(vi) Supply of a truck for the disposal and management of domestic solid wastes	Supply of a truck, supply of material/ equipment for sewage disposal tanks, pumps	AS and Commune	490,000 168,000	INDH

Concerning (i), though earnest request was issued from the Commune, ORMVA/TF has so far

refused to provide its support due to pending problem on water right with beneficiary farmers at downstream side. Therefore, the Study Team expressed difficulty of providing support for this request and finally it was agreed to exclude this proposal. As regards (iii), a plan of constructing a building with 6-7 stories has been proceeding on, and it has been found that loans have been planned to apply to FEC by the tenants. As to the project of (ⅳ), supply of truck del has already been decided in 2010 fiscal budget by INDH project.

As the result of consultation, it has been decided to assist the plan promoting agricultural production in Mzel Aghad Seguia that has high priority. Through this project MCA（Millennium Challenge Account） plans to assist in collaboration with ORMVA/TF for the rehabilitation of Seguia at its downstream side （total length reaching around 3,000m） , promotion of conservation/ increased production of dates, that of olive production and support for organizing water user's association (WUA). However, since rehabilitation of a part of main canal that takes water from Ighefnissil Tazrout Barrage constructed in the bank of Ghriss River (length: about 520m) has been essential but left intact due to budgetary shortage, other planned projects have not materialized. So, it has been agreed among the concerned agencies/ organizations that the rehabilitation of this canal, support for improving farming/ livestock and that for establishing WUA. Also, based on this agreement, ORMVA/TF accepted to provide land survey and an estimation of the project cost for target section for rehabilitation of Seguia. In this regard, support for strengthening inhabitants' organizations has been agreed as PP component.

Mzel Aghad Seguia Downstream by

Ighefnissil Tazrout Barrage in Ghriss River const. in 1979

Intake for Mzal Agfad Seguia

Intake for Mzal Agfad Seguia

Rehabilitation area L=520m

Rehabilitated by ORMVA/TF in 2003

(4) Gourrama Commune

3 consultative meetings were held on March 10th, 17th and 18th in this Commune where Kaid, Commune President, Commune Council members, representatives of AS and cooperatives and the Study Team presented to consult on the PP components based on the following list of priority PP.

List of priority PP components in Gourrama Commune

Name of project	Contents	Implementing agency	Budget (Dh)	Cooperating organizations
(i) Consolidation program of basic infrastructure	Purchase of construction materials/ equipment, back-hoe etc. Consolidation of roads, rehabilitation of Seguia, construction of flood protection walls etc	AS, Commune		Requiring much higher project cost
(ii) Promotion of processing and sale of medicinal herbs	Construction of processing facility, supply of materials and equipment for processing and sale	AS		ADS
(iii) Supply of improved livestock varieties	Supply of D'man and other improved varieties of goats, dairy cows	AS	320,000	Support by INDH as poverty alleviation
(vi) Improvement of Solid Waste Management in Gourrama	Training of methods to collect domestic wastes, supply of truck for waste transport, construction of waste treating or dumping site, provision of education for health and sanitation, O/M of solid waste management facility, PR activities as a model commune	AS, Commune	724,000	JICA
(v) rehabilitation of Seguia, construction of flood protection walls	Rehabilitation of cabals with concrete structures, construction of flood protection walls	AS		PDK plans to implement this project

Out of 5 project components as shown in the above table, it has been agreed among the participants that waste disposal / management improving project is to be adopted as PP component. In implementing this project, the Commune expressed its intention to make all-out effort of approaching improvement of hygiene / sanitary environment, however, the project component listed in PCD is only procurement of waste collecting vehicle. The Study Team conveyed the opinion that support can be provided a comprehensive menu including enlightenment education toward inhabitants, establishment of a managing system for solid waste collection / transport measure. The participants agreed on this proposal and consultation was completed deciding to implement this proposal as PP component.

Besides, contagious diseases including leashmania have posed a serious problem in Gourrama Commune attributable to aggravated hygiene environment. To cope with this problem, the Study Team has proposed to try to enhance the improvement effect in coordination with the transversal project called "the project of supporting improved health service in remote areas". A Kick-off workshop was held in late June in this Commune where it was decided farther to continue consult on the estimation / determination of the project cost, that of cost-sharing

among related organizations and schedule of project implementation etc.



(5) Amellagou Commune

Meetings were held here three times on March 12th, 17th and 18th 2010. Participants of these meetings consisted of Kaid, President and Vice President of Commune, Commune Council members and del. representatives of 7 associations, also those of the related agencies including DAS, DCL, ADP, water and forests commission（DPEFLCD）and the Study Team.

List of priority PP components in Amellogou Commune

Name of project	Contents	Implementing agency	Budget (Dh)	Cooperating organizations
(i) Processing and Marketing Promotion of Rosemary	Support for establishing and consolidating cooperative, construction of processing facility, support for processing/ sale and supply of materials/ equipment, establishment of natural vegetation conserving plan adopting rotation of harvest	Coop.、Commune	500,000	JICA support (DPEFLCD)
(ii) Rehabilitation of Khettaras/ Seguias and program of constructing flood protection walls	Rehabilitation of flood-damaged irrigation facilities and construction of flood protection walls	AS		ORMVA/TF、PDK
(iii) Program of supporting processing/sale of olive and almond	Construction of processing facility, supply of processing and sale equipment	AS, Coop.		ORMVA/TF 、INDH
(vi) Program of constructing livestock rearing center	Supply of high quality dairy cows and beef cattle, construction of a livestock rearing center	AS		ORMVA/TF 、INDH

Out of 18 priority project components listed in PCD, the above tabulated 4 components were proposed as PP by the Commune. Out of these, the Commune proposed (i) as the top-priority component according to its intention. Against this proposal, 2 associations opposed this proposal insisting that only a part of the inhabitants could benefit from this project because the area of natural rosemary habitat is confined to 2 areas (3 Ksars), leading to hot debate among the participants. To find the solution, it was decided to consult this matter later inviting stakeholders again on the deal of rosemary referring to legal institutions, regulations, ownership etc at the presence of water, forests and desertification control commission of the Province（DPEFLCD) that is in charge of cropping and harvesting of rosemary. The original proposal was issued from the top, Kaid and President of the Commune, to down, against which the

representatives of a part of association presented their opposition. Such hot discussion yields good results for selecting and developing PP activities because both parties frankly presented their own policies and led to hot debate.

Consultations were made on March 17th and 18th 2010 on how to deal rosemary in the PP at the presence of Commune Council, Committee of Association, Committee of Traditional Association, ORMVA/TF, DPEFLCD and the Study Team.

DPEFLCD has imposed social contribution on the processing and sale of rosemary where a part of the project benefit is to be reduced to the Commune concerned and outsiders of beneficial people. Therefore, only if the understanding reaches among the participants of this consultation meeting, the proposed component of PP can be adopted for implementation. As regards natural habitat of rosemary, two areas are included, namely Tagounsa Area (area of natural rosemary habitat: 6,120ha with annual harvest yield 450～500Ton）and Ikiss Area（3,000ha, 300～400Ton, respectively）where 3 concerned Ksars are located（Amellagou, Ait M'kome and Agdir）. According to their explanation, Rosemary has been utilized as a medicinal herb, nectar source of apiculture and also livestock fodder, and dispute can be avoided among stakeholders if rotation blocks are established in the natural habitat in which harvests are regulated. The habitat area of rosemary is under the control of DPEFLCD, and the right of resource utilization is vested to only the groups who made the contract of resource utilization with DPEFLCD, while use of this resource without concluding any contract as currently practiced is deemed illegal in a strict interpretation. After clearing these consultations, the Commune of Amellagou selected support for processing and sale of rosemary as PP.

Whereas, inhabitants in Amellagou. soon after they heard that the project plan on rosemary processing had been proceeded on between DPEFLCD and herb refinery agents in Midelt in the Study Area, judging that the benefits of the plan is only received by the beneficiary population living within the planned project area and appealed their opposition against this plan by organizing a demonstration march with several hundred participants on July 5th 2010 judging that the benefits of the plan is only received by the beneficiary population living within the planned project area. The Commune council, judging it serious and grave, decided to withdraw this project. In addition, the Provincial Governor requested the Study Team to cancel this project in the technical session of the Province on account of furious opposition by the inhabitants against the said project scheduled by the Commune. Coping with this request,

the Study Team decided to consult the draft PP plan again in 2011.

Consultations on the execution of PP among stakeholders in the Commune and all the associations concerned were made on 12th March 2011, where a project on quality improvement project of beef cattle. In a situation that the remaining Study period is 8 months or shorter, the Study Team could not offer full-scaled support to the Commune and also a long time was required to review, adjust and alter the contents of the activities of the new proposal, it could get an approval of JICA HQs for starting the newly proposed activities. The Study Team made consultations with livestock association in Amellagou on 25th May 2011 then decided to implement extension of recommended strain of bulls through AI as a PP.

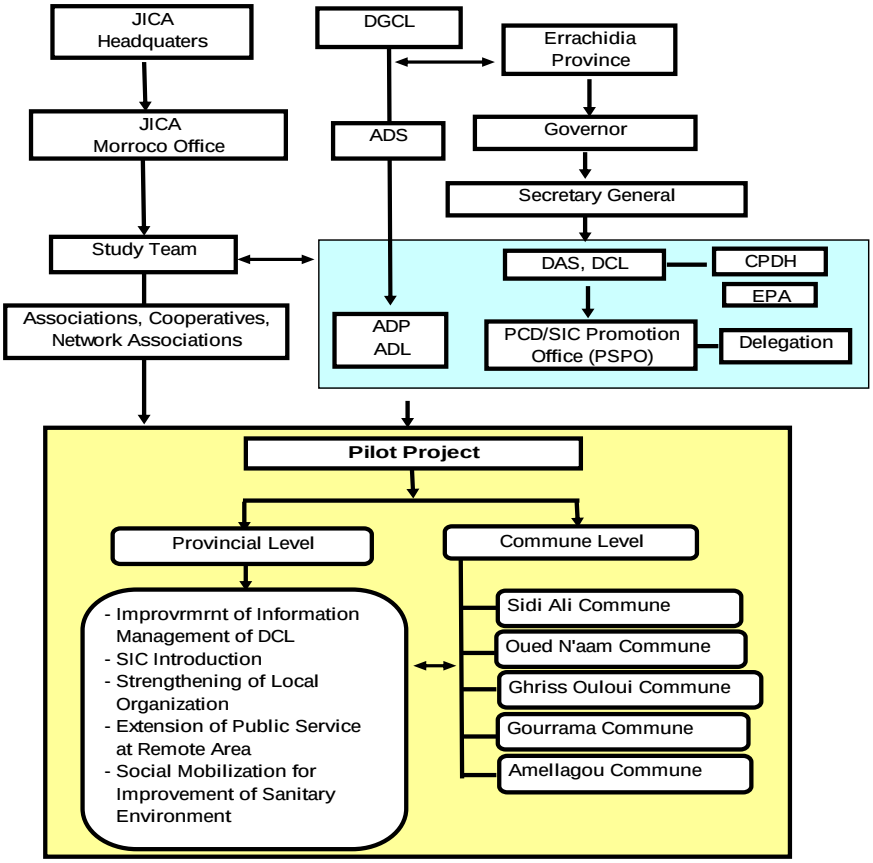
3.2.3. Baseline Survey

The objectives of the study reside in the elucidation of current status around the living/ environment as well as socio-economic activities of the inhabitants concerned that may serve as the base of planning and evaluating the Pilot Project (PP) activities. The survey targets at the entire villages or those in the project areas, (except those where any opposition against the Project activities has ever taken place) of the 5 target communes concerned. The survey was carried out in an interview based on a questionnaire .The households to visit and to interview are arbitrarily chosen from the name list of those who live in the delineated beneficiary area of the Pilot Project. The respondents to the questionnaire were the heads of the selected households unless they had left villages for jobs or working out of their villages. The survey was carried out during the period from mid-September to early October 2010 by a staff of the Study Team and 2 subcontracted staffs. The team arbitrarily selected 120 households in the target 5 communes and interviewed by Arabic that is the official language in the Kingdom. Details of survey results are shown in Appendix as “The Report for Baseline Survey”

3.3. Project implementation system/ project costs

(1) Project implementation system

The following figure shows an organigram of Project implementation system of PP. At the Provincial level, monitoring of the project is to be executed mainly by DAS and DCL. ADP and ADL are planning by their own initiatives to carry out training for empowerment of Commune staff and the Study Team is to cooperate with them. Also, in consideration of empowerment/ human resource development of inhabitants’ organizations and Communes, it was decided that these organizations/ Communes are to take initiatives for monitoring progress of each project component, as well as intermediate and final evaluations, while the Study Team support their works.



Project implementation system for PP

(2) Project cost

Project cost was estimated at 4,578,100Dh in total and the summary of the first year and the second year PP are as follows.

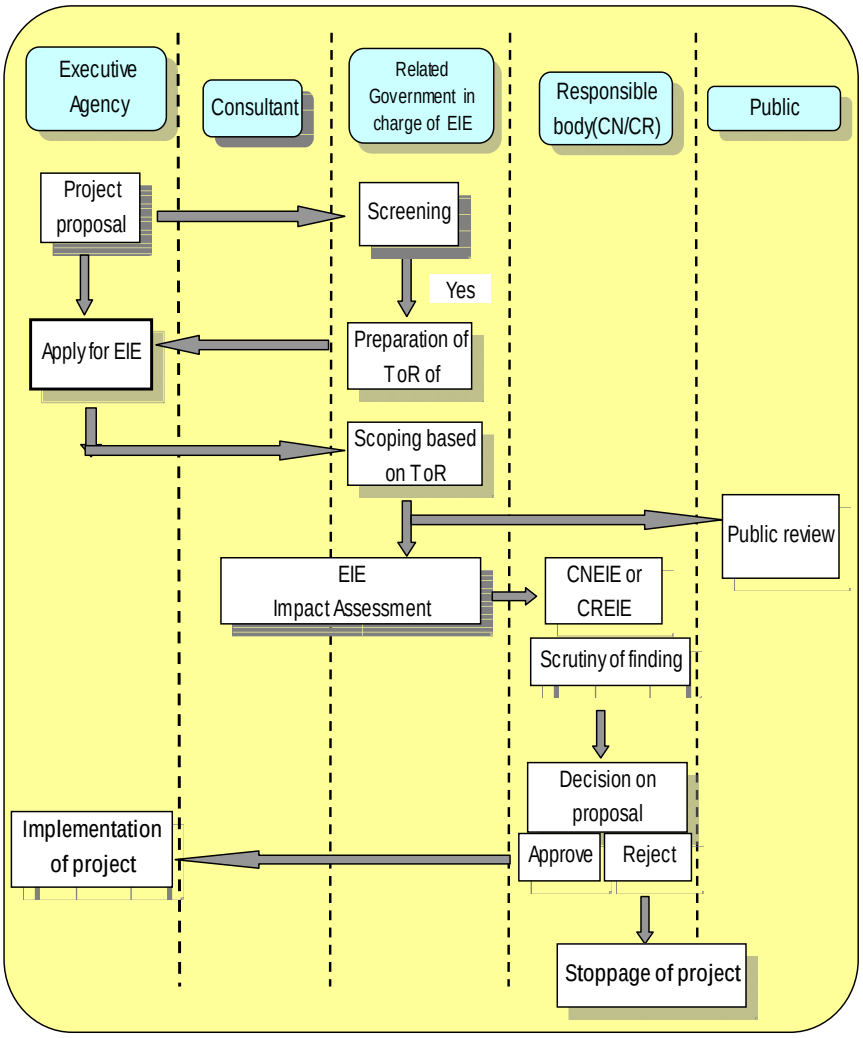
No	Project Name	Sub-Contract							
		Name of Contractor	2010			2011			Total
			Contract		(Dh)	Contract		(Dh)	
			Begining	End	Ammount	Begining	End	Ammount	(Dh)
1. Transversal Pilot Projects									
PP01	Inprovement of Information Management of DCL	Ecokeys	22nd Mar	30th Apr	67,440	-	-		67,440
PP02	SIC Introduction (Sidi Ali, Oued N'aam)	Association ALWAHA POUR L' ENVIRONNMENT ET LE DEVELOPPEMENT	19th Mar	5ht Dec.	320,000	-	-		320,000
PP03	Strengthening of Local Organization (5 communes)	ATMDAS	24th Mar	30th Nov	300,000	-	-		300,000
PP04	Extension of Public Health Service at Remote Areas (Amellagou)	Association les amis de l'ecole pour l'action sociale et le developpement	15th Oct	8th Dec	100,500	-	-		100,500
PP05	Social Mobilization for Improvement of Sanitary Environment (Oued N'aam, Ghriss Oulloui)	Association Oasis Ferkla Pour L'environnement et Le Patrimoine (AOFEP)	1st Oct	30th Nov	61,900	-	-		61,900
2.Pilot Project for Commune									
PP06	Improvement of Livelihood and Income Generating Activities Project	Sté LES PALMIERS DE SIJILMASSA (SARL)	15ht Sep	15th Dec	340,000	18th Feb	31st Jul	180,400	520,400
PP07	Processing and Marketing Promotion of Henna and Cumin	Cooperative M'daghra	-	-	0	27th Apr	31st Jul	400,000	400,000
PP08	Cleaning and Marketing Promotion of Fossiles	Cooperative M'daghra	-	-	67,440	27th Apr	31st Jul	361,000	428,440
PP09	Tourist Optional Program Development	Adrar Association	10th Jun	30th Nov	141,500	3rd Apr	31st Jul	75,500	217,000
PP10	Solid Waste Management in Oued N'aam	Network Association in Oued N'aam	13th Jun	30th Nov	110,000				110,000
PP11	Improvement of Water Control System for Increase of Agricultural Productions in Mezl Aghad Seguia Area	SOCIETE ECTRADIVE S.A.R.L	15th Jul	15th Oct	556,500	14th Mar	30th Jun	546,000	1,102,500
PP12	Improvement of Solid Waste Management in Gourrama	Association Ighrem Akhatar	29th Jun	30th Nov	110,000				110,000
PP10/11	Provision of trucks for Collection of Solid Waste	IRI-TAF	27th May	31st Jul	889,920				889,920
PP13	Race Improvement of Bovine through Artificial Insemination	Association SERRADRAR	-	-		27th May	31st Jul	130,000	130,000
	合計				3,065,200			1,692,900	4,758,100

(3) Study on EIA

In Morocco, Environment Impact Study (Etudes d'Impact sur l'Environnement, EIE) is to be subjected on activities/projects which have possibility to affect natural environment by Loi No.12-03 relative aux etudes d'impact sur l'environment, 2003. The procedure of EIE is shown in Table below. Executive agency of projects submits the proposal of activities to governmental agencies in charge of EIE. Then, screening of projects is made on the basis of the list attached in 'loi No.12-03'.

As a result of screening, if necessary, scoping is conducted to decide what type of EIE is to be carried out. The implementation of EIE is, in many cases, conducted by consultants. It is also possible that the experts, such as the one in Division of Technique (Division de technique), take responsibility to deal with. The result of EIE is submitted to National Committee of EIE (Comité National d'Etude d'Impact sur l'Environnement) or Regional Committee of EIE (Comité Régional ~) which makes decision whether the projects can be conducted or not. If the project costs more than 200 million, it is to be dealt with by National Committee, and in the case of less than 200 million, Regional Committee will be responsible for it.

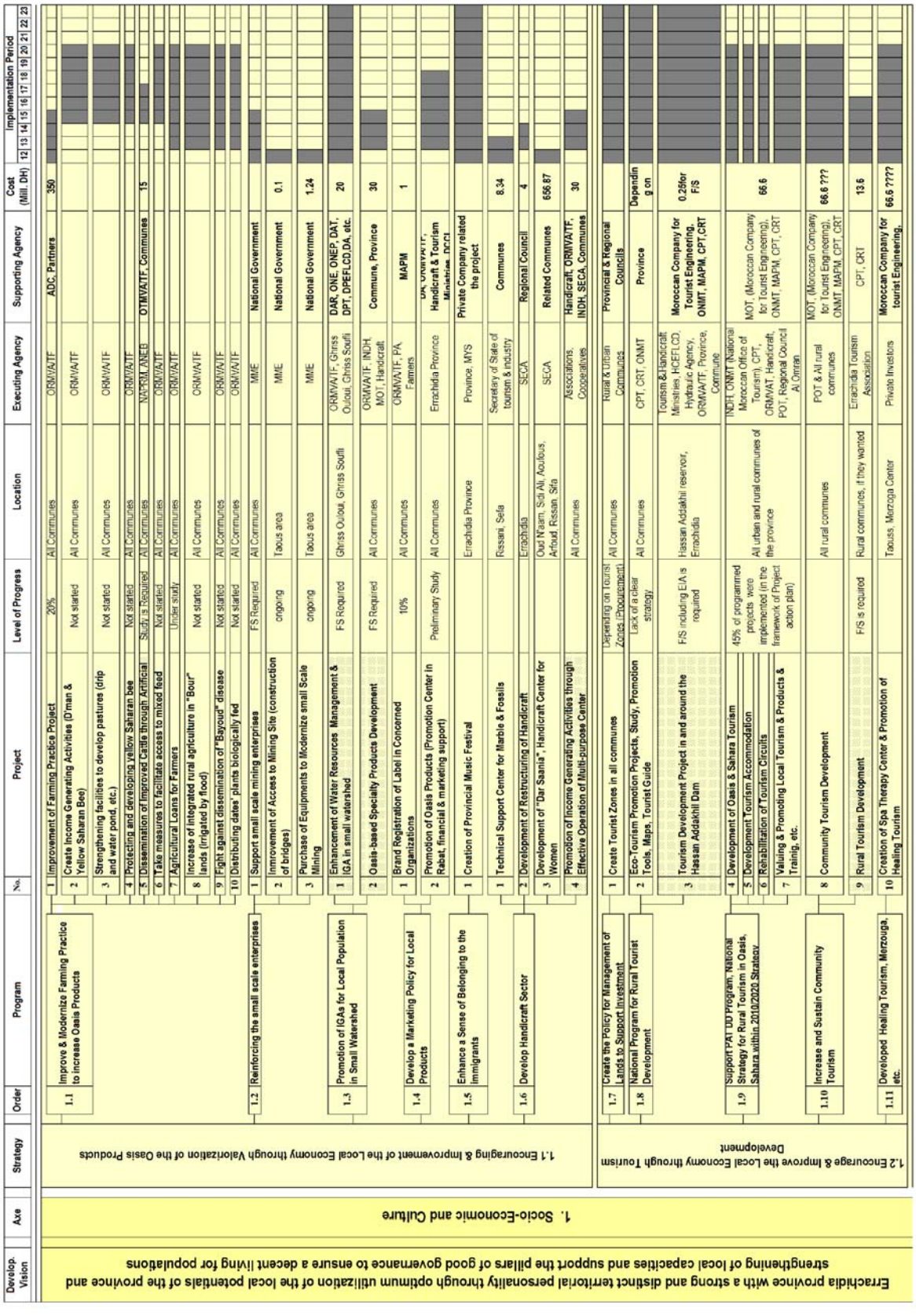
In this Study, the Study Team will not execute EIE but assist Moroccan counterpart in terms of providing information of EIE in details, advice, and, if necessary, supervising the EIE conducted by Moroccan side. In the case of which the project might need to be executed, the budget will be one of issues in a sense of who will be responsible for its financing. Moreover, it is considered that it takes around one month for EIE to be finished. It means that the project can not start until the result comes out. Therefore, matter of EIE should be considered and discussed in advance not to make any delay affecting the project commencement. Through discussion with agencies concerned the PP, they agreed that EIA was not necessary to execute because of the PP which components are small scale size as well as rehabilitation of existing facilities.



Flow Chart for Implementation on EI

Appendix 4

4.1. Development Framework for Provincial Rural Plan



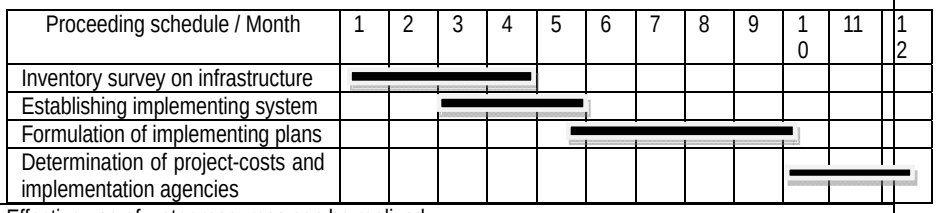
Development Framework for Provincial Rural Plan

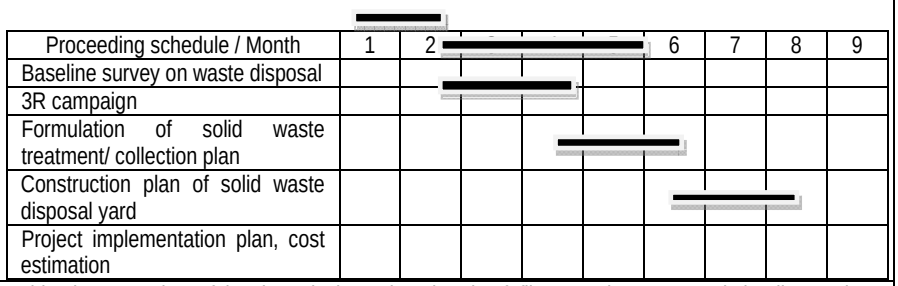
Develop. Vision	Axe	Strategy	Order	Program	No.	Project	Level of Progress	Location	Executing Agency	Supporting Agency	Cost (Mill. DH)	Implementation Period 12 13 14 15 16 17 18 19 20 21 22 23
Errachidia province with a strong and distinct territorial personality through optimum utilization of the local potentials of the province and strengthening of local capacities and support the pillars of good governance to ensure a decent living for populations	1. Socio-Economic and Culture	1.3 Promote & Support Youth & Immigrants	1.12	Orienting Immigrants to Invest in Development Fields to Create Jobs for	1	Establishment of Vocational Training Center	Preliminary study is required	Errachidia Municipality (current Artisan building)	Artisan, ORMVA/TF, Ministry of Tourism,			
		1.4 Rehabilitation of Cultural Heritage	1.13	Rehabilitation of Cultural Heritage	1	Rehabilitation of Ksar's Housing Compound		Communes of the province	Culture Delegation, MHUAE /Al Omran	Rural Commune		
					2	Establishment of Cultural Complex		Arfoud, Goulmima, Risani,	Culture Ministry	Rural Commune		
					3	Establishment of Cultural House		Jorf, Aoufouss, Kheng, Ferkla soufla, Ferkla Oulia, Malaab	Culture Ministry	Rural Commune		
					4	Establishment of Cultural Library		Mdaghra, Meski, Gerss Tiallalin, Aghbalou Nkardouss, Bni	Culture Ministry	Rural Commune		
					5	Establishment of Ethnological Museum		Errachidia, Arfoud, Goulmima	Culture Ministry	Rural Commune		
					6	Establishment of Musical Conservatory		Errachidia, Arfoud, Goulmima	Culture Ministry	Rural Commune		
					7	Establishment of Modern Library		Errachidia, Goulmima, Jorf,	Culture Ministry	Rural Commune		
	2. Natural Environment and Resources	2.1 Preservation of Natural Environment	2.1	Controlling Desertification with New Regional Approach	1	Protecting Saharan Ecological Systems	65% of farmlands, 30km of irrigation canal, 35 housing group, 10km of roads	Errachidia province	HCEFLCD	HCEFLCD	20	
					2	Biological Protection from Desertification by Planting Tamarix & Palm Grid	Protect 33% of targets	Tafilalet plain area , Malaab	ORMVAT	HCEFLCD	5	
			2.2	Conservation on Oasis Environment	1	Program of Developing Oasis Tafilalet Area (POT)	Implementation 2006-	7 Urban Communes and 25	POT	DAT , ADS , UNDP	80,100	
					2	Establishment of Sewage Water Treatment Facility in Rural Cities	Construction plan was formulated in 2009	9 Municipalities and Urban Commune in Errachidia Province	Municipality, Urban commune	ONEP		
			2.3	Study on Provincial Master Plan for Liquid & Solid Waste Management	1	Formulation of Household Solid Waste Management Master Plan	Preliminary study is required	Errachidia Province	Errachidia Province	Ministry of Environment, Water and Environment Department (Hydraulic Agency), Meteorological Service, Communes	8	
			2.4	Create an Information System to Track Climate Change and Natural Disaster Prediction	1	Study on Flood Protection	The study in Ziz, Guir and Ghriss Rivers is	Errachidia Province	DRH/GRZ			
			2.5	Control Urban Expansion to Protect Oasis Environment	1	Elaboration of Development Plan for Rural Agglomeration (PDAR)	Ongoing(20% of the total amount is paid)	Aoufous,Fezna,Amellagou,Aghbalou Nkardous	MESFRS		1296,000,0 0 DH	
					2	Elaboration of Plans for Communal Development (PAC)	Ongoing(20% of the total amount is paid)	Chr,Mdaghra,Ferkla Soufla ,Ghriss Ouloui,Arab Essabah	MESFRS		1806,600,0 0 DH	
			2.6	Improve Pastures to Reduce Population Pressure on Natural Environment	1	Construction of Timkit Dam (Under construction	Under Construction	Aghbalou Nkardouss rural	HCEFLCD	HCEFLCD	1.5/ year	
		2.2 Rationalization of Natural Resources Exploitation	2.7	Identifying & Valorizing Deep & Surface ,Shallow Natural Resources characterizing the Region	1	National Program for Geological Maps	good	Qualified areas along the country	Energy and Mining Ministry	The government, African Development Bank		
			2.8	Rationalization & Valorization of Water Resources through Encouraging Use of Modern Techniques in Irrigation	1	Study on Irrigation Projects		Oued N'aam	Water and Environment Department (Water Authority), ORMVA/TF	IFAD, MCA	5,400	
					2	Expanding Small, Medium Irrigation Facilities		Melaab			20,400	
					3	Rehabilitation Areas Affected by Floods		Ghriss River			30,500	
					4	Collecting Flood Water (Water Harvesting)		Ziz River			151,500	
					5	Diverting water from Guir river to Ziz river	Rissani, Others	Rissani, Others			450,000	
					6	Rehabilitation of Irrigation Facilities in downstream area in Timkit Dam		Tinjdad oasis	Ministry of Agriculture		38	
					7	Integration of Down Stream Area in Tazougart Dam	Feasibility study is on				650	
					8	Expanding Small to Medium Irrigation Facilities	Detail study is	Malaab Oasis				
					9	Rehabilitation & Expansion of Segui & Khettara	Detail study is	Errachidia Province	ORMVA/TF, Communes	INDH, Donors	600	
					10	Rehabilitation & Expansion on Existing Main Irrigation Systems	Detail study is required	Errachidia Province	ORMVTF	Province, DPET, DRHGRZ, DPEFLCD, RCs, Donors	700	
			2.9	Water Resources Development	1	Construction of Barrages		Ghriss, Guir, & Ziz River Basins	DRH / GRZ	ORMVA/TF		
					2	Flood Control		Ghriss, Guir, & Ziz River Basins	DRH / GRZ	ORMVA/TF		
					3	Rehabilitation of Intake Gates of Existing Barrages		Ghriss, Guir, & Ziz River Basins	DRH / GRZ	ORMVA/TF		
					4	Construction of Intake Gates		Ghriss, Guir, & Ziz River Basins	DRH / GRZ	ORMVA/TF		
			2.10	Promotion of the Use of Renewable Energies	1	National Program of Solar Energy		areas that will be defined by a decree (formal)	MASEN & private sector	The government and Donors		
			2.11	Improve Management & Exploit Traditional Mines & Quarries	1	National Program for Mine's Development	On going	Traditional mining area of Tafilalet and Figuig	Ministry of Mining and Energy	The State		

Development Framework for Provincial Rural Plan

Develop. Vision	Axe	Strategy	Order	Program	No.	Project	Level of Progress	Location	Executing Agency	Supporting Agency	Cost (Mill. DH)	Implementation Period 12 13 14 15 16 17 18 19 20 21 22 23
Errachidia province with a strong and distinct territorial personality through optimum utilization of the local potentials of the province and strengthening of local capacities and support the pillars of good governance to ensure a decent living for populations	3. Basic Service	3.1 Rehabilitation of Basic Infrastructure	3.1	Improvement of Domestic Water Supply	1	Providing Drinking Water in Ksars of some RCs	Requesting, or Planning was	Amellagou, Rissani, Kheng, Ferkla Oulia, Tadighoust,	ONEP	Communes	33	
			3.2	Improvement of Electricity Supply	1	Electrification of Ksars with low & high voltage		Connecting 57 ksars w/in	Communes	ONE	68.834	
					2	Creation of Power Line		Installing solar energy systems in	Communes	ONE	262.179	
			3.3	Improvement of Roads and Bridges	1	Rural Road Construction (PNNR2)	90%	Regional road n°702 linking Arfoud and Merzouga along 32.646 km between PK: 102+597	DPET	MET	210	
					2	Supporting & Maintaining Road Network Project	Geotechnical study is ongoing for 3 parts.	National road n°13/ National road n°10	DPET	MET	57.5	
					3	Construction & Maintaining Bridges	Preliminary project is	Tinghir & Tinjdad, Goulmima &	DPET	MET	38.2	
		3.2 Improvement of Social Services	3.4	Action Plan of Health Delegation	1	Procurement of 4 Wheel Drives	112 deaths of mothers in 100,000 new birth/ 30 deaths of children in 1000 new births	Tadighoust and Sifa communes	Population of Target Communes	Communes	90	
					2	Urgent Medical Aid for Pregnant Women in the Rural Area		Amellagou		Communes	0.05	
			3.5	Rehabilitation of Education Sector	1	Construction & Expansion of School Facilities	transactions validation, or Announcing, or Studying	Errachidia Municipality, Aghbalou Nkardous, Malaab, Sfalat, Arfoud, Boudnib, Oued Naam, Ghriss Ouloui, Ghriss Soufli, Tinidad, Arfoud, Boudnib, etc.	MEN	Commune	Under Estimation	
					2	Improvement of Canteen System	Transaction Validation	primary institutions and junior high school in rural area	MEN	Commune	Under Estimation	
					3	Improvement of School Facilities (Classroom, Toilet, Water Supply,etc.)		Malaab & others	MEN	Communes, INDH, NGOs	Under Estimatio	
					4	Integration to Accept Handicapped Students in Primary Education	Study	Jorf, Boudnib, Risani, Tindad	MEN	Communes		
			3.6	Improvement of Social Service to Nomads	1	Provide Education Opportunities to Normads	Preparing the Document	Sidi Ali, Oued N'aam, Kheng, Amellagou, Ferla Oulia, Malaab, Aghbalou Nkardouss	MEN	Commune		
			3.7	Supporting Youth, Sports & Culture	1	Construction of Socio-Sport Centers		Errachidia, Arfoud, Rissani,	MYS,	Commune		
					2	Construction of 3 Centers for youth Service	Signing Convention	Municipality of Errachidia,	MYS,	Commune	10	
					3	Construction of Camping & Entertainment Centers	Signing Convention	Municipality of Errachidia,	MYS,	Commune	10	
					4	Construction of Women's Training Centers	Signing Convention	Municipality of Errachidia,	MYS,	Commune	10	
					5	Creation of Sports Center in Oasis	Signing Convention	Municipality of Errachidia	MYS,	Commune	40	
					6	Sports Social Centers (B & E Category)	Signing Convention	Errachidia, Tinjdad, Goulmima, Arfoud, Kheng, Malaab, F.Soufla	MYS with collaboration of local Collectivities	Province, MYS, Donors	0.9	
			3.8	Create & Rehabilitate Social Institute	1	Construction of Social Care Centers & Institutions		All areas, if necessary	NA, Errachidia Province	MOSDFS, INDH	15	
					2	Rehabilitate & Equip Existing Center	Setting Stage	All areas, if necessary	NA, Errachidia Province	MOSDFS, INDH	10	
					3	Training & Capacity Development for Humman		All areas, if necessary	NA, Errachidia Province	MOSDFS, INDH	1.5	
	4. Institution	4.1 Support the Pillars to Attain Good Governance	4.1	Exploitation of International Support & Regional Plans to Develop Good Governance	1	Enhancement of Local Capacities through implementing Inter-Communal Project	AP is Required	Errachidia Province	DCL (CPDC)	Other Dept. in Province		
					2	Creating & Enhancing Local Committees for monitoring programs	Just started in 2011	All Commune	DCL(CPDC)	DGCL, Commune (ETC)		
					3	Technical Assistant for elaboration on Integrated Errachidia Provincial Development Plan to correct disparities and to reduce poverty	Proposed stage	The Cell of Promotion of Development Plans and Coordination, CPDC	Donors	DGCL, Errachidia Province	2.5	
			4.2	Activating the Associative Networks to Sensitize the Desertification Phenomenon	1	Activating the Association Network to Combat Desertification	Detail study is required	Errachidia Province	DPEFLCD, ORMVA/TF, Province, Communes	Associations, Cooperatives, Network		
			4.3	Simplifying Administrative Procedures to Execute Programs/Projects	1	Project for Rationalization of Administrative Procedures	Preliminary study is required	Errachidia Province	DCL (CPDC)	Other Department in the Province, DGCL		
		4.2 Strengthening of Local Capacities	4.4	Capacity Development to Local Organization and Population	1	Establishment of Handicraft Complex for Training & Marketing	Preliminary study is required	Errachidia Municipality	DA, ORMVA/TF, MOT, Province, etc.			
			4.5	Combat Against Brain Draining	1	Creation of Provincial Music Festival	Preliminary study is required	Errachidia Province	Province, MYS, Communes	Private companies related to sports and		
		4.3 Activating Scientific Research Institution	4.6	Strengthening Scientific Research to Maintain Oasis Environment & Encouraging Technological Invention	1	Agricultural Research on Production Increase	Preliminary study is required	Errachidia province	ORMVAT/TF, INRA			

4.2. Priority Sheet

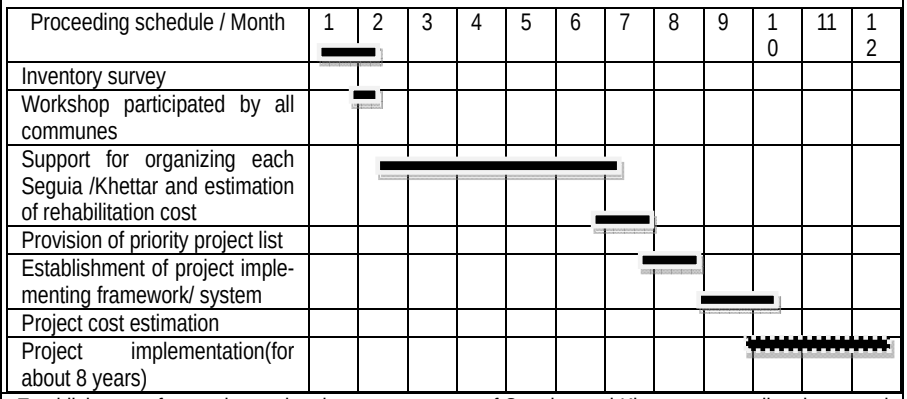
PPS01 Priority Project Sheet	
(1) Project Name	Empowerment of water resources management, improvement of living /income generating activities for local population in small watershed area
(2) Location	Ghriss Ouloui and Ghriss Soufli Communes
(3) Overall Goal	Encouraging & Improvement of the Local Economy through Valorization of the Oasis Products
(4) Project Purpose	Integrated development of a small watershed area is facilitated by comprehensively managing water resources in Ghriss River basin, as a core project, coupled with rehabilitation/ extension of existing water distribution facilities, reforestation, practice of water-saving irrigation, farming improvement, development of marketing/ agro-processing facilities, treatment of household waste, improvement of community drain- sewage disposal system etc. Also, it is envisaged that a link between Province and Communes, as well inter-communal coordination by the inter-communal projects, thereby accelerating projects in PCD and PRDP, eventually spreading this Provincial Model development program into other small watershed areas.
(5) Beneficiaries	19,296 persons (Ghriss Ouloui(10,822) , Ghriss Soufli(8,474)
(6)Executive Agency/ Supporting Agency	(1)ORMVA/TF、Ghriss Ouloui and Ghriss Soufli Commune (2)DAR, ONE, ONEP, DAT, DPT, DPEFLCD,DA, etc.
(7) Background	In utilizing existing principal water use facilities, conflicts among beneficiary people have arisen since water-right within the beneficiary has not well been established and agreed. This has so far made the rehabilitation works with pressing need in this water distribution system pending. Implementation of rehabilitating water use facilities had been postponed by such difficulties as lack of mutual understanding between traditional association and water-users one (WUA) that has newly been organized. In this watershed area, repairing works of Mzel Aghad Seguia has been completed, followed by on-going rehabilitation works of secondary canals attached to this Seguia by MCA and introduction of high-quality date variety into the perimeter, support for strengthening such organizations as WUAs, rehabilitation works of khattara by POT etc. However, these projects have not been carried out by the initiative of the Commune. Thus, water resources management has become more important in close coordination with Ghriss Soufli Commune, the down-stream beneficiary of the same Seguia. If this turns out successful, increased agricultural production can be expected through more effective use of water resources, then necessity of supporting livelihood enhancement projects including agro- processing arising from increased production. Also, in recent years, environmental improvement in this watershed area has become a pressing need due to illegal waste disposal and unconsolidated community drainage/ sewage disposal system.
(8) Project Component (Input/ Activities)	Inputs： F/S study by the assistance of a donor (staffing; 7 members including chief/ water management, organization strengthening, farming/ marketing, irrigation, community drainage/ sewage treatment, environment management, project evaluation) Activities：Inventory survey on infrastructure by means of SIC system, establishment of project implementing framework/system among stakeholder agencies concerned, coordination and collaboration with other donors, delegations of related ministries, formulation of priority projects and programming of project implementation plans etc.
(9) Budget	48MM、20,000,000Dh
(10) Implementation Schedule	
(11) Effectiveness	Effective use of water resources can be realized. Annual household income will be increased by introducing high valued fruit-tree varieties including dates owing to the above-cited effective water use. Creation of community drainage treatment facility and of waste disposal yard will be run as transversal (inter-communal) projects, through which living environment will be improved and solidarity among related Communes will be consolidated. These projects would become a model case through which integrated development of other similar watershed area is expected.
(12) Risk / Risk Management	Aligning of SIC database is carried out in the Commune. Collaboration among related Communes and relevant delegations of related ministries are a precondition for a successful outcome.

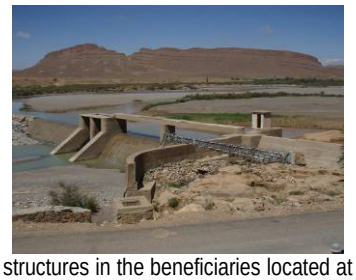
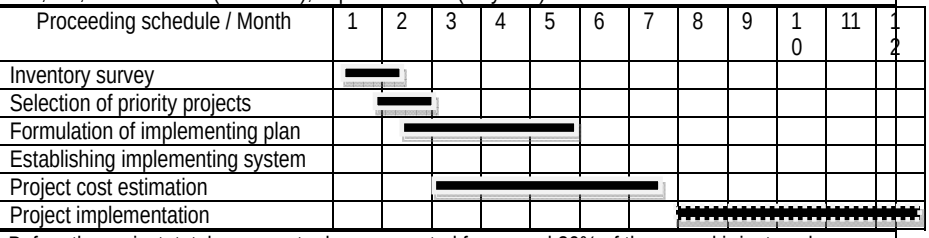
PPS02 Priority Project Sheet	
(1) Project Name	Household solid waste management master plan in Errachidhia Province
(2) Location	Province of Errachidhia
(3) Overall Goal	Preservation of Natural Environment
(4) Project Purpose	Improving treatment of household solid waste management in the Province
(5) Beneficiaries	Population in the Province
(6)Executive Agency/ Supporting Agency	(1) Executive Agency: Province of Errachidhia (2) Supporting Agency: Each Commune, Ministry of Environment
(7) Background	As public waste collection services have not been provided in many ksars, household wastes are burnt or left untreated along the roadsides or vacant lots, or putting wastes over the desert by only enclosing the space with earthen walls. Such a state is never acceptable from sanitation and scenery points of view, thus requests of improving it have been issued from inhabitants concerned, because heaped waste may become a source of incubating stingy flies or of parasitic diseases such as leushmaniasis. Though "Waste management state program (PNDM)" was formulated in June 2006, the master plan that the Province should have established is not yet provided, thus proper waste treatment at rural commune level has seldom been observed. Household wastes have been accumulated in vacant lots in Ksar on which swarms of flies have emerged, in some cases problem arises from deaths of livestock that is caused by eating vinyl sheets contained in wastes. More than 80% of 22 rural communes in Errachidia Province have selected provision of solid wastes collecting vehicles or creation of dumping sites of solid wastes as priority projects, thus need of these emergency measures has been enhanced. JICA Study Team has brought "solid waste treatment/ management improvement project in Oued N'aam" and "solid waste treatment/ management improvement project in Gourrama" as pilot projects into implementation. The outcome of these projects in which solid wastes are collected by trucks coupled with enlightenment activities for hygiene can be monitored for the reference. Also, the result of constructing a waste treatment lot in Figuig City (in the vicinity of this Province) in 2004 can be served as a reference.
(8) Project Component (Input/ Activities)	Input : F/S study supported by a donor (5 experts including chief advisor/ solid waste treatment/ management plan, organizational empowerment, facility design of solid waste treatment, environment and economic evaluation) Activities : SIC-based baseline survey on solid waste disposal in each Commune, Determination of site and scale of waste disposal yard, 3R campaign (Reduce, Reuse and Recycle), Establishment of project implementation/ management system at village, Communal and Provincial levels, Formulation of project implementation plan etc.
(9) Budget	20MM、8,000,000Dh
(10) Implementation Schedule	
(11) Effectiveness	Epidemic expansion of leushmaniasis and outbreak of flies can be prevented, leading to less patients suffering from contagious diseases. Scattering of wastes such as vinyl sucks decreases, leading to better scenery. Knowledge of rural population on health/ hygiene will be improved.
(12) Risk / Risk Management	There remains a risk that inhabitants are not cooperative on the collection of fee required for sustaining solid waste collection. Pistes to Ksar are too narrow to allow trucks to pass. To solve this issue, waste disposal yard is placed at he entrance of the Ksar, but the work of loading solid waste onto trucks will be required whenever trucks circuit. Also, in the case that a few Communes plan to construct a jointly-utilized solid waste yard, there is a fear that the selection of the construction site is not agreed on among the related Communes.

PPS03 Priority Project Sheet	
(1) Project Name	Comprehensive tourism development plan in and around the Hassan Addakhil reservoir
(2) Location	Municipality of Erracidia, around the Hassan Addakhil Reservoir
(3) Overall Goal	Encourage & Improve the Local Economy through Tourism Development
(4) Project Purpose	It can serve as a typical tourism spot, thereby enhancing job-opportunities and improving livelihood.
(5) Beneficiaries	Provincial DCL staff and related Communal staff
(6)Executive Agency/ Supporting Agency	(1) Province of Erracidia, Provincial Tourism Department（DPT） (2) ORMVA/TF and the province, Water/ Forests/ Desertification Prevention Commission, GRZ Local Water-use Agency, Provincial Facility Branch Office, Provincial Handicraft Branch Office, Kheng Commune etc
(7) Background	Foreign tourists visiting the Province have been recorded at 70 thousand (in 2008), but actually several times as much as this record are estimated. These visitors go through municipality of Errachidia ahead to stay in and around Erford for a couple of days in most cases to visit desert around Merzouga. To solicit them, tourism development inside the municipality is envisaged making use of Hassan Addakhil Reservoir (storage capacity: 380 million m3) as main spot, aiming at soliciting visitors to stay in the municipality. Currently, only fishing of bass is practiced by the inhabitants and it isn't used in other way.  JICA Study Team supported the implementation of a Quick Project by Kheng Commune for reforestation with cactus, pistachio nut and caper around the reservoir for the purpose of preventing sand and rock erosion as well of recharging groundwater note 1) the management of which has been handed over to the Tazoka Association. Also, in the outskirt of the municipality of Erracidia, tourism program can be developed in which oasis farming, Hamam bathing, local recipes can be experienced by the visitors where traditional handicraft goods can be sold. This project will be promoted mainly by DPT (Provincial Tourism Department) in close coordination with POT (Oasis Development Program and delegations of ministries. Besides, many reservoirs are located in the Province, multi-purpose utilization of these reservoirs can be expected making this project as a model case.
(8) Project Component (Input/ Activities)	Input: Participation / intervention of supporting organizations (6) such as DPT Activities: Organizing Development Promotion Committee (DPC) by the initiatives of Governor and Vice-governor, formulating tourism development plan in and around the reservoir (including provision of rental fishing boats), also formulating plan of promoting use of Mi Ali Cherif airport, reforestation, trekking road consolidation etc.
(9) Budget	F/S 250,000Dh, Project Implementation is 3years,, Project cost about 10,000,000Dhs
(10) Implementation Schedule	

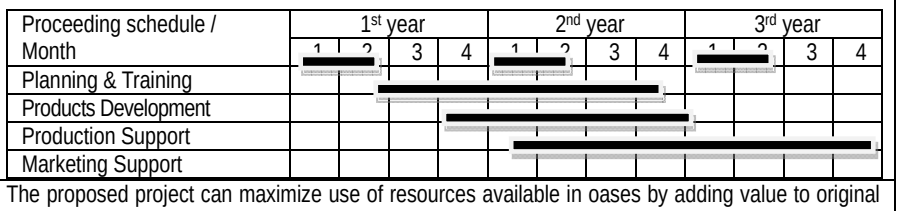
Proceeding schedule / Month	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of DPC												
Formulation of Implementation Plan												
Formulation of Airport Use Plan												
Cost estimation and project implementation plan												

(11) Effectiveness	Economic benefits in the form of alleviating erosion of sand, soliciting tourists to stay in the municipality of Erracidia are envisaged by developing tourism spots / program in and around the reservoir coupled with / pursuing environmental conservation, eventually creating opportunities of hiring jobless population.
(12) Risk / Risk Management	(note 1) As to land acquisition of this Project, interests of organizations concerned are interrelated in a complicated way, because the land is managed by traditional association of the Commune and GRZ water agency that controls water use of the reservoir and well construction. Hence, it is indispensable to reach a consensus among organizations concerned prior to starting development activities. In soliciting tourists, improvement of flight schedules in Mi Ali Cherif Airport (currently flight is available twice a week from Casablanca) is also essential.

PPS04 Priority Project Sheet	
(1) Project Name	Rehabilitation and Expansion of Seguia and Khettara System
(2) Location	Province of Errachidia
(3) Overall Goal	Rationalization of Natural Resources Exploitation in compliance with rural development strategy (SDR2020)
(4) Project Purpose	Improved living status / livelihood can be expected through rehabilitation of irrigation facilities
(5) Beneficiaries	All farmers in Errachidia Province
(6)Executive Agency/ Supporting Agency	(1) Executive Agency: ORMVA/TF and Commune (2) Supporting Agency: DAS （INDH）
(7) Background	Khattara gives an environmentally friendly system in which natural hydrologic cycle has well been utilized, thus providing precious water source not only for irrigation purpose but also for that of potable and miscellaneously usable water for farmers and farm households. However, only 176 systems, or 48% of the total existing number of khattaras, 359, currently function while others have lost it due to successive droughts for 6 years from 1999 to 2005, also to the influence of flood taken place in 2006 and 2008 that have brought depletion of water sources or sand deposits into vertical manifolds etc. Japanese conventional non-reimbursable fund assistance has been applied for repairing some of them , however, their rehabilitation has been delayed due to absolute shortage of rehabilitating budget in responsible agencies etc. In this regard, Japan has carried out a technical cooperation through a development study under the title of “the Development Study on Rural Community Development Project in Semi-Arid East Atlas Regions with Khattara Rehabilitation (February 2003~ October 2005) ” by which a development plan with rehabilitation of irrigation facilities to economize irrigation water so as to increase cropping acreages as well as farm production towards better farm income has been formulated, though it failed to design concrete measures to meet farm demand. Meanwhile, 176 seguias, or traditional canals have functioned in Errachidia Province, but major ones have not well functioned owing to damages caused by floods etc. Repairing of Khettaras and Seguias have been placed at higher priority ranking in over 80% of PCDs in Communes, though their works have not been implemented on account of budgetary deficits.
(8) Project Component (Input/ Activities)	Input: A team of experts (5members) including chief advisor/ design of irrigation facilities(canals), design of irrigation structures (gates etc), project cost estimation, project implementation plan and environment assessment. Activities: : Inventory survey (making use of information from 29 Communes and SIC), Formulation of priority projects, of project implementing schedule and implementation.
(9) Budget	600,000,000Dhs, F/S(9months), Implementation(6 years)
(10) Implementation Schedule	
(11) Effectiveness	Establishment of operation and maintenance system of Seguias and Khettaras as well as increased farm products by means of canal rehabilitation can be expected. Also, introduction of agro-processing facilities is promoted through the increased farm production and livelihood improvement is accelerated by the activities of women cooperatives.
(12) Risk / Risk Management	In case that financial support by donors is difficult, there is no other way than implementing the projects by self-help of related communes or through INDH projects, then it takes longer period to complete the projects.

PPS05 Priority Project Sheet	
(1) Project Name	Rehabilitation and expansion on existing main irrigation facilities in Errachidia
(2) Location	Watershed basins of Ziz-Ghriss-Guir Rivers
(3) Overall Goal	Rationalization of Natural Resources Exploitation in compliance with rural development strategy (SDR2020) as well as on Green Morocco Plan
(4) Project Purpose	The project aims at increasing production of farm products through effective use of water resources brought about by repairs/ expansion of existing main irrigation facilities, thereby envisaging higher farm income.
(5) Beneficiaries	Farmers in Errachidia Province
(6)Executive Agency/ Supporting Agency	(1) Executive Agency: ORMVA/TF (2) Supporting Agencies: Errachidia Provincial Office, Provincial branch of equipment office (DPET), Water Agency of Guir-Rheris-Ziz Basins (DRH/GRZ), Povincial Water, Forests and Desertification Control Department, Related Communes
(7) Background	Water use structures existing in Guir-Gheris-Ziz and Maider basins consist of 9 barrages including Hassan Addakhil Dam and 246 intake weirs and water diversion weirs. Out of these weirs, 25 are used for dispersing floods and other 77 comprise temporary / removable weirs. Current gross water storage capacity is measured at 333.6 MCM, amounting to 352MCM if water volume stored directly taking from streams is added to it. Area of irrigated perimeter within Guir-Gheris-Ziz ~Maider basin amounts to 68,923ha, of which 40,732ha is located in Errachidia Province. Out of these command areas, 27,900ha is gravitationally irrigated and the rest 41,023ha is irrigated through pumps. The annual mean water volume used as irrigation purpose in this basin amounts to 572MCM/year, of which 352 MCM/year is derived from surface running water, consisting of 84MCM/year is gravitationally irrigated as the discharge from Hassan Adakhil Barrage and the rest is utilized directly from water flowing in the streams. Under such a state, precious water resources have been under-utilized by the following reasons: i) Water loss from conveyance loss along irrigation canal networks and from evaporation from canals: Compared with actual discharge of 626MCM/year, nominal water use efficiency comes to 90% including direst intake from streams. However, actual efficiency remains at only 60% due to loss from water conveyance through irrigation networks and also from evaporation. In particular, since discharged water from the barrage to the terminal beneficiary perimeter flows in Ziz River for the section of 75km in Ziz watershed area, the loss in this section reaches 30% ~ 40% of the discharge.  ii) Lowered water use efficiency owing to the dilapidation of structures in the beneficiaries located at the downstream of the dike Water use efficiency of weirs of Akerouzu, Boutaaridt Douis and Kaddouss (photo in the right) has been lowered or mal-functioned. iii) Total annual water loss amounts to 179MCM/year (mean rate of loss is about 30%) as against the total irrigated water 572MCM/year. Thus, emergent/ pressing necessity of repairing / expanding of the existing major irrigation facilities arise from the above-cited reasons.
(8) Project Component (Input/ Activities)	Input: a team of experts (7 members, including chief engineer/ water resources, irrigation plan, design of irrigation structures (canals), ditto (gates etc), project cost estimation, project implementation planning and environment assessment. Activities: Rehabilitation/expansion of existing irrigation facilities, dredging of sedimentation in barrage etc. refer to the below schedule
(9) Budget	700,000,000Dhs F/S (7 months), implementation (10 years)
(10) Implementation Schedule	
(11) Effectiveness	Before the project, total mean water loss accounted for around 30% of the annual irrigate volume or 179MCM/year out of the irrigated volume of 572MCM/year, however, after the project the total water loss is expected at only around 10%, or the saved amount of 114 MCA will be able to use as irrigation water. Water storage function will be recovered at 246 intake weirs, thus alleviating flood

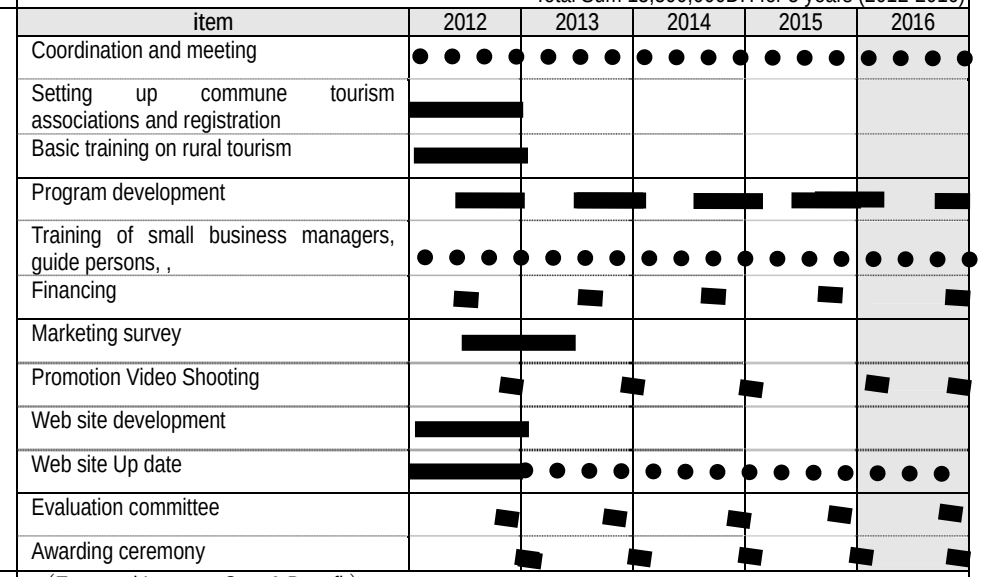
	damages that had annoyed rural population before.
(12) Risk / Risk Management	Funding sources are issues of this project. Besides, mutual collaboration among related organizations is also indispensable to carry it out.

PPS06 Priority Project Sheet	
(1) Project Name	Oasis- Based Specialty Products Development
(2) Location	Province of Errachidhia
(3) Overall Goal	Encouraging & Improvement of the Local Economy through Valorization of the Oasis Products in line with the SDR2020 and Green Morocco,
(4) Project Purpose	Through development of oasis-based specialty products, lively standard of farmers will be increased.
(5) Beneficiaries	All farmers in Errachidhia
(6)Executive Agency/ Supporting Agency	(1) Executive Agency: ORMVA/TF and Errachidia Province (INDH) (2) Supporting Agency: DAT/POT, DPT, Communes
(7) Background	Inhabitants in oases have limited resources and means of livelihood and often are exploited by brokers/ middlemen during marketing and on business occasion, selling their oasis products at cheaper prices and at low value added. Crops suitable for producing in oasis hydrology, climate and soils are aromatic and medicinal plants including rosemary and thyme, henna, cumin, okra, garlic, sesame, sunflower, anis, saffron, etc. in addition to such traditional specialty as date and olive. Technical and marketing support is imperative to add higher values to their specialty products in oases, and to diversify their oasis products to improve their livelihood means. The project involves all rural communes in the province, and aims at, as far as possible, establishing at least one special, major, and value-added, oasis-based local product at each commune. The project will be implemented by close cooperation with INDH program.
(8) Project Component (Input/ Activities)	Input : Two (2) long term experts (project manager, and coordinator) from donor country and their equipment for demonstration, and five (5) short term experts (agronomist, oasis products development, marketing, capacity development, and business management). Their TORs are production and processing of specialty herbs and crops in oases, establishment of an electrified processing / storage unit with a volume 100 MT, and providing technical trainings and marketing support measures to sell the oasis products at higher prices. Activities : - Identification of promising oasis products (receiving proposals and sample products from communes) - Feasibility (technical and financial) study on the products - Technical trainings (production, processing, production management, packaging, quality control, food sanitation, marketing, business planning & management, capacity development, proposal writing, etc) - Oasis products development (equipment, material, facility improvement, packaging, labeling, etc) - Marketing support (developing marketing channel, Blanding, quality mark) - Sales promotion (exhibition, competition, publicity campaign, antenna shop; e.g. oasis products promotion center in Casablanca, “Michi-no-Eki (direct selling shop at main road side)” in Errachidia/ Erfoud) - Development of Manual for Developing Locally Specialized Oasis Products
(9) Budget	60 MM, 30,000,000 Dh (excluding INDH support)
(10) Implementation Schedule	
(11) Effectiveness	The proposed project can maximize use of resources available in oases by adding value to original products and can absorb job-less inhabitants into processing and marketing activities, conserving fragile environment in oases.
(12) Risk / Risk Management	Instability of electric supply: Total volume of electric supply to oasis areas has been limited, and this leads to limited availability of electricity consumption in oases. Similarly, since water in oases relies solely on groundwater resources it is difficult to introduce processing requiring much water in its process. Taking these risks into account, it is planned to process products during summer, or the period of less hours of pumping operation (crop-fallow period), thus keeping periodical balance of electricity consumption, thereby conserving environment in oases.

PPS07 Priority Project Sheet					
(1) Project Name	Rural Tourism Development Project				
(2) Location	Any commune which want to promote tourism				
(3) Overall Goal	Encourage & Improve the Local Economy through Tourism Development				
(4) Project Purpose	This project aims to develop rural tourism so that rural communities can get additional income				
(5) Beneficiaries	-Rural people who has limited income from conventional industries such as agriculture and livestock will get additional income -While increasing number of population become engaged in tourism industry through this program, conventional tourism stakeholders (tour operators, hotels, restaurants, guide persons, souvenir shops) will also increase their turn over				
(6) Executive Agency/ Support Agency	Executive organization: Errachidia Tourism Association (proposed association structure attached to this sheet)				
(7) Background	Even though there are many potential tourism resources, they are not fully developed. On the other hand, agriculture and livestock has been leading industry of the province and are main income resource for the majority of the rural population. Community tourism can be an emerging industry that supplements limited income to the rural households. See the SWOT analysis below;				
	SWOT Analysis of Rural Tourism in Errachidia province				
	Strength • Unique nature of Oasis and desert • Unique culture of rural life • Existing tourists flow • Connection with European countries by overseas workers from Errachidia		Opportunity • Tourists require unique experience (which are available in Errachidia) • Morocco and Errachidia has a stable security (comparing to other areas) • Sahara has an exotic image		
	Weakness • Limited ability to develop tourism destinations and adductions • Limited supporting system for community tourism • Rural population who are interested in tourism are not organized		Threat • International competition in tourism is becoming fierce • Tourists stay shorter because they also want to visit another destinations • Tourists fluctuation due to Jasmine revolution, SARS, terrorism, etc.		
(8) Project Componer (Input/ Activities)	1) Institutional building • Set-up organization structure for the promotion of rural tourism • Organize Commune Tourism Association with small businesses and local stakeholders • Conduct basic trainings for rural stakeholders to understand tourism industry 2) Destination Development • Select two communes from each group of (oasis, desert, and town) and support as model communes by dispatching consulting team • Create matching fund or low interest loan program for small tourism businesses • Train local people for small business management and rural guiding 3) Marketing and promotion • Conduct marketing survey to identify programs and services to be developed • Assign provincial tourism Ambassador for promotion (Mr. El Hamri, for example) • Promotion video of the Tourism Ambassador • Promotion web site with phenology calendar (information of seasonal programs) 4) Awarding • Select a couple of best practices of rural tourism and award them. "Prince Rachid Award" for best rural tourism practice of the year "Governor Award" for the best leader of rural tourism "Tourism Delegation Award" for best cooperation among tourism stakeholders • Organize awarding ceremony and invite TV, radio, newspapers and tourist agencies of Casa Blanca and Rabat. • Award winners should work as volunteer advisors for rural tourism in province				
(9) Budget		Activities	Cost item	Breakdown	Sum
	1. Institutional building	Coordination & meeting	Transport/ communication	10,000DH x 5years	50,000DH
		Setting up associations and registration	Registration	10,000DH x 20 communes	200,000DH in 2012
		Training (rural tourism)	Lecturers fee	2,000DH x 20 communes	40,000DH in 2012
	2. Destination Development	Program development	Consultants	50,000DH x 6 area x 5 yrs	1,500,000DH
		Training (business	Lecturers fee	2,000DH x 20 pers. x 5	200,000DH

		managers, guiding)		yrs	
		Financing	Destination dvlpmnt.	500,000DH x 3 area x 5 yrs	7,500,000DH
	3. Marketing & Promotion	Marketing survey	analysis, reporting	1 set 300,000DH	300,000DH in 2012
		Promotion Video	Video Shooting/ editing	1 set 300,000DH X 5 yrs	1,500,000DH
		Web site development	Web design/ info.	1 set 200,000DH	200,000DH in 2012
		Web site Up date	Info. collecting/ editing	1 set 100,000DH x 5yrs	500,000DH
	4. Awarding	Evaluation committee	Evaluation visit	20,000x 5years	100,000DH
		Awarding ceremony	Ceremony/ promotion	300,000DH x 5 yrs	1,500,000DH
	Total Sum 13,590,000DH for 5 years (2012-2016)				

(10) Implementation Schedule



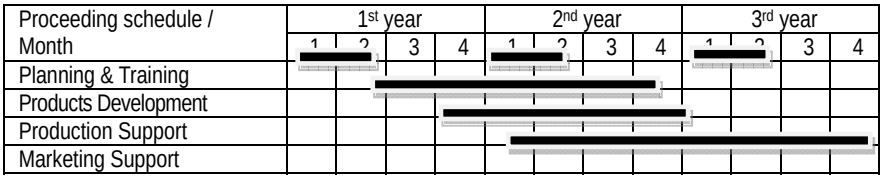
(11) Effectiveness

（Expected Impacts, Cost & Benefit）

(1) Tourism income and employment would increase in the target communes.
(2) Women's group would get more profit by handy craft souvenir & miscellaneous works
(3) Rural population become more proud of their life style & keep living in their community
(4) After 5 years of care-taking, each commune tourism association with small tourism business would survive with their efforts

(12) Risk / Risk Management

Tourism is called "Industry of Peace". Terrorism and unstable political situation might decrease tourists drastically. And tourists are sensitive to world economic condition; tourism income might not grow during depression. However, repeater-tourists may mitigate this fluctuation.

PPS08 Priority Project Sheet	
(1) Project Name	Promotion of Income Generating Activities through Effective Operation of Multi-purpose Center
(2) Location	All Communes in Errachidia
(3) Overall Goal	Encouraging & Improvement of the Local Economy through Valorization of the Oasis Products
(4) Project Purpose	Develop Handicraft and Light Manufacturing Sector to Create Job Opportunities to Women and Youth so as to Increase Their Income
(5) Beneficiaries	Women and Youth
(6)Executive Agency/ Supporting Agency	Handicraft delegation, ORMVA/TF, Province (INDH), SECA, Communes Associations, Cooperatives
(7) Background	Agricultural production in inland region of Morocco is unstable due to erratic rainfall and severe natural environment, in addition to undeveloped infrastructures in particular remote mountain and desert area. However, it is effective to increase people's income through developing locally specialized non-farm products by improving handicraft makers' skills and promoting collective marketing of their products. Non-farm products provide alternative income source in the agricultural off season and to those young population who gain higher educations. Producing fossils, marble-made crafts, traditional carpet, embroidery, Berber garment, pottery, etc. are common activities in rural communes in the province, and women and craftsmen sell their products at local market and to middleman from large markets. However, their production skills are quite poor, which result in being forced them to sell at cheaper prices. Also some of handicraft producers sell rude material (e.g. fossils including ammonites, trilobites, orthoceras) to the outside middlemen, and most adding value goes outside of their community. Therefore, if handicraft producers in rural communes can create adding value on their natural products, they can earn more income from outsiders including foreign customers. The project provides technical trainings, production and marketing supports, sales promotion places including multi-purpose centers in rural communes and antenna shop in large market. Also, the project involves all rural communes in the province, and aims at, as far as possible, establishing at least one special, major, and value-added, oasis-based local product at each commune. The project will be implemented by close cooperation with INDH program.
(8) Project Component (Input/ Activities)	Input : Long term and short term experts, Technical trainings, Production support including equipment and materials, Marketing support including multi-purpose center and sales promotion center. Activities : - Identification of promising income generating activities (receiving proposals from associations and cooperatives which have willingness to participate this project) - Technical and financial feasibility study on the products - Technical trainings (production, processing, production management, packaging, quality control, marketing, business planning & management, capacity development, proposal writing, etc) - Production support (equipment, material, facility improvement, packaging, labeling, etc) - Marketing support (developing marketing channel, Blanding, quality mark) - Sales promotion (exhibition, competition, publicity campaign, multi-purpose center in rural communes, sales promotion center in Erfoud / Errachidia)
(9) Budget	30,000,000 Dh (excluding INDH support)
(10) Implementation Schedule	
(11) Effectiveness	The proposed project can maximize use of resources available in oases by adding value to original products and can absorb job-less inhabitants into processing and marketing activities, conserving fragile environment in oases.
(12) Risk / Risk	Instability of electric supply: Total volume of electric supply to oasis areas has been limited, and this leads to limited availability of electricity consumption in oases. Similarly, since water in oases relies solely on groundwater resources it is difficult to introduce processing requiring much water in its process. Taking these risks into account, it is planned to process products during summer, or the period of less hours of pumping operation (crop-fallow period), thus keeping periodical balance of electricity consumption, thereby conserving environment in oases.

PPS09 Priority Project Sheet	
(1) Project Name	Dissemination of Improved Livestock (bovine, D'man, goats, camel, and horse) through Artificial Insemination
(2) Location	All Communes
(3) Overall Goal	Accomplishment of National Strategy for Increasing Livestock Production, Encouraging & Improvement of the Local Economy through Valorization of the Oasis Products
(4) Project Purpose	Improvement of quality of Livestock through dissemination of Appropriate skills for race improvement and livestock breeding
(5) Beneficiaries	Member of livestock breeders cooperative
(6) Executive Agency/ Support Agency	(1) ORMVA/TF, NAPRM, ANEB (2) Local Associations/ Cooperatives (3) Local Authority, Rural Commune, Commune Council
(7) Background	Supply of red meat in Morocco can not satisfy peoples demand, and annual consumption of the red meat is only 12/ person/ year in 2011. The government has a plan increase the rate up to 41kg/ person/ year. For this purpose, the government promotes race improvement of livestock through artificial insemination (AI), and makes the service more efficient through privatization. However, livestock breeders are unsure about the AI since they can not see stud bull for example, which in turn result in a heavy going of the service dissemination. Particularly, it is more difficult to extend the AI service in the inland dry region including Errachidia than the coastal region of Morocco. Since the AI requires only light weight equipment, it is faster and economically more efficient to disseminate AI service to the desert and the mountainous regions, where Ksars are scattered in the vast area. Moreover, natural crossbreeding requires careful attention on the bull to avoid such risk as animal disease. It must be noted that incidence rate of the animal disease is higher in the mountainous region than the Southern dry region. Therefore, the project aims at establishing an effective AI dissemination model in all rural communes. Specifically, association takes responsibility to make preparations to receive the AI service at Ksar level and to conduct raising awareness campaign. The project also provides technical training opportunity for effective breeding method of livestock to Ksar level beneficiaries, and training of trainers will be organized for this purpose. Particularly, improving feeding method is quite important, and trainings to introduce high quality of fodder crops and haylage method will also be provided. The project covers raising awareness campaign and technical training, and the AI service implementation will be conducted under the initiative of the association concerned.
(8) Project Component (Input/ Activities)	Input Expert: Long Term (project manager, coordinator) and shorts Term (livestock breeding, veterinarian, feed production, processing and marketing, capacity development), Training of Trainers (TOT), Raising awareness campaign, Inventory survey, Study tour, technical training to breeders, and provision of veterinary service Activities - Veterinary service contract - TOT, Raising awareness campaign, - Inventory survey for livestock breeding - Study tour to advanced associations in Rich and Errachidia - Technical training to breeders - Processing (by products) and Marketing support
(9) Budget	20MM, 15,000,000 DH

(10) Implementation Schedule

	1st Year			2nd Year			3rd Year		
	1-4	5-8	9-12	1-4	5-8	9-12	1-4	5-8	9-12
Study and planning									
Veterinarian Services									
Training of Trainers									
Awareness Campaign									
Inventory Survey									
Study Tour									
Organizing/ Training to Farmers, AI Service									
Processing and Marketing support									

(11) Effectiveness	- Establishment of collaboration structure among Association, ETC, commune council, local authority for planning, implementing, and M&E of the project - Demand driven breeding skills of the farmer breeders - Race improvement through AI dissemination and improving breeding method of farmers in the inland dry region
(12) Risk / Risk Management	1) Infectious disease to livestock 2) Political invasion to the economic activities

PPS10 Priority Project Sheet	
(1) Project Name	Technical Assistant for elaboration on Integrated Errachidia Provincial Development Plan to correct disparities and to reduce poverty reduction
(2) Location	Errachidia Province
(3) Overall Goal	Strengthening the Organizations concerning the rural development in Errachidia
(4) Project Purpose	To correct disparities and to reduce poverty reduction through formulation and implementation of the Development Plans in Errachidhia
(5) Beneficiaries	Staff of Errachidhia Province and, Commune and population
(6) Executive Agency/Supporting Agency	(1) The Cell of Promotion of Development Plans and Coordination, CPDC (2) DGCL and Errachidhia Province
(7) Background	Concerning the provincial development Plan (PDP), Provincial text (PDP to be prepared by Article 36 of Provincial Charter) has been instituted in 2003, through which provinces have obligation to formulate their PDP. Whereas, current situation prevails in such a way that such plan is at present not yet formulated, means of their formulation has been at the province's disposal or arbitration. Out of 71 provinces in the kingdom, only a few of them has so far formulated their plans. In each province, need of formulating PDP is pressing because development plans for sector-transversal projects should be provided coping with environment conservation measures coping with recent dynamic changes in climate and rectifying area disparity and creating local employment for which solutions have been demanded in PCDs. Nevertheless, assistances by development partners have been called for because the provinces do not have any experience on the PDP formulation, in the lack of relevant guideline to formulate it. In order to overcome various issues and to push effectively forward of development projects, it is essential that provinces shift from hitherto sectoral administration to mutual collaboration among sectors and provide integrated development strategy introducing participatory approach. With a view to creating a comprehensive area development strategy, it is indispensable to build and develop administrative capacity of provinces that play key role in development administration at local level, as well strengthening autonomous function that fosters decentralization. In particular, in implementing commune-transversal as well as sector-transversal programs that serve mission of development plans at provincial level, an organization is necessary that can coordinate roles of concerned communes and delegations, procure project funds from the existing programs by donors and delegations to put the program into implementation under mutual collaboration of these actors/partners. To this end, JICA Study Team has proposed to establish a "The Cell of Promotion of Development Plans and Coordination, CPDC "who are playing roles of formulating, implementing, evaluating and monitoring provincial plan, follow-up of PCD, aiming at capacity building of development actors and a "Task Force Team" consisting of principal provincial divisions and delegations technically supporting PPS, representatives of associations etc,. As a result, under the strong leadership of the governor, such organizations have been organized in July 2011. However, such an activity is the first trial for the province, and no staff even in the members of PPS has experience of performing the required services. Hereafter, it is vital to establish functional frame of PPS and to strengthen the activities of nurturing resource persons. In coming years, review of PCD is scheduled in 2013 and also formulation of PDP on the basis of PRDP will be followed. In view of such a pressing need, the Governor of the province has requested further Japanese support on the provision of provincial development plan coupled with the follow-up of verification projects.

(8) Project Component (Input/ Activities)	In order to overcome the above-mentioned issues, the terms of cooperation have to be focused on the following activities as a technical cooperation project for strengthening organizations and nurturing resource persons. ● Support on the implementation of Rural Development Plan of Errachidia Province (PRDP) ● Support on the formulation/ implementation of Provincial Development Plan of Errachidia （PDP） ● Support on the provision of a guideline for formulating PDP based on the lessons learnt and proposals in the process of PRDP formulation ● Support on the implementation, monitoring and review of Commune Development Plan （PCD） ● Support on introducing IT and SIC（Commune Information System）for statistics and information ● Support on revision of PCD manual including process of project implementation, monitoring and reviewing practices ● Evaluation and follow-up of Pilot Projects that the Study Team assisted in their implementation 6 staff are deployed including Chief Advisor

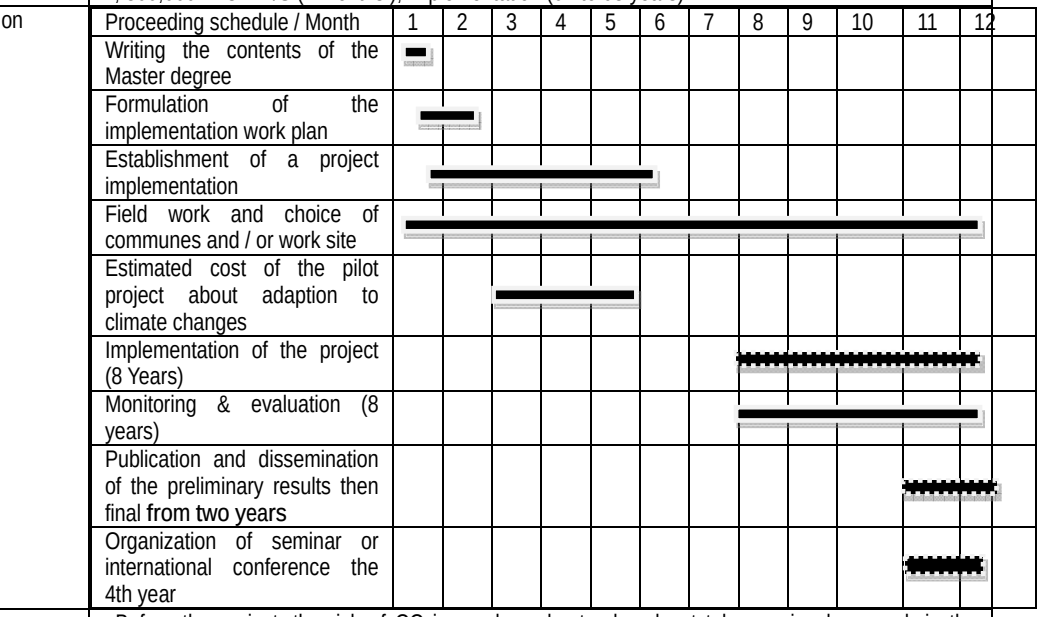
T O R	1st year	2nd year	3rd year	Total
Chief advisor/Area development/ Local administration				16
Organizational strengthening/ Human resource nurturing/Gender				24
Agro-processing/Marketing				8
Consolidation of Rural Infrastructure				12
Information management				6
Coordination				(6)
Total				66

(9) Budget	25,000,000Dh
(10) Implementation Schedule	3 years starting from may 2012. The following gives the process of formulating and implementing area development plan hereafter.

Schedule on the Process of Project	2011	2012	2013	2014	2015	2016	2017
Revision of PCD Guideline							
Formulation of Integrated PCD Manual							
Duration of technical project in supporting Erracidia Province							
1. Formulation of Provincial Development Plan（PDP）		PRDP		PDP			
2．Formulation of Provincial Rural Development Plan（2012-23）				Review of PCD			
3. Commune Development Plan（2011-16）							
4. Revision of PCD Formulation Manual				Revise the PCDManual			
5. Support on SIC practices・information management							
6. Follow-up of Pilot Projects							

(11) Effectiveness	♦ Strengthening the collaboration System among Errachidhia Province, Communes and External Development Agencies. ♦ Implementation of the Inter Communal Projects and Sectorial Project will be able ♦ Formulation of the Provincial Development Plan and Its implementation, Monitoring & Evaluation will be done effectively.
(12) Risk / Risk Management(Lessons Learnt from Pilot Project	To assure a budget for CPDC's activities.

PPS11 Oases of Tafilalet and climate change (CC)	
(1) Project Name	Setting up a computer system for monitoring climate change and natural disaster prediction.
(2) Location	The four watersheds in the province: Ziz Gheris, Guir and Maeder
(3) Overall Goal	Setting up an alert service and adaptation to the risk of climate changes in the oases of Tafilalet.
(4) Project Purpose	Specific Objective 1 : Sensitize and train staffs of Communes, schools, health centers, associations, nomads, etc., about the problem of climate change (with special attention for women) Specific Objective 2 : Assist communes to integrate Climate Changes in the planning process and local sustainable development Specific Objective 3 : Elaboration and follow up a pilot project on adaptation to climate changes: the case of management of irrigation water in one of the pilot communes (ex. Gheris Ouloui). Specific Objective 4 : Mapping of risk and possible adaptations against the Climate Changes (GIS) Specific Objective 5 : Provide specialized academic training (Master and doctoral training) in addition to scientific research for sustainable development.
(5) Beneficiaries	Students from the MIU, farmers' representatives of some communes in the province of Errachidia, nomads, students, school teachers and professors, associations, tourist guides, the external services of the province (water, agriculture, equipment, health, tourism, etc..).
(6) Executive Agency/Supporting Agency	✓ Moulay Ismail University (MIU), Faculty of Sciences and Techniques Errachidia (FSTE). ✓ Morocco Ministry of Environment / Secretary of State ✓ HCEFLCD ✓ PNUD ✓ GIZ ✓ UE ✓ UNESCO ✓ ANDZOA
(7) Background	Man was once part of the oasis ecosystem, in the sense that he respected, adapted and got profits of the various services that this ecosystem gave him. In recent decades, in addition to the effects of drought, people seem to be inconsistent with the management of their environment and unsure about the sustainability of the services provided by ecosystems. The most significant factor in the progressive loss of oases in recent decades is not the irrational use of natural resources, caused by human activities that result in a change in the balance of ecosystems, causing subsequent progression of desertification. All this background is now accentuated by the Climate Change. The effect observed in Tafilalet oasis ecosystem is the degradation of natural resources and all biotopes. This degradation affects biomass and interactions, shelters and services it can provide to humans. Hence the search for better control of possible adaptations of this ecosystem facing the Climate Changes. Natural landscapes and architecture are in a situation that does not reflect the character and local identity, urbanization is an anarchic way, the abuse and often without scientific approach to fossil quarries and sand in bed rivers can be a source of threat to humans if this behavior is not seen and interpreted in a global view (scientific, social, economic, etc.) taking into account the threat of climate change (risks). Water has become increasingly rare and, paradoxically, increasingly polluted. The lack of groundwater and its depletion induces the death of the palm trees and therefore the loss of the key services and functions of the oasis. The scarcity also causes conflicts of use and users. The flood waters are often lost because of these conflicts or lack of maintenance of irrigation canals. This results in an increased stress on water especially for the date palm that is the backbone of the oasis. This will be more likely to be more pronounced and alarming under pressure from the Climate Changes. Of course this project will enable the strengthening and enhancement of knowledge and know-how acquired by the local population who was able to adapt to changes in climate since so long time. This project proposes then: to sensitize, train, to the extensive scientific research, to support and strengthen the implementation of projects identified and to identify in each commune of the province of Errachidia (PCD). Also, to contribute to the implementation of the National Charter and the surrounding Sustainable Development (NCSD) of Morocco in the light of the threat CC. It will also eventually made available to the local decision-makers and others the most appropriate level of their territories against the CC.

(8) Project Component (Input/ Activities)	Input: Opening of a Master in FSTE_UMI to be entitled "Environment and sustainable development in arid and semi-arid regions of Morocco: Case of Oasis." For the expected modules, we quote: Health and environmental, information systems and communication, modeling, Climate change and ecosystem dynamics (adaptations), Entrepreneurship and Renewable Energies, etc.. The Master degree is held in accordance with what has been defined by the ministry in four semesters S1, S2, S3 and S4. The fourth semester is reserved for the presentation of the dissertation study and followed by an internship in one and / or private institutions, public and semi-public.) Activities: research, raising awareness, follow up, implementation of the various thematic maps (GIS), setting up projects, monitoring and evaluation, etc.. Refer to table below
(9) Budget	1, 300,000 Dhs F/S (7 Months), implementation (04 to 08 years)
(10) Implementation Schedule	
(11) Effectiveness	Before the project, the risk of CC is poorly understood and not taken seriously enough in the planning and / or implementation of projects and programs in each area (by the communes and other agencies involved in local development). With the project, local officials, especially in communes are convinced to take into account the threat of CC in their planning. For its part, the university could contribute to SD through its openness towards the socio economic development. Students who were able to work in this project will be the future leaders of these communes and / or others. The pilot well done and implemented in scientifically rigorous monitoring (indicators) may be reproduced (oil spot). The threats of the CC are reduced.
(12) Risk / Risk Management(Lessons Learnt from Pilot Project	Funding is the major problem. Moulay Ismail University put their skills to the development of the province. Of course, collaboration and commitment of other partners is the key to the success of this project.

Appendix 5 Table and Figure

Table 1.1.1 Situation of Errachidia Province in Meknes-Tafilalt Region

Region	Area ((Km²)	Communes No.	Population (person)	Pop. Density Persons/ Km²	Poverty Rate (%)	Vulnerable Rate (%)	Illiteracy Rate (%)	
							male	female
Errachidia	60,000 (75.4%)	47	556,612	9.3	*29.49*	20.58	25.7	53.4
Khénifra	12,320(15.5%)	38	511,538	41.5	18.18	20.80	41.1	63.4
Elhajeb	2,209 (2.8%)	16	216,388	98.0	21.43	*22.68*	35.0	61.0
Ifrane	3,310 (4.2%)	10	143,380	43.3	16.03	18.31	36.7	58.0
Meknés	1,786 (2.2%)	23	713,609	399.5	12.85	16.17	22.0	43.8
Total	79,625(100%)	134	2,141,527	26.8	19.5	19.22	29.8	53.6

Source: Données cartographiques et statistiques September 2004

Table 1.1.2 Per Capita Annual Food Consumption (kg)

Item	Morocco (a)	World (b)	a/b	Item	Morocco (a)	World (b)	a/b
Wheat	179.26	67	2.7	Oranges, Mandarines	23.89	11.68	2.0
Barley	38.96	1.13	34.5	Apples	8.75	8.12	1.1
Potatoes	38.88	32.88	1.2	Dates	1.47	0.79	1.9
Sugar	35.8	20.85	1.7	Bovine Meat	4.94	9.58	0.5
Pulses, Other	5.26	2.97	1.8	Mutton & Goat Meat	3.96	1.88	2.1
Olives	1.84	0.31	5.9	Poultry Meat	9.23	11.91	0.8
Olive Oil	2.47	0.4	6.2	Milk	35.93	80.82	0.4
Tomatoes	24.22	16.37	1.5	Eggs	6.3	8.63	0.7
Onions	21.25	7.62	2.8	Fish, Seafood	8.66	16.06	0.5

Source: FAO Food Balance Sheet

Table 1.1.3 Revenue Items of Errachidia Province

Revenue Items	Details
General Administration	Commissions, Royalties, etc.
Social Matters	Water charge, Electricity fee, Ambulance fee, etc.
Technical Matters	Urban tax, Vacant land tax, Damage to articles, Garbage collection, etc.
Commercial Matters	Market tax, Trade tax, Sales tax, Slaughter house charge, Museum fee, etc.
Support and Subvention	Subvention from central government, Subsidy
Government Derigations	Ministry of Education, Ministry of Health, etc.

Source： DCL, Errachidia Province

Table 1.1.4 Possible Controllable Capacity for Reservoir

Watershed	Name of Dam/Barrage	Dam Type		Storage Capacity (Mm^3)	Dam/River Name	Possible Controllable Capacity (Mm^3)
		Reservoir	Diversion			
Ziz	Ait Balahcen	x		1.6	Nzala	1.6
Total 1	1	1	0	1.6		1.6
Gheris	Oukhit	x		1.6	Oukhit	0.8
	Tadighoust*	x		25	Gheris	20
	Timkit			13	Ifegh	9
	Assif Ouamrane	x		1	Ouamrane	0.4
	Oulhou	x		1.6	Oulhou	0.6
	Taghoucht	x		1.6	Anesnim	0.6
	Ouaklim	x		5	Ouaklim	3
Total 2	7	7	0	48.8		34.4
Total 1+2	8	8	0	50.4		36.0
Guir-Bouanane	Tiouzaguine	x		4	Guir	3
	Kaddoussa	x		22	Guir	21
	Khang Grou	x		50	Khang Grou	47
Total	4	3	1	76		86
Maider	Bouchama	x		1.2	Fezou	1.1
	Imi N'Tourza	x		1.6	Fezou	1.5
	Tiamzite	x		4.8	Hssia	4.3
	Khing	x		2.5	Hssia	2.1
	Hanedour	x		2.4	Taghbalt	2
Total	6	5	1	12.5		14.6
Grand Total	18	16	2	139		118

Source : DEBAT NATIONAL SUR L'EAU, DIECTION DE LA REGION HYDRAULIQUE DU GUIR-GHERIS-ZIZ Févier 2007
Note : *Tadighoust Dam was already constructed

Table 1.1.5 Budgetary Allocation Plan for Countermeasures against Flood and Drought

Related Organization	Construction	Rehabilitation	Total (MDH)
MET	27, 43	-	23, 43
MHUAE	28, 80	44, 50	73, 23
MAPM	26, 00	02, 30	28, 30
HEFLCD	26, 00	67, 90	93, 88
Others	28, 90	13, 30	42, 20
Total	137, 00	128, 00	265, 00

Source : DEBAT NATIONAL SUR L'EAU, DIECTION DE LA REGION HYDRAULIOUE DU GUIR-GHERIS-ZIZ Févier 2007

Table 1.1.6 Project Summary for Rehabilitation/Construction of Irrigation Facilities

Project Name	Type of intervention	Related Commune	Years unit :1.000 Dh		
			2010	2011	Over 2012
1. Development of PMH	Extension of Operations		4.500	3.900	12.000
2. Repair of flood damages	Repair of damaged structures		30.500	-	-
3. Flood water harvesting					
GHABA area including forest	Construction of dam and irrigation network	Oued N'aam	10.100	10.000	13.000
MELAAB area	-ditto-	Mellab	-	-	21.000
SIDI BOUKIL area	-ditto-	M'zizel	-	-	19.000
LAMHARZA area	-ditto-	Sifa	-	-	5.000
Bour KHORBATE area	-ditto-	Ferkla Oulia	-	-	54.000
TINJDAD area	Completion of the network of Ras Sdaf, Ait Labzam et Chtam	Ferkla Oulia Felka Soufia	7.000	7.200	5.200
4. Transfer GUIR-ZIZ rivers	Construction works for head and channel of transfer	Rteb, A.Seb.Ziz, Sifa, Rissani, Bni Mhamad Sijjimassa	-	-	450.000
5. Rehabilitation of khettaras	Rehabilitation of irrigated areas by khettaras		-	900	100.000
	Total		52,100	19.000	679.200

Source: Service de l L' Equipment Rural, ORMVA/TF

Table 1.1.7 Water use improvement plan by 2015

Basin	Utilized water potential (MCM)	Utilization of Water in 2009		Utilization of Water in 2015	
		Volume (MCM)	Ratio (%)	Volume (MCM)	Ratio (%)
Surface water	536	385.9	72	439.5	82
-Ziz river	223	211.9	95	211.9	95
- Gheris river	125	106.3	85	113.8	91
- Guir river	188	69.6	37	112.8	60
Underground water	186	93.0	50	102.3	55
TOTAL	722	476.5	66	541.5	75

Source: Service de L' Equipment Rural, ORMVA/TF

Table 1.1.8 Schedule of PURR2 unto 2212

Project Name	Executive Agency	Related Communes	Total Budget.	Budgetary Allocation (Unit: 1,000DH)							Budegt Support
				2009	2010	2011	2012	2013	2014	2015	
Preparation of road 702 between Arfoud and Merzouga	DPET	Erfoud -Merzouga	11,200								DPET
Construction of road between road 7103 and Agourai	DPET		6,800								DPET
construction of road connectiong road N10 and Tazgarine	DPET		20,000								DPET
Rehabilitation of road 7110 between Fzou and Tafraout	DPET	Sidi ali	21,722								DPET
Total			59,722								
Road network mainrenace	DPET	Rissani,Errachidia ,Arfoud,Jorf,Imilchil	34,740								DPET
Total operations			94,462								

Table 1.1.9 Schedule of Rehabilitation of Bridges, etc, unto 2012

Project Name	Executive Agency	Related Communes	Total Budget.	Budgetary Allocation (Unit: 1,000DH)							Budegt Support
				2009	2010	2011	2012	2013	2014	2015	
Rehabilitation of Brideges, etc.	DPET	Jorf-Arfoud	13,200								DPET
Rehabilitation of Brideges, etc.	DPET	Arfoud-Merzouga	11,600								DPET
Rehabilitation of Brideges, etc.	DPET	Goulmima-Eraachidia	18,000								DPET
Rehabilitation of Brideges, etc.	DPET	Tinghir-Errachidia	26,000								DPET
Total			68,800								

Table 1.1.10 Rural Global Electrification Program (PERG) in Errachidhia

Project Name	Executive Agency	Related Communes	Total Budget (1,000DH)	Budgetary Allocation							Budget Support
				2009	2010	2011	2012	2013	2014	2015	
medium and low voltageElectrification of 14 ksars in PERG IV framework (Project in finale stage)	ONE	M'daghra, kheng Melaab	10,334	10,334							ONE, Communes Benificiary Households
medium and low voltage, Electrification of 7 ksars in PERG IV framework	ONE	Sidi Ayad Assoul	5,900		5,900						ditto-
medium and low voltage, Electrification of 8 ksars in PERG IV framework	ONE	Taous, Rich Amouguer	10,600		10,600						-ditto-
medium and low voltage, Electrification of 28 ksars in PERG IV framework	ONE	Zaouiat Sidi Hamza, N'zala, Guers Tiaalaline, Amelagou, Melaab,M'ssici, Tadighouste, Rissani	42,000			42,000					-ditto-
Total : 57 Ksars			68,834	10,334	16,500	42,000					

Table 1.1.11 Summary of Investment Project in Errachidia Province

Project Name	Executive Agency	Related Communes	Total Budget (1,000DH)	Budgetary Allocation							Budget Support
				2009	2010	2011	2012	2013	2014	2015	
medium and low voltageElectrification of 14 ksars in PERG IV framework (Project in finale stage)	ONE	M'daghra, kheng Melaab	10,334	10,334							ONE, Communes Benificiary Households
medium and low voltage, Electrification of 7 ksars in PERG IV framework	ONE	Sidi Ayad Assoul	5,900		5,900						-ditto-
medium and low voltage, Electrification of 8 ksars in PERG IV framework	ONE	Taous, Rich Amouguer	10,600		10,600						-ditto-
medium and low voltage, Electrification of 28 ksars in PERG IV framework	ONE	Zaouiat Sidi Hamza, N'zala, Guers Tiaalaline, Amelagou, Melaab,M'ssici, Tadighouste, Rissani	42,000			42,000					-ditto-
Total : 57 Ksars			68,834	10,334	16,500	42,000					
Strengthening the security of sensitive sites in THT/HT Post of Errachidia	ONE	Errachidia Province	1,947			1,947					ONE
225 KV line construction of 260Km : Errachidia-Ouarzazate	ONE	Errachidia Province	228,720					228,720			ONE
60kv line construction of 73 Km : Erfoud - Errachidia	ONE	Erfoud Cercle Rissani Cercle	31,512					31,512			ONE
Total			399,847	20,668	33,000	85,947	0	260,232			
Grand Total			468,681	31,002	49,500	127,947	0	260,232	0	0	

Table 1.1.12 Studies of Drinking Water Supply by ONEP

Project Name	Executive Agency	Related Communes	Total Budget.	Budgetary Allocation							Budegt Support
				2009	2010	2011	2012	2013	2014	2015	
1. Study of drinking water supply											
Study of Drinking water supply	ONEP	Sidi ayad commune center and ksars	0,17MDH								
Study of drinking water supply of future commissions- coupon 1	ONEP	Ait hani ,Imilchil , Assoul , Amellagou, Amouger, Nzala and Guers tialaline	0,67 MDH								
Study of drinking water supply of future commissions- coupon 2	ONEP	Alnif,H'ssia, M'ssici,Taous and Sidi Ali	0,93 MDH								
Study of drinking water supply of Bour area and Touroug	ONEP	Mlaab and Farkla Oulia	0,68 MDH								
Study of drinking water supply of future commissions- coupon 3	ONEP	Gourama,Guir,Ouad Naam,Zaouiat sidi hamza,M'zizel,Ait yahia, Outerbat , bouzmou, Aghbaloun'k and Tadighouste	0,99 MDH								
Study of strenghtening of storage capacity of Erfoud center and Ziz oasis.	ONEP	Erfoud,Aoufous,M'daaghra and Rteb.	0,50 MDH								
Study of Tafilalet regional traction channel renovation and strenghtening and insurance of Errachidia city supply .	ONEP	Municipality: Errachidia,Aoufous,Erfoud,My ali cherif,Jorf, and communes :Taous,Kheng,Rteb,M'daghra,Sifa,Arab Sabah Ziz,Arab Sabah GHris,Beni Mhamed Sijilmassa,Rissani and Sfalat.	0,80 MDH								
Studies Total cost			4,74 MDH								

Table 1.1.13 Studies of Sanitation in all municipalities

Project Name	Executive Agency	Related Communes	Total Budget.	Budgetary Allocation							Budegt Support
				2009	2010	2011	2012	2013	2014	2015	
3. Sanitaion Studies			x 1,000 DH								
Study of the rehabilitation and expansion of sewage network	ONEP	Errachidia and Rissani	753,9 KDH								
Study of the supplement-ary cleaning for sewage station	ONEP	Errachidia	800 Kdh								
APD-DCE)* update of sewaage Study	ONEP	Arfoud	795,61 KDH								
. update of sewaage Study (APD-DCE) .2 part	ONEP	Boudnib	760,2 kdh								
(Sewage Study (APS-APD-DCE	ONEP	Gourrama	898,45 KDH								
(Sewage study (APS-APD-DCE	ONEP	Aoufous	660,3 KDH								
(Sewage study (APS-APD-DCE	ONEP	Mrzouga	780,3 KDH								
(Sewage study (APS-APD-DCE	ONEP	tinjdad	600 KDH								
Total cost of sanitation studies			6048,76 KDH								

Table 1.1.14 List of on going and planning projected by DPT

Project Name	Executive Agency	Related Communes	Total Budget	Budgetary Allocation							Budget Support
				2009	2010	2011	2012	2013	2014	2015	
			X 1,000 Dh								
A.Studies											
Study of oasis and desert demand and supply and tourist visits and creation of an evaluation system	DPT & regional council	province communes	1,000								DPT & regional council
B. Executions											DPT
PAT house construction	DPT	Arfoud	1,500								DPT
PAT house equipement	DPT	Aarfoud	500								DPT
Markup and signalization of Ghris valley palm groove circuit	DPT	Goulmima	1,000								DPT
Markup and signalization of Tinjdad palm groove circuit	DPT	Tinjdad									DPT
Markup and signalization of sand dune crossing	DPT										DPT
Markup and signalization of desert crossing	DPT										DPT
Markup and signalization of Tazggarte – Merzouga cercuit	DPT	Merzouga									DPT
Training of service providers	DPT	province communes	500								DPT
Total			4,500								

SMIT : Moroccan Firm of Tourism engineering
PAT:Tourism Reception Area

Table 1.1.15 Project List of DPEFLCD (2005-2014)

Project	Objective	Action	Unit	2005-2014		2005-2009		Exp. Rate(%)
				Unit Cost	Budget(DH)	Unit Cost	Budget(DH)	
Horizontal Action	Delimitation and conservation of forest for exploitation and the adding of value on PAM(Aromatique and Medicinal Plant)	Regeneration	ha			1	17,280	
		Production of plants	Plants	3,375,000	5,062,500	1,500,000	1,700,000	
		Temporal/ parmanent delimitation	ha	70,000	100,000	60,000	170,000	
		Registration	ha	150,000	10,400,000	112,548	5,233,000	
		Maintenance/ reparation of administrative ofiice				1	200,000	
		Rehabilitation of guard office				2	100,000	
		Total			15,562,500		7,420,280	47.68
Conservation of river bank of Ziz Ghriss River	Prevention of water erosion at natural area in Nord Conservation	Reforestration	ha	850	5,950,000	500	2,354,888	
		Suppot of plantation	ha	750	1,500,000	400	704,156	
		Maintenance/ rehabilitation of pist	Km	40	2,000,000	26	2,040,000	
		Distribution of fruit tree				6,000	90,000	
		Technical support for gully	M^3	10,000	5,000,000	13,500	4,200,000	
		Construction of water point		2	100,000	4	193,105	
		Total			14,550,000		9,582,149	65.86
Park National du Haut Atlas Oriental(PNHAO)	Rehabilitation of natural area/ management and conservation of biodiversity/ development of ecotourism with participatory approach in the framework of PNHAO and Reservation of sahara Fauna and Flora in M'cissi	Construction of office for forester		5	1,450,000	5	1,290,000	
		Construction of directors office at Parc		1	600,000	1	550,000	
		Construction of accomodation		2	600,000	2	552,000	
		Maintenance of rough road	Km	20	250,000	20	250,000	
		Implimentation of action plan	Bloc	Bloc	1,200,000		1,200,000	
		Purchase of signboad					200,000	
		Equipment, maintenance and instllation					446,000	
		Total			4,100,000		4,488,000	109.46
Protection of saharan ecosystem	Prevention of sedimentation/ protection of agricultural&palm land, of irrigation system,of access road and of Ksar	Care of reserve area					330,000	
		Alimentation	Tonne	200	1,000,000	60	225,000	
		Extension of exclosure	ML	1,600	320,000	Bloc	513,090	
		Fixing of dune	ha	400	20,000,000	185	7,694,264	
		Total			21,320,000		8,762,354	41.10
		Ground Total			55,532,500		30,252,783	54.48

Table 1.1.16 Main activities 2009-2010 by DA

Activities	Executive Agency	Commune	Budget (DH)	Plan
Equipment of material for producing marble	MA	Erfoud	1,600,000	2009
Creation of complex for handcraft	MA	Imilchil	800,000	2010
Arrangement of craft village including marble/ fossil	MA,CP,CR,CR	Erfoud	not yet	
Creation of retail place in Ait Messoud	MA	Mdaghra	not yet	

Table 1.1.17 JOCV in Errachidia Province

Name	Type of Job	End of Period	Activity Place	
Chikato ENDO	PC Instructor	2010/01/18	Errachidia	Errachidia
Tomonobu Maruyama	Surveyer	2011/03/20	Errachidia	Errachidia
Hirotaka MOFUSA	Handy Craft	2009/12/23	Amelagou	Association AL KARAMA
Miya OKAMURA	Garment	2010/01/04	Assoul	Coopération du tissu
Yuko KATAOKA	Primary school Teacher	2010/03/21	Erfoud	Arb sbah Ziz
Keiko HIRAOKA	Rural Development	2010/02/22	Ghriss Ouloui	Ghriss Ouloui Commune
Maki HORIOKA	Handy Craft	2010/03/23	Ghriss Ouloui	Ghriss Ouloui Commune
Tomoko KOTABE	Rural Development	2010/03/23	Rissani	Beni Mhamed
Eri OKADA	Nurse	2011/06/19	Errachidia	Errachidia
Ayumi KUWAHARA	Rural Development	2011/09/25	Erfoud	Erofoud
Mai MAKIZONO	Youth activities	2011/09/25	Errachidia	Errachidia
Masami TAKAHASHI	Kindergarden teacher	2011/09/25	Errachidia	Errachidia

Table 1.1.18 Commune for PDK

Circle	Commune	Ksar
Imilchil	Imilchil	19
	Bouzmou	13
	Ait Yahia	10
	Ontararat	13
	Amouber	15
Sub-total	5	70
Rich	Zaouiat Sidi Hamza	8
	N'zala	17
	Sidi Ayad	18
	M'zizil	17
	Kours Tiaalaline	44
	Gourama	19
	Ghir	14
	Rich (Municipality)	
Sub-total	8	142
Assoul	Assoul	19
	Amelago	15
	Ait Hani	13
Sub-total	3	47
Goulimima	Aghablou N'Kardous	19
	tadighoust	9
Sub-total	2	28
Total	18	287

Table 1.1.19 Main agencies financed the project

Financed Agencies	Amount
MHAUE	1,090,000 US$
DGCL/CPDH/CLDH	2,560,000 US$
ADS	820,000 US$
UNDP	350,000 US$
Others	3,190,000 US$
Total	8,010,000 US$

Table 1.2.1 Monthly Distribution of Rainfall / Snowfall in the Study Area

STATION	Sep 06	Oct 06	Nov 06	Dec 06	Jan 07	Fev 07	Mar 07	Apr 07	May 07	Jun 07	Jul 07	Aug 07	Total 06/07	Total 05/06
Rich	31.5	46.5	37	-	53	13.5	2	28.5	13	-	1	19.5	245.5	310.2
Errachidia	9.7	21.1	51	23	32.4	10.7	-	47.8	2.1	-	-	5.6	203.4	107,9
Erfoud	44	14.5	30	9.5	13	5.5	-	23	-	2	-	11	152.5	170.5
Goulmima	25	15.5	64	33	29,5	14	3.5	20.5	8	-	-	2.5	215.5	125.7
Beni Tedjt	17	75	27	18	29	12	-	67	03	-	8	12.5	268.5	274
M.2006/2007	25.4	34.5	41.8	16.7	31.4	11.1	1.1	37.4	5.22	0.4	1.8	10.2	217.08	-
M.2005/2006	13.4	14.4	16	4.3	39,8	11	-	4	74.4	10.4	8.5	1.2	217.08	197.66

Source : Report on the Activiies of ORMVA Tafilalet 2007

Table 1.2.2 Balance of aquifers at each basin

Principal aquifers			Exploitable Water resources	Exploited Water resources
Bv Ziz-Gheris	Bottom laid～Quarternary discontinuous aquifers		2.5	2.5
	Jurrasic un-continuous aquifers		101.5	61.7
	Aquifers in Cretaceous groundwater basin	Infracenomanian Era	20.6	9.2
		Turonien	29.7	27
		Senonien	16.5	6
	Quarternary aquifers	Rich	3.4	1.4
		Goulmima	7	6.3
		Tinjdad	20	20
		Errachidia	16	13.4
		Tafilalt	22.4	22.4
Total of B Ziz-Gheris (MCM)			239.6	169.9
BV Guir-Bouanane	Jurrasic discontinuous aquifers		24	9.5
	Aquifers in Cretaceous groundwater basin	Infracenomanian Era	1	0.1
		Turonien	0	0
		Senonien	13	7
	Quarternary aquifers	Boudnib	9.7	9.7
		Gourrama	1.5	1.2
Total of BV Guir-Bouanane (MCM)			49.2	27.5
BV de Maider	Bottom laid～Quarternary discontinuous aquifers		23.8	22.6
Total of BV de Maider (MCM)			23.8	22.6
Grand total (MCM)			313	220

Source : DEBAT NATIONAL SUR L'EAU, DIECTION DE LA REGION HYDRAULIQUE DU GUIR-GHERIS-ZIZ Février 2007

Table 1.2.3 Water resources utilization

Water Resource	Available Water Use	Water Use at Present	Ratio (%)
Surface Water	626	352	56
Groundwater	313	220	70
Total	939 MCM	572MCM	61

Table 1.2.4 Values Related to the Catchment Area of Guir / Gheris / Ziz

Item	Value	Item	Value
Surface area of catchment	58,868 km^2	River length up to the dam	145 km
Average of the altitude	1,223 m	Utilized water olume	572MCM/yr
Mean annual rainfall	133 mm	A partir des eaux de surface	352MCM/yr
Discharge of surface water	626MCM/yr	A partir des eaux souterraines	220MCM/yr
Gross capacity of storage	334 MCM	Area of beneficiary farmland	113,066 ha
Regulated volume	352MCM/yr	Of which ; irrigated area	68,923 ha
Rate of regulation by the dam	56 %	Improved area in Ghriss	27,000 ha
Volume of storing floods	105MCM/yr	Improved area in Ziz river	41,023 ha
Relative runoff /ha catchment	106.34m^3/ha	Rate of discharge	8% (11%*)
Irrigated area from the dam	5.300 ha	Discharge for irrigation	38 MCM/yr
Length of the dam	785 m	Hight of the dam	85 m

Rate of access to drinking water : 78 % (2005) * ; if adding fluvial underflow estimated at 20%

Table 1.2.5 Irrigated Area by Flood in 2006/ 07

Circles	Wadi / Zone	Irrigated area (ha) by flood	Discription
Erfoud	Ziz River	9,025	Supplemental for irrigated perimeter
Erford	GhrisRiver	8,254	Mostly conveyance to bour
Goulmima	Goulmima	11,461	Supplemental for perimeter + bour
Errachidia	Errachidia	5,100	Supplemental for irrigated perimeter
Total	-	33,840	Mostly conveyance to irrigated land

Table 1.2.6 Available Volumes & Water Requirement of the Crops around the Study Area

	Month of the year												Total
	S	O	N	D	J	F	M	A	M	J	J	A	
Available Volumes (in MCM)	3,55	5,52	17,31	7,69	8,62	12,46	18,35	22,63	14,33	5,73	3,19	2,84	122,22
requirement (in MCM)	1,98	0,60	0,00	1,21	1,66	1,45	2,66	2,68	1,59	2,53	3,91	4,80	25,06
Difference	1,57	4,92	17.31	6,48	6,96	11,01	15,69	19,95	12,78	3,20	0,72	1,96	+97,16

Source : « Fiche du Périmètre du Dadès » ; Etude des Périmètres de PMH de la Zone d'action de l'ORMVAO ; 1982.

Table 1.2.7 Growth Rate of Population in Rural Communes in Errachidhia

Cercle	Commune	Area (Km^2)	Ksar	Population In 2004 (1)	Population In 2007 (2)*	Change (1)-(2)
Rich	7	4,796	141	52,489	51,850	(639)
Imilichil	5	1,182	62	32,836	33,899	1,063
Assoul	3	2,211	18	21,403	21,924	521
Errachidia	5	22,916	64	57,334	57,637	303

Goulmima	7	6,014	87	84,723	94,840	10,117
Erfoud	7	6,257	122	73,690	75,569	1,879
Rissani	5	21,629	127	46,767	48,035	1,268
Rural Total	39	65,005	621	369,242	383,754	14,512
Urban Total	8	782	38	185,058		
Total	47	65,787	659	554,300		

Source: Census 2004 and Socio-Economic Survey Result by Study Team, and ONEP in 2009(*)

Table 1.2.8 Composition of budget of the Office of Commune (2009, unit: Dh)

Communes	Operating Budget (09)			Total Expenditure		Investment Budget (09) /a			Total Budget
	Total	VAT (2009)	Independent Revenue Sources			Total	Provisional Excess (09)	from National Government e and others	
	A=B+C	B	C	D	D/A (%)	E=F+G	F=A-D	G=H-A	H
Rural Commune (Average)	3,055,842	2,893,263 (95%)	162,579 (5%)	2,277,053	75%	1,710,211	778,789 (46%)	931,421 (54%)	3,987,263
Urban Communes (Average)	14,423,613	10,908,375 (76%)	3,515,238 (24%)	13,517,988	94%	2,295,675	905,625 (39%)	1,390,050 (61%)	15,813,663
Urban/ Rural Communes (Average)	5,032,846	4,287,196 (85%)	745,650 (15%)	4,231,998	84%	1,812,030	800,848 (44%)	1,011,183 (56%)	6,044,028

Source: DCL, Errachidia Province
Remarks: a/ E and G are estimated by the Study Team

Table 1.2.9 IT equipments at the DCL office

IT equipment	Availability
PC (Desktop)	5 PCs (2 old, 1 not funcioning)
PC (Laptop)	None
Printer	5 Printers
Internet Access	None
Intranet Network	None

Table 1.2.10 Programs of INDH under DAS Management

No	Program Name	Description	Officer In Charge
1	Transversal	Deals with the issues of associations and cooperatives of INDH projects	Dr. Hassan
2	Rural	Deals with the issues of development of poor rural communes.	Mr. Abdesslam
3	Précarité	Follow up of INDH projects of constructions and rehabilitations of student boarding house, women house, etc.	Mr. Ali

Table 1.2.11 IT equipments at the DAS office

IT equipment	Availability
PC (Desktop)	6 PCs
PC (Laptop)	3 PCs (+ 3 laptops purchased by the QP)
Printer	6 printers
Internet Access	Yes
Intranet Network	Under preparation by the QP

Table 1.2.12 Administrative Sections in Communes

Division	Main Role
Civil State Office	Maintenance of population registration data (birth and death). Issuing of certificate.
Technical Office	Following-up construction projects, dealing with other development issue, issuance of permits
Finance Office	Budgetary management
General Administration	Communal administrative tasks
Human Resources	Manage commune staff members
Validation	Issuance of certificate

Table 1.2.13 Project budget for Water Supply and Sanitation Improvement in Errachidia

Investment Period	Drinking Water			Sanitation	Total
		Urban	Rural		
2000-2008	279.4 MDH	152.4 MDH	127.0 MDH	115.1 MDH	394.5 MDH
2008-2015	348.9 MDH	229.3 MDH	119.6 MDH	499.4 MDH	848.3 MDH

Source: Provincial Delegation of ONEP in Errachidia, June 2009

Table 1.2.14 GPI and Repetition Rate in Secondary Schools in Errachidia

	Total	Urban	Rural
GPI	0.68	0.72	0.47
Repetition	19.2%	18.9%	20.8%

Source: Education Delegation, Errachidia, 2009. calculation by the Study Team

Table 1.2.15 Reparation of Specialized Doctors

Specialities	Number	Specialities	Number	Specialities	Number
Visceral surgery	4	Intern medicine	1	Ophthalmology	3
Traumatology	2	Cardiology	1	ORL	1
urology	2	Endocrinology	1	Psychiatry	2
Neurosurgery	1	Gynaecology	4	Pneumology	1
Child surgery	1	Radiology	2	Paediatrics	1
Biology	1	Sport doctors	1	Public health	1
Dermatology	1	Anaesthesia	1	Intensive care	1
Infantile trauma	1				

Source; Plan D'action Quinquennal « 2008 –2012 »

[Actions à mettre en place au niveau de la province d'Errachidia],Ministère de la Santé

Table 1.2.16 Repartition of the Para-medical Personnel

Specialities	No.	Specialities	No.
AUXILIARY NURES	188	POLYVALENT	150
OBSTETRICIANS	12	PHARMACY-PREPARATOR	3
SOCIAL ASSISTANT	1	PSYCHIATRY	17
DIETETICIAN	2	RADIOLOGY	15
PARAMEDICAL TEACHING	4	REEDUCATION	4
HYGIEN OF ENVIRONMENT	14	MID-WIVES	49
MAJORATC/C	9	STATISTICS	6
MAJORAT SCE HOSP	4	SURVEYOR	1
ORTHOPHONIST	1	LABORATORIES	15
ANAESTHESY	10	Total	505

Source; Plan D'action Quinquennal « 2008 –2012 »
[Actions à mettre en place au niveau de la province d'Errachidia],Ministère de la Santé

Table 1.2.17 Some Statistics on Tourism in Errachidia

		Tourist Arrival			Tourist Stay Night			
		2,001	2,008	change	2,001	2,008	change	Average in 2008
Residents		4,872	8,887	82.41	7,642	13,827	80.93	1.56
Non-residents		78,128	69,729	-10.75	111,283	85,842	-22.86	1.23
	Spain	5,217	12,820	145.74	6,544	15,323	134.15	1.20
	France	35,856	10,861	-69.71	53,512	13,229	-75.28	1.22
	Germany	14,232	8,040	-43.51	18,775	10,360	-44.82	1.29
	Italia	5,725	5,980	4.45	7,127	6,728	-5.60	1.13
	United Kingdom	1,731	4,226	144.14	3,190	6,437	101.79	1.52
	Japan	4,152	5,449	31.24	5,374	6,274	16.75	1.15
	USA	2,116	3,880	83.36	3,087	5,461	76.90	1.41
	Holland	1,219	3,062	151.19	1,772	3,901	120.15	1.27
	Portugal	683	1,282	87.70	834	1,418	70.02	1.11

Table 1.2.18 Relevant Association of Tourism Industry in Errachidia Province

	Name of Tourism relevant Association	President
1	Committee for Provincial Tourism / CPT)	Hassan Habibi
2	Ass.de l'industrie hotelière	SADOK Abdeslam
3	Ass. des hotels et auberges non classés, des campings et des gîtes.	Président: HABIBI Hassan
4	Ass. des accompagnateurs et guides de tourisme	BEN BOUAZZAOUI Med

5	Ass. provinciale des guides de montagne d'Errachidia.	OUCHAOUA Med
6	Ass. des transporteurs touristiques de la prov. d'Errachidia	:OUASSOU Brahim
7	Ass. des bazaristes de la prov. d'Errachidia.	YOUSFI Alaoui Mly Ahmed
8	Ass. des établissements touristiques (Tamtatouchte)	ATMAN (Hotel Salama)
9	Ass. des gorges pour le tourisme et l'écologie...	SAID
10	Ass. du développement du tourisme (IMILCHIL)	CHABOU Bassou

Table 1.2.19 Number by Cercle

Cercle	Number of craftsmen / women	Number of apprentice / trainees
Errachidia	1,545	903
Erfoud	906	569
Rissani	907	430
Rich	444	275
Goulmima	750	404
Assoul	129	26
Imilchil	52	1
Total	4,733	2,608

Table 1.2.20 Number by domain

Domain	Number of craftsmen/women	Number of apprentice/trainees
Textile	605	612
Wood	1,216	608
Leather	242	70
Metals	402	303
Food	251	148
Building	432	165
Plants	127	-
Clay/pottery	335	131
Others	1,123	571
Total	4,733	2,608

Table 1.2.21 Craft work by region in Errachidia Province

Activities	Place	Product	Extra Information
Traditional weaving	Imilchil, Rich, Rissani, Assoul, Errachidia	Hanbal, Djellaba, Burnous, Handira, Hayek, Berbere rug	-
Pottery	Goulmima, Rissani, Tinejdad	Jars, braziers, bowls, plates	Earth clay of good quality
Fossil/ Marble processing	cercle Rissani, Erfoud,Alnif, Jorf, Tinejdad	Tables, boxes, ashtrays, plates, decorative items	- Over 7 deposits -90% Of production is marketed abroad
Jewelry	Rissani, Erfoud, Tinejdad	Rings, pins, bracelets, rings, earrings, brooches	-
Carpentry and woodwork	Errachidia, Goulmima, Rissani, Tinejdad, Erfoud, Rich	Utility Products, wooden locks, bowls, plates, plows	-
Iron processing	Errachidia, Goulmima, Rissani, Tinejdad Erfoud, Rich	Window bars, doors, bags of plows, scythes	-
Tannery	Rissani, Erfoud, Goulmima	Nets, baskets, chouari	Near oasis (Ziz and Ghris)

Source; Deligation de Artisant

Table 1.2.22 Basic data of Networkl Asscciations

Name	RADOSE	RA	R.AIN	RADOG
Place of office	Errachidia	Gouramma	Boudnib	Ghriss Ouloui
Number of office cooedination member	11	5	11	11
Number of member associations	32(Sud-west region)	9 (Gouramma Commune)	14 (Boudnib 7, Oued N'aam 7)	12 (Ghriss Ouloui)
Strength	Office equipped with basic facility	Collaboration with member association	Collaboration with member association	Active
	Collaboration with member association	Strong motivation of staff of NA	Good initiative of staff of NA	Collaboration with member association
	Human capacity			Enough facility
	Collaboration with DPs			
	Skillful in administrative management			
Weakness	Lack of communication among members, governmnetal agency	Weakness in administrative management skill	Lack of time for office member to work for NA	Old and damaged office
	Weakness of motivation of member association	Lack of communication among members and related agency	Weakness in administrative management skill	Lack of administrative management skill
	Lack of finance	Lack of finance	Lack of finance	Lack of finance
	Lack of office facility (meeting room, storage etc)	Lack of technical skill for activities	Lack of facility in Office	Lack of technical skill for activities
	Lack of salary to staff			Lack of salary to staff

Table 1.2.23 PH and Electric Conductivity of Irrigation / Potable Water in the Study Area

Name of place	Fezzou	Ksar Mbidiaa	Erfoud	Alnif, Taoumart
Water Source	Well with the depth15m	Well with the depth -8m	Running in a canal	Khettara along slope
Water use	For family use	Field irrigation	Irrigation network	Irrigation network
pH	7.75	7.83	8.12	7.58
Conductivity mS/cm	0,384	3,01	0,784	0,568
Equivalent salinity ppm	280	2.400	570	410
Water Temperature	19 ~ 24	19.2	19.0	20.3
Name of place	Taoumart	Assoul	Imilchil	Agoubaloun
Water Source	Non-saline well	Quelle /fountain	Tap water deom well	Eau dans un seguia
Water use	For family use	Seguia along slope	Potable at restaurant	Irrigation only
pH	7.12 ~ 7.12	7.94	8. 19	8. 19
Conductivity mS/cm	0,783 ~ 39,7	220	> 220	> 220
Equivalent salinity ppm	570 ~ 26.000	75.000	>75.000	>75.000
Water Temperature	19.1 ~ 19.2	20.3	18.8	18.8

Source: JICA Study Team, measured during Mrsch ~ May 2009

Table 1.2.24 Number of farm households by land-holding by zone delineated by the zoning

Zone by zoning	Number of Farm HH	<0.1ha	0.1<0.3 ha	0.3<0.5 ha	0.5<1.0 ha	1.0<2.0 ha	2.0<3.0 ha	3.0<4.0 ha	4.0<5.0 ha	5.0<10 ha	< 10ha	Average Holding
Zone I	6,515	5,270					1,146			90	9	1.5
Zone II	8,472	1,380	1,519	1,999	1,527	1,055	245	138	115	87	225	1.1
Zone III	3,948	240	320	320	380	200	456	803	382	108	540	3.9
Zone IV	9,715	2,675	2,273	1,809	1,415	1,312	1,154	1,088	975	1,252	333	3.1
Zone V	1,274	297	260	209	156	124	82	70	42	29	5	1.1
Total	29,924	9,863	4,373	4,338	3,479	2,691	3,083	2,099	1,514	1,566	1,112	2.0
Zone I	100%	81%					18%			1.38%	0.14%	-
Zone II	100%	16%	18%	24%	18%	12%	3%	2%	1%	1%	3%	-
Zone III	100%	6%	8%	8%	10%	5%	12%	20%	10%	3%	14%	-
Zone IV	100%	28%	23%	19%	15%	14%	12%	11%	10%	13%	3%	-
Zone V	100%	23%	20%	16%	12%	10%	6%	5%	3%	2%	0%	-
Total	100%	33%	15%	14%	12%	9%	10%	7%	5%	5%	4%	-

Table 1.2.25 Area, production and yield by principal crop specie by zone

Acreage in ha												
Season	Winter crops		Summer crops		Perennial / casual crops							
Zone by zoning	Wheat	Barley	Maize	Beans & peas	Vege-tables	Fodder (alfalfa)	Henna	Cumin	Dates	Olives	Apple	Almond
Zone I	3,260	169	607	615	148	1,090	0	1	0	246	2,676	130
Zone II	5,281	507	1,591	55	498	1,605	0	0	0	33	1,600	1,863
Zone III	7,774	1,031	800	354	664	3,206	55	10	4,629	1,536	46	632
Zone IV	5,230	2,755	55	73	191	380	55	40	2,043	190	0	63
Zone V	1,470	600	63	15	40	46	35	25	550	0	0	2
Total	23,015	5,062	3,116	1,111	1,540	6,327	145	76	7,222	2,005	4,322	2,690
Production in MT												
Zone I	8,567	423	1,185	666	3,437	52,779	0	0	0	3,050	4,131	32
Zone II	10,601	1,052	2,679	71	9,656	31,600	0	0	0	310	924	4,211
Zone III	11,566	1,482	607	826	5,431	134,650	65	10	9,674	4,564	116	488
Zone IV	8,305	3,557	75	105	1,961	17,770	60	29	9,553	148	0	140
Zone V	2,440	750	99	13	350	632	178	11	470	0	0	8
Total	41,478	7,263	4,645	1,680	20,835	237,431	303	50	19,697	8,072	5,171	4,879
Yield in MT/ha												
Zone I	2.6	2.5	2.0	1.1	23.2	48.4	0.0	0.0	0	12.4	1.5	0.2
Zone II	2.0	2.1	1.7	1.3	19.4	19.7	0.0	0.0	0	9.4	0.6	2.3
Zone III	1.5	1.4	0.8	2.3	8.2	42.0	1.2	1.0	2.1	3.0	2.6	0.8
Zone IV	1.6	1.3	1.4	1.4	10.3	46.8	1.1	0.7	4.7	0.8	0.0	2.2
Zone V	1.7	1.3	1.6	0.9	8.8	13.7	5.1	0.4	0.9	0.0	0.0	4.0
Total	1.8	1.4	1.5	1.5	13.5	37.5	2.1	0.7	2.7	4.0	1.2	1.8

Sources: The socio-economic survey by the Study Team in September 2009

Table 1.2.26 Distribution of extension staff by ORMVA/TF

Name of Coordination	No. of extension staff		D.O. per station		Covering Commune	
	Total	of which, Officer	Cercle	Commune	Name of jurisdictional Communes	Farm HH
Goulmima	43	12	7.1	4.7	Aghbalou, Tadigouste, Gh.ouloui, Tinjdad, Gh. Soufli, Gourmima, Fer. oulia, Fer. soufla, Melaab	12,211
Erfoud	60	10	12.0	4.3	Fezna, A.S.Ghris, A.S. Ziz, Jorf, Erfoud, Sijilmassa Rissani, M. A. Cherif, Siffa, Sfalat, Taous, Sidi Ali	15,576
Erracidia	84	12	21.0	12.0	Erracidia Kheng, M'dhagra Aoufous, Rteb, Oued N'aam	9,853
Rich	51	10	12.8	3.4	Rich, Gourrama, Bou Azmou, Guers.Tiaalaline, M'zizel, Sidi Ayad, N'zala, Zaouiat Sidi .Hamsa, Imilcil, Guir, Amouger, Outerbat, Ait Yahya	18,085
Province	238	44	10.8	5.2	Number of farm house holds per extension staff = 234	55,725

Source: from ORMBA/TF 2008 Budgetary Document

Table 1.2.27 An inventory of drip irrigation schemes existing in the Study Area

Zone	Name of Commune	Number of drip Irrigation sets	Water source	Command Area (ha)	Number of Beneficiaries	Management body
Zone I	Gourrama	1	G.W.	1	1	private
	Guir	1	S.P.	40	1	private
	Sidi Ayad	1	G.W.	10	1	private
	N'zala	1	S.P.	76	6	private
Zone	-	0	-	0	0	-
	Oued Naam*	1	G.W.	684	6	farmers union
	Ghriss Essoufli*	1	S.P.	100	7	farmers union
	Ferkla Eloulia*	1	S.P.	200	54	farmers union
	Melaab*	1	S.P.	60	20	farmers union

Zone III	Municipalité de Tinejdad	1	S.P.	8	1	private
	Fezna	1	G.W.	6	1	private
	Arab sebah ghris	1	Khattara	4	2	-
	Municipalité Jorf	1	G.W.	8	4	-
	Oued Naam*	1	G.W.	684	6	farmers union
Zone IV	Arab Sabah Ziz	1	G.W.	1	2	-
Zone V	-	0	-	0	0	-
T o t a l		14	GW:7, SP:6, Kh;1	<1,198	106	Private:6, FU:5, -:3
Remark: G.W = groundwater, S.P. = pump station, * only a part of command area is irrigated by drip sets, FU: farmers union						

Sources: The socio-economic survey by the Study Team in September 2009

Table 1.2.28 Farm-gate prices of major agricultural products in the Study Area

(Unit Prices Dh / kg)

Zone by zoning	Wheat	Barley	Maize	Beans & peas	Vege-tables	Fodder (alfalfa)	Henna	Cumin	Dates	Olives (oil:/L)	Apple	Almond
Zone I	3 ~ 3.5	2 ~2.5	2.5 ~ 3	2.5~7.5	2 ~ 4	1 ~ 2	-	50	-	(30~35)	3 ~ 5	30~ 60
Zone II	3	-	2.5	-	2	-	-	-	20	6	3.2~ 9	(5)
Zone III	3	1.8~2.5	2	6 ~ 7	2	1	10	-	3 ~ 80	(20~50)	5	(4 ~ 7)
Zone IV	2.5 ~ 3	2	1.5 ~ 2	1.5 ~ 8	1 ~ 3	0.8 ~ 3	12 ~ 15	40 ~60	2 ~100	4 ~5	-	10~ 60
Zone V	3	1.8~2.3	-	-	1 ~ 10	-	15	55	-	-	-	-
Average	3	2	2.25	5.5	2.8	1.5	13	51	2.5 ~67	(67) 5	5	(5) ~ 40

Table 1.2.29 Estimated crop profitability by crop and by zone in the Study Area

Zone by zoning	Wheat	Barley	Maize	Beans & peas	Vege-tables	Fodder (alfalfa)	Henna	Cumin	Dates	Olives	Apple	Almond
Gross Return by household with average acreage in each zone (Dh/HH/crop)												
Zone I	8,327	6,328	4,832	4,061	26,126	8,716	-	-	-	78,575	5,094	7,477
Zone II	4,306	-	2,778	-	10,664	-	-	-	-	40,300	2,131	39,161
Zone III	11,314	9,040	3,552	29,599	15,955	13,104	13,891	-	202,965	52,737	27,437	52,892
Zone IV	8,799	5,703	4,439	10,643	15,956	22,035	13,696	33,713	443,551	7,063	-	108,500
Zone V	3,560	2,114	-	-	13,234	-	25,174	7,986	-	-	-	-
All Zones	7,029	4,304	4,025	8,316	18,938	9,006	16,315	20,172	114,554	26,172	6,582	37,552

Table 1.2.30 Number of bee-keeping households

Cercle	Rich	Imilchil	Assoul	Errachidia	Goulmima	Erfoud	Rissani	Total
農家数	2,049	786	675	601	838	311	0	5,260
	39%	15%	13%	11%	16%	6%	0%	

Table 1.2.31 Number of bee-keeping households by type of keeping

	Rich	Imilchil	Assoul	Errachidia	Goulmima	Erfoud	Rissani	Total	
Modern	556	89	62	311	397	160	0	1,575	30%
Traditional	1,493	697	613	290	441	151	0	3,685	70%

Table 1.2.32 The Number and Examples of Registered Associations to ORMVA/TF

	Coordination Office	Registered numbers	Example of Registered Association
1	*Errachidia*	65	Name of Association: Addi Ouzanou pour le développement Established on: 22/10/2000 Objectives: -Income generating activities -Integration of women in the rural development -Youth and childhood promotion -Organization and management of cultural, art and sport activities -Schooling and literacy support -Environmental protection -Promulgation of sense of solidarity and mutual care
2	*Erford*	78	Name of Association: Essaid Established on: 03/04/1998 Objectives: -Contribution to socio-economic development. In the area -Support of local activities -Women and child promotion -Support of scientific researches at the area level -Communication and cooperation with other associations.
3	*Goulmima*	63	Name of Association: Clean Oasis for the environment a development. AOPED. Established on: 03/05/2000 Objectives: -Environmental protection -Combat the inappropriate use of agricultural land for building constructions - Women integration in the development process -Reforestation and green areas creation
4	*Rich*	43	Name of Association: Women acknowledgement for development and environment protection Established on: 02/02/2002 Objectives: -Handicraft sector support -Creation of cooperatives for D'man breeding, poultry, and handicraft -Support to the poor and handicapped -Women literacy -Women awareness
5	*Beni tadjit*	43	Name of Association: Nohas Zing pour le développement Established on: 15/09/2000 Objectives: -Water gates management - Schooling and literacy support -Women integration in the development process -Improvement of agriculture and livestock - Environment protection

Table 1.2.33 Summary of the Cooperatives at Each Cercle

Name of Cercle	Rich		Imilchil		Assoul		Errachidia		Goulmima		Erfoud		Rissani		Total	
Cooperative's Activities	Unit	Number	Unit	Number	Unit	Number	Unit	Number	Unit	Number	Unit	Number	Unit	Number	Unit	Number
Irrigaton water from well, Extraction of olive and s	1	93	0	0	0	0	0	0	0	0	0	0	0	0	1	93
Irrigaton water from well, and selling of Agri. Prod	2	92	0	0	0	0	0	0	0	0	0	0	0	0	2	92
Extraction of olive and selling	1	99	0	0	0	0	0	0	0	0	0	0	0	0	1	99
Use & Integrate of Pasture	3	506	0	0	0	0	1	0	0	0	0	0	0	0	4	506
land management	0	0	0	0	0	0	6	87	0	0	0	0	0	0	6	87
Rearing of D'Man sheep (male)	0	0	1	0	4	147	4	108	6	274	1	28	2	36	18	593
Rearing of D'Man sheep (female)	4	142	1	25	0	0	7	296	5	232	4	170	2	62	23	927
Irrigation water from well	2	55	0	0	16	994	19	1,367	20	790	11	837	4	279	72	4,322
Bee keeping	0	0	0	0	0	0	2	52	1	16	1	7	0	0	4	75
Apple Product Union	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Milk Product Union	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Date Product Union	0	0	0	0	0	0	4	7	0	0	2	25	0	0	6	32
Others	0	0	0	0	0	0	1	0	2	0	2	0	3	18	8	18
Total	13	987	2	25	20	1,141	44	1,917	34	1,312	21	1,067	11	395	145	6,844

Table 1.2.34 Major Production Place of Fresh Vegetables/ Fruits at Errachidia Wholesale Market

Production Place	Distance to Errachidia	Proportion in Total Volume	Transacted Products
Agadir	681km	70-80%	Tomato, Hot paper, Cucumber, Zucchini, Radish, Turnip, Cabbage, Eggplant, Cauliflower, Melon, Lemon, Banana
Casablanca	506km	5-10%	Peach, Apple
Berkane	565km	5-10%	Orange, Apple, Avocado,
Rich	60km	5%	Potato

Source : JICA Study Team (April 26, 2009)

Table 1.2.35 Current state of groundwater use in the Study area

Circle/Commune No.		Underground water (ha)				
		Khattera		Well		Tota irrigation area
		No.	irrigation area	No.	irrigation area	
Rich	7	5	0	677	880	880
Imilchil	5	0	0	61	66	66
Assoul	3	12	344	86	0	344
Errachidia	5	0	0	1,159	0	0
Goulmima	7	116	3,130	1,446	2,114	5,244
Erfoud	7	165	1,023	4,012	2,147	3,169
Rissani	5	33	19	947	0	19
Urban Commune	8	28	0	636	127	127
Total	47	359	4,515	9,024	5,333	9,849
Total in Rural Commune		331	4,515	8,388	5,206	9,722

Source: ORMV/TF in 2004 Note: 176 Systems out of 359 (48%) are only functional.

Table 1.2.36 Current state of groundwater use in the Study area

Circle/Commune No.		Underground water (ha)				
		Khattera		Well		Tota irrigation area
		No.	irrigation area	No.	irrigation area	
Rich	7	5	0	677	880	880
Imilchil	5	0	0	61	66	66
Assoul	3	12	344	86	0	344
Errachidia	5	0	0	1,159	0	0
Goulmima	7	116	3,130	1,446	2,114	5,244
Erfoud	7	165	1,023	4,012	2,147	3,169
Rissani	5	33	19	947	0	19
Urban Commune	8	28	0	636	127	127
Total	47	359	4,515	9,024	5,333	9,849

Source: ORMV/TF in 2004 Note: 176 Systems out of 359 (48%) are only functional.

Table 1.4.1 Solar energy system installation plan at each Zone by ONE

Zone Name	Required HH	Validated HH	Balance	Ratio
Mountainous	441	207	234	47%
Plateau/Piedmont	1,002	969	33	97%
Inter-mediate	236	25	211	11%
Plain	479	37	442	8%
Desert	244	0	244	0%
Total	2,402	1,238	1,164	52%

Source: ONE in PERG in 2009

Table 1.4.2 Priority Areas of Interventions in Education Sector

No	Priority Areas	Possible Interventions at School, Commune, Provincial Level	Focus Zone
1	Achieve gender equity in primary education	- Awareness raising campaign to communities - Communal campaign to follow up unregistered students - Construction of toilets - Construction and equipping of pre-schools - Promotion of pre-school enrolment especially among girls - Selective scholarship for poor female pupils - Literacy classes at schools for communities - Sawing classes at schools for female pupils	- Mountainous - Plateau
2	Achieve gender equity in lower-middle education and secondary education	- Awareness raising campaign to communities - Construction and rehabilitation of dormitories - Introduction and expansion of school buses	- Mountainous - Plateau - Plain - Desert
3	Raise quality and reduce repetition in primary education	- Sensitization campaign to stakeholders of schools - Awareness raising to communities - Analysis on the causes of repetition - General teaching strategy improvement to raise academic performance to combat repetition	- Mountainous - Plain - Desert
4	Eliminate drop-out in	- Awareness raising to communities	- Mountainous

	primary education	- Follow up on students absenteeism - School bus for remote schools	- Desert
5	Raise quality and reduce repetition in lower middle schools and secondary schools	- Sensitization campaign to stakeholders of schools - Awareness raising to communities - Analysis on the causes of repetition - General teaching strategy improvement to raise academic performance to combating repetition	- Mountainous - Plateau - Intermediate - Plain
6	Improve school management capacity	- Activation of activities of school committee and parents association - Promotion of community participation in school improvement - Capacity building for school management at school and provincial level - Introduction of school based teacher training	- All

Table 1.4.3 Priority Areas and Possible Activities in Health and Hygiene Sector

No	Priority Areas	Possible activities	Focus Zone
1	Improvement of environmental health	- Raising awareness of communities - Health education and environmental education - Establishment of health/ environmental club at school - Promotion of construction of toilets - Mobilizing communities for collection of garbage and recycling activities - Empowerment of association for protection of environmental health - Establishment of cooperative - Collaboration with related agencies for technical support; eg. DH, DAT, ORMVAT, Province/ CPDH, Communes, DPs, ADS, CBOs etc Province, Commune	-Mountainous -Plateau/ Piedmont Zone
2	Improvement of maternity Health	- Raising awareness of communities - Empowerment of female association for support of maternity - Collaboration with related agencies for technical support - Promotion of traveling health service in remote areas - Introduction and dissemination of maternity class	All
3	Capacity-development of human resource	- Establishment of technical committee with related agencies; eg. DH, DAT, ORMVAT, Province/ CPDH, Communes, DPs, ADS, CBOs etc Province - Site visit in advanced area - Improvement of communication skill - Seminar for information sharing on health issue - Empowerment of association	All
4	Improvement of medical benefit	- Raising awareness of communities in the importance of medical treatment - Promotion of traveling health service in remote area - Collaboration with related agencies for technical support	All
5	Improvement of medical equipment	- Improvement of medical facilities	All

Table 1.4.4 Development Strategy for Livelihood Activities in the Plateau/ Piedmont Zone

	Strategy	Project
1	Selective and intensive support to apples, almond, honey, traditional weaving, carpentry work and iron processing	- Appointment of production place: apples for all communes in the Plateau/ Piedmont zone - Promotion of support program to the production place - Establishment of cooling system for apples (construction of cooling facility, operational support, market price information service) - Reduction in post harvest losses of apples (packing material)
2	Promotion of food processing industries	- Establishment of small-scale processing industry of apple juice/ chips, almond batter/ oil, caper pickles, cactus oil, etc.
3	Establishment of marketing channel to external market	- Establishment of sales center of the locally specialized products (roadside of national road 13, pilot shop in the coastal regions, canter of the Errachidia provincel, etc.) - Sales promotion of the locally specialized products (tie-up with tourist industry, participating fair for the locally specialized products, advertisement) - Improvement of transportation means (collective shipment, transportation mode)
4	Enhancement of production environment	- Construction of flood protection/ mitigation measures - Community based watershed management
5	Enhancement of private sector and CBOs to increase competitiveness	- Promotion of entrepreneurial education (business skill improvement, financial support, overseas training, study tour, TOT, organization enhancement)

Table 1.4.5 Development Strategy for Livelihood Activities in the Intermediate Zone

	Strategy	Project
1	Selective and intensive support to dates and olives	- Appointment of production place (dates: all communes in the Intermediate zone, olives: all communes in the Intermediate zone) - Promotion of support program to the production place - Establishment of cooling system for dates (construction of cooling facility, operational support, market price information service)
2	Enhancement of institutionalization; CBOs and network body of CBOs	- Support for establishment of association/ cooperative, and network for information-sharing among association/ cooperative
3	Promotion of food processing industries	- Establishment of small-scale processing industry of dates, olive oil and pickles, caper pickles, cactus oil, etc.
4	Establishment of marketing channel to external market	- Establishment of sales center of the locally specialized products (roadside of national road 11, pilot shop in the coastal regions, Erfoud/ Rissani, etc.) - Sales promotion of the locally specialized products (tie-up with tourist industry, participating fair for the locally specialized products, advertisement) - Improvement of transportation means (collective shipment, transportation mode)
5	Enhancement of production environment	- Construction of flood protection/ mitigation measures - Combat desertification
6	Enhancement of private sector and CBOs to increase competitiveness	- Promotion of entrepreneurial education (business skill improvement, financial support, overseas training, study tour, organization enhancement)

Table 1.4.6 Development Strategy for Livelihood Activities in the Plain Zone

	Strategy	Project
1	Selective and intensive support to dates, olives and fossile	- Appointment of production place (dates and olive: all communes in the plain zone) - Promotion of support program to the production place - Establishment of cooling system for dates (construction of cooling facility, operational support, market price information service)
2	Enhancement of institutionalization; CBOs and network body of CBOs	- Support for establishment of association/ cooperative, and network for information-sharing among association/ cooperative
3	Promotion of food processing industries	- Establishment of small-scale processing industry of dates, olive oil and pickles, caper pickles, cactus oil, henna, cumin, etc.
4	Establishment of marketing channel to external market	- Establishment of tourism center to sell the locally specialized products (center of Erfoud/ Rissani) - Sales promotion of the locally specialized products (tie-up with tourist industry, participating fair for the locally specialized products, advertisement) - Improvement of transportation means (collective shipment, transportation mode)
5	Improvement of market facilities	- Modernization of Rissani market (relocation of each section considering flow and traffic line , improvement of sanitary conditions)
6	Enhancement of production environment	- Construction of flood protection/ mitigation measures - Combat desertification
7	Enhancement of private sector and CBOs to increase competitiveness	- Promotion of entrepreneurial education (business skill improvement, financial support, overseas training, study tour, organization enhancement)

Table 1.4.7 Development Strategy for Livelihood Activities in the desert Zone

	Strategy	Project
1	Promotion of food processing industries	- Establishment of small-scale processing industry of henna, cumin, and livestock products, etc.
2	Establishment of marketing channel to external market	- Sales promotion the locally specialized products (tie-up with tourist industry, participating fair for the locally specialized products, advertisement) - Improvement of transportation means (collective shipment, transportation mode)
3	Enhancement of production environment	- Establishment of road network (construction of road, establishment of road traffic sign) - Stabilization of irrigation water supply (groundwater development, promotion of water saving technologies) - Combat desertification
4	Activation of CBOs in economic activities	- Promotion of entrepreneurial education (business skill improvement, financial support, overseas training, study tour, organization enhancement) - Establishment of association for IGAs (collective procurement of daily necessities, processing of agro-products including henna and cumin)

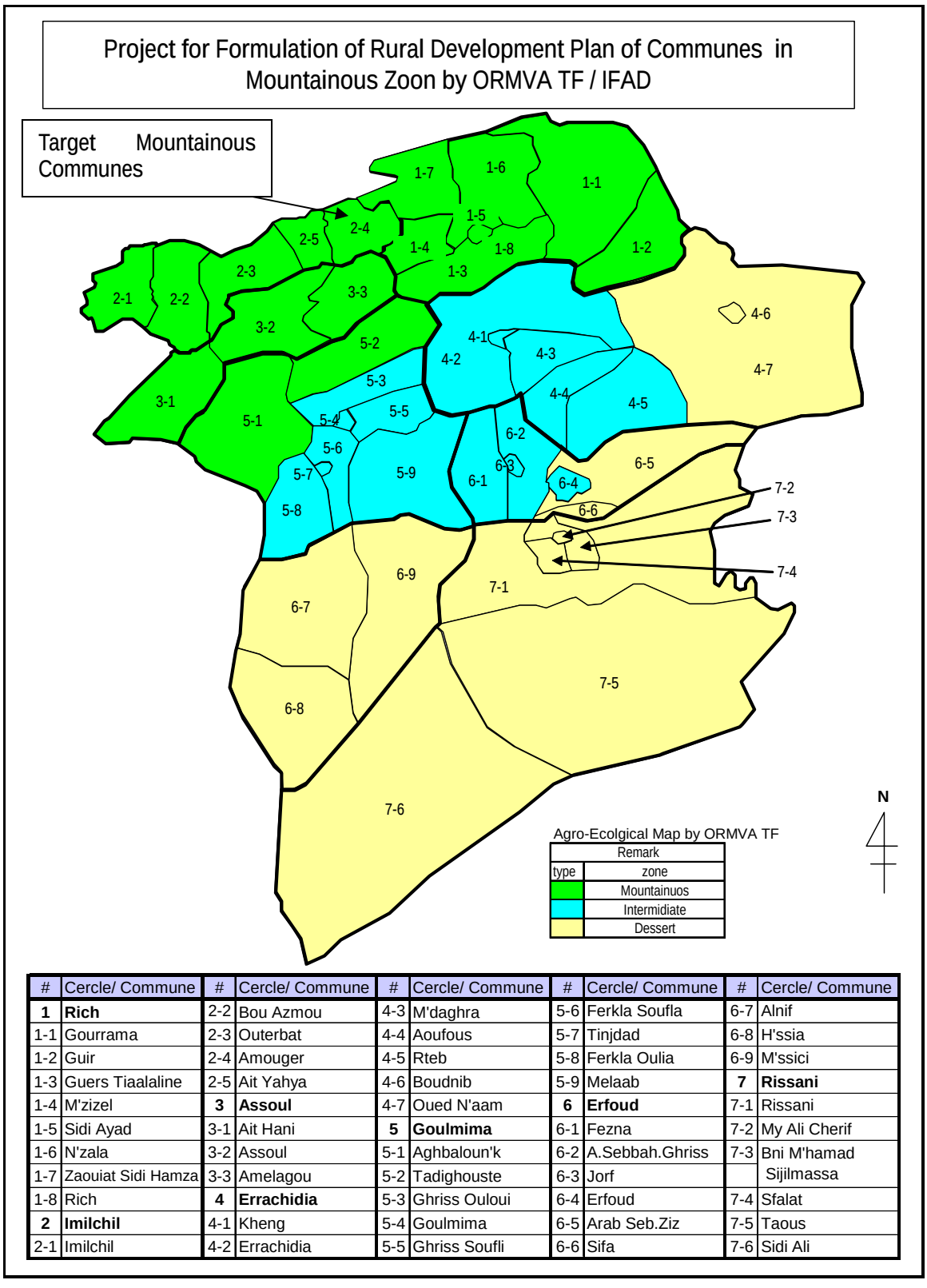
Table 1.4.8 Development Program for the Strengthening of the local Government

	Program	Objective	approach	Activities
1	Enhancement of human capital	Strengthening of the capacity on basic knowledge required for public officer, and on the task expected.	Strengthening of capacity on; - Public financial management for financial management, financial analysis - Project planning and management for planning in the process of PCD formulation、project management, M&E, information management（SIC） and so on - Administration for reporting, operation of PC, accounting and so on - Leadership skill - Ethics for public officer - Technical support by domain (eg. Agric, education, handicraft, health etc)	- Series of trainings, TOT, seminars, OJT, workshop - Field trip to advanced area
2	Enhancement of social capital	Enhancing collaboration and communication among stakeholders: Province – Commune – local people	- Strengthening of communication network: information share among stakeholders	- Series of trainings, TOT, seminars, OJT, workshop - Establishment of information sharing system - Setting regular meeting among stakeholders
3	Enhancement of physical capital	Equipping basic facilities for making enabling environment to work	- Enhancement of physical capital	-Facilities, transportation, equipment and so on

Table 1.4.9 Development Program for the Strengthening of the local Organization

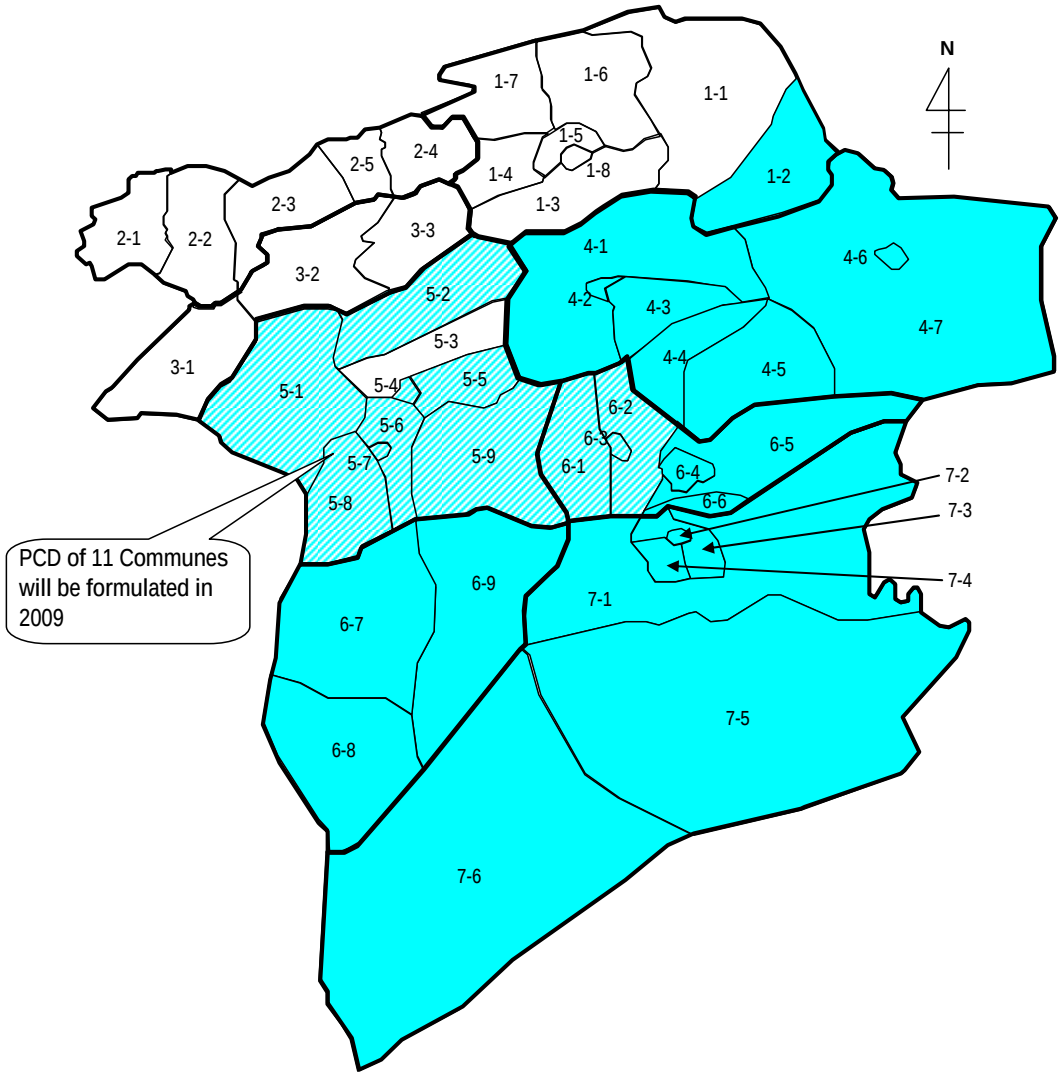
	Program	Objective	approach	Activities
1	Enhancement of capacity for Association/ Cooperative	Strengthening of the capacity for association/ cooperative to carry out activities optimally	- Support for foundation of organization	- Support for establishment of association/ cooperative
			- Capacity-building of organization	- Series of trainings, seminars, OJT, TOT,workshop, field trip on project management/ financial management/ administrative management, equipment of
			- Improvement of quality of activities	- Implementation of technical support, monitoring/ evaluation, TOT
			- Establishment of network among stakeholders	- Networking for association, cooperative, NGOs, CBOs, network association, government etc
2	Enhancement of capacity for civil society	Empowerment of civil society to have future vision on community development	- Raising awareness and capacity-building for community development	- Series of trainings, seminars, OJT, workshop, study tour
			- Enhancement of communication skill	- Establishment of information sharing system with stakeholders: public/ private
			- Supporting leader for next generation	- Training, workshop, seminars for leadership skill to young people - Establishment of study group - Social education to children

Figure 1.1.1 Maps on PDK



#	Cercle/ Commune	#	Cercle/ Commune	#	Cercle/ Commune	#	Cercle/ Commune	#	Cercle/ Commune
1	**Rich**	2-2	Bou Azmou	4-3	M'daghra	5-6	Ferkla Soufla	6-7	Alnif
1-1	Gourrama	2-3	Outerbat	4-4	Aoufous	5-7	Tinjdad	6-8	H'ssia
1-2	Guir	2-4	Amouger	4-5	Rteb	5-8	Ferkla Oulia	6-9	M'ssici
1-3	Guers Tiaalaline	2-5	Ait Yahya	4-6	Boudnib	5-9	Melaab	**7**	**Rissani**
1-4	M'zizel	**3**	**Assoul**	4-7	Oued N'aam	**6**	**Erfoud**	7-1	Rissani
1-5	Sidi Ayad	3-1	Ait Hani	**5**	**Goulmima**	6-1	Fezna	7-2	My Ali Cherif
1-6	N'zala	3-2	Assoul	5-1	Aghbaloun'k	6-2	A.Sebbah.Ghriss	7-3	Bni M'hamad Sijilmassa
1-7	Zaouiat Sidi Hamza	3-3	Amelagou	5-2	Tadighouste	6-3	Jorf		
1-8	Rich	**4**	**Errachidia**	5-3	Ghriss Ouloui	6-4	Erfoud	7-4	Sfalat
2	**Imilchil**	4-1	Kheng	5-4	Goulmima	6-5	Arab Seb.Ziz	7-5	Taous
2-1	Imilchil	4-2	Errachidia	5-5	Ghriss Soufli	6-6	Sifa	7-6	Sidi Ali

Figure 1.1.2 Target Area of DAT/POT



#	Cercle/ Commune	#	Cercle/ Commune	#	Cercle/ Commune	#	Cercle/ Commune	#	Cercle/ Commune
1	Rich	2-2	Bou Azmou	4-3	M'daghra	5-6	Ferkla Soufla	6-7	Alnif
1-1	Gourrama	2-3	Outerbat	4-4	Aoufous	5-7	Tinjdad	6-8	H'ssia
1-2	Guir	2-4	Amouger	4-5	Rteb	5-8	Ferkla Oulia	6-9	M'ssici
1-3	Guers Tiaalaline	2-5	Ait Yahya	4-6	Boudnib	5-9	Melaab	7	Rissani
1-4	M'zizel	3	Assoul	4-7	Oued N'aam	6	Erfoud	7-1	Rissani
1-5	Sidi Ayad	3-1	Ait Hani	5	Goulmima	6-1	Fezna	7-2	My Ali Cherif
1-6	N'zala	3-2	Assoul	5-1	Aghbaloun'k	6-2	A.Sebbah.Ghriss	7-3	Bni M'hamad Sijilmassa
1-7	Zaouiat Sidi Hamza	3-3	Amelagou	5-2	Tadighouste	6-3	Jorf		
1-8	Rich	4	Errachidia	5-3	Ghriss Ouloui	6-4	Erfoud	7-4	Sfalat
2	Imilchil	4-1	Kheng	5-4	Goulmima	6-5	Arab Seb.Ziz	7-5	Taous
2-1	Imilchil	4-2	Errachidia	5-5	Ghriss Soufli	6-6	Sifa	7-6	Sidi Ali

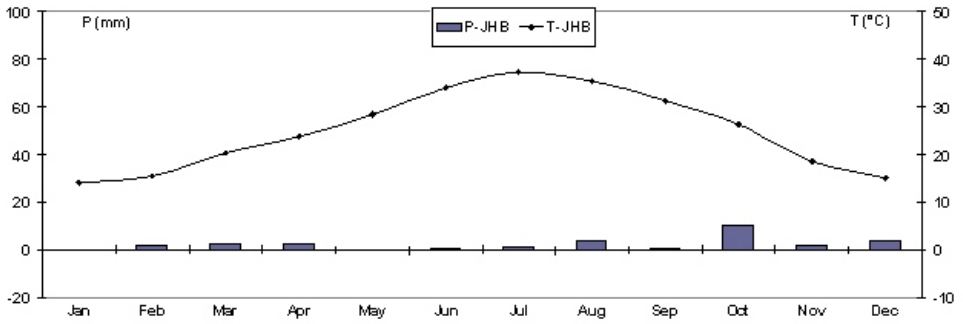


Figure 1.2.1 Climate in Ghriss Ouloui (western side of the Study Area)

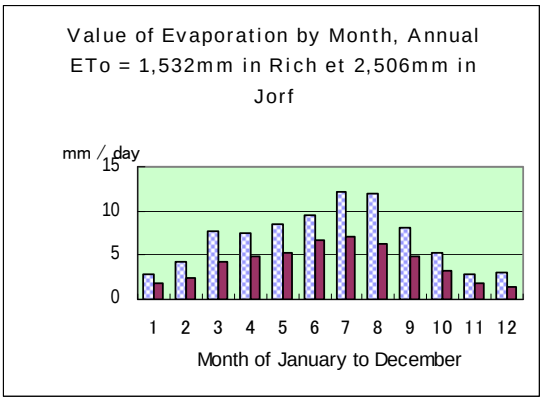


Figure 1.2.2 Value of Evaporation by Month, Annual

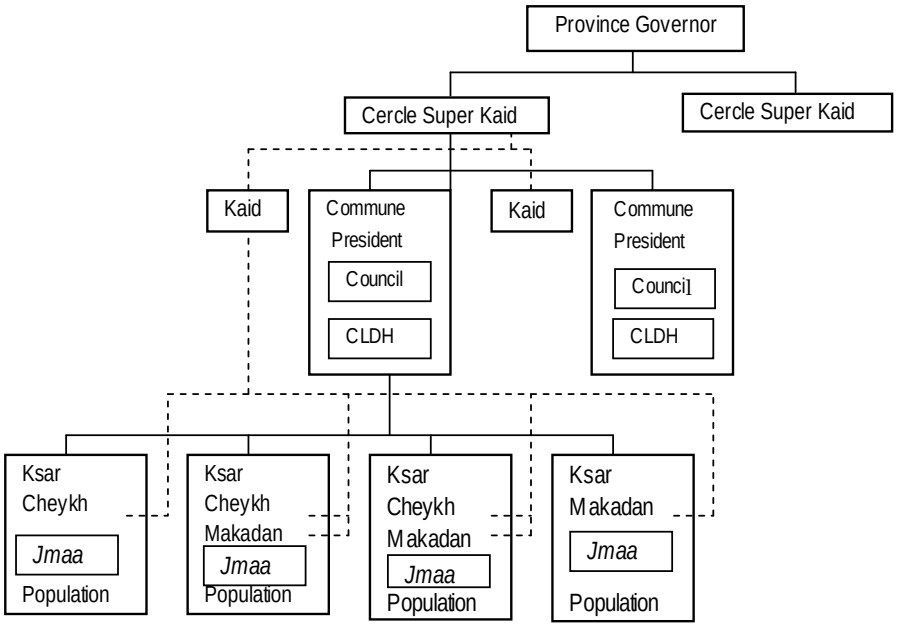


Figure 1.2.3 Administrative Structure Under Province

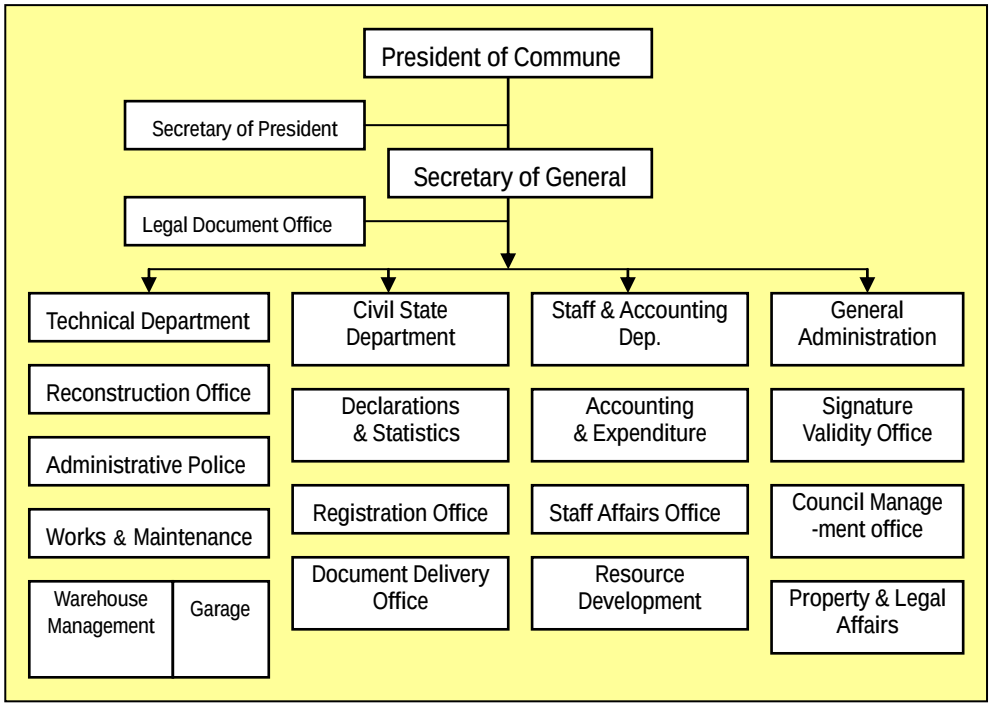


Figure 1.2.4 Organization of a commune

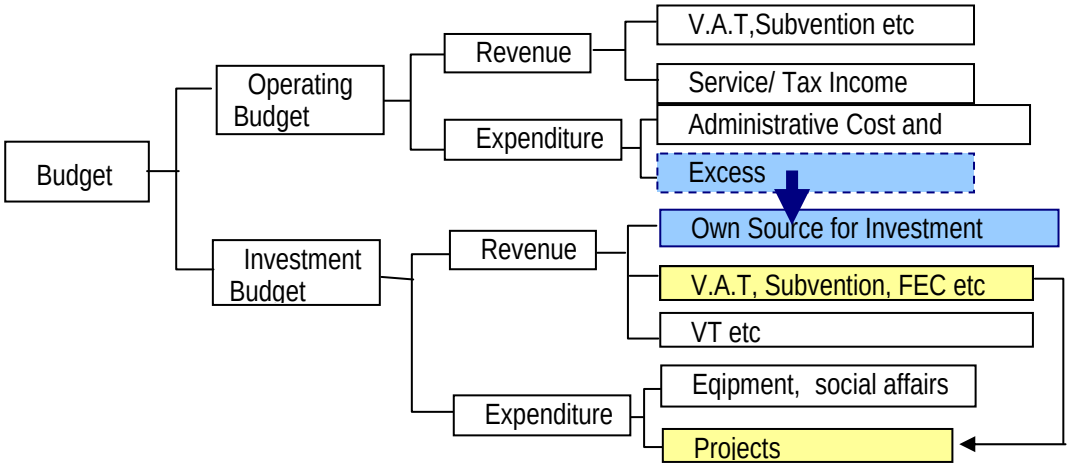


Figure 1.2.5 Structure of the budget of the Office of Commune

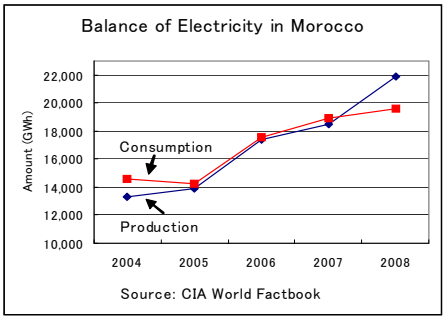


Figure 1.2.6 Balance of Electricity in Morocco

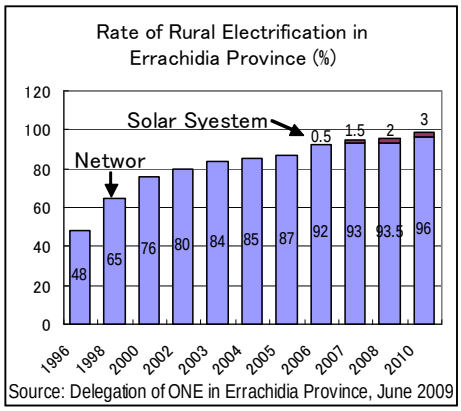
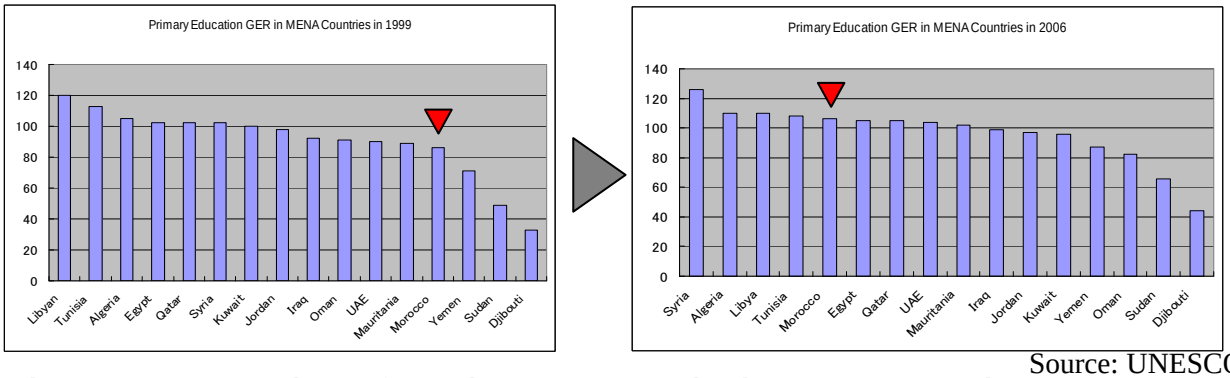
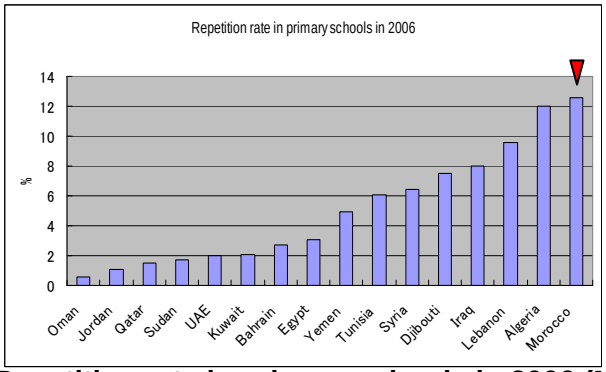


Figure 1.2.7 Rate of Rural Electrification in Errachidia Province



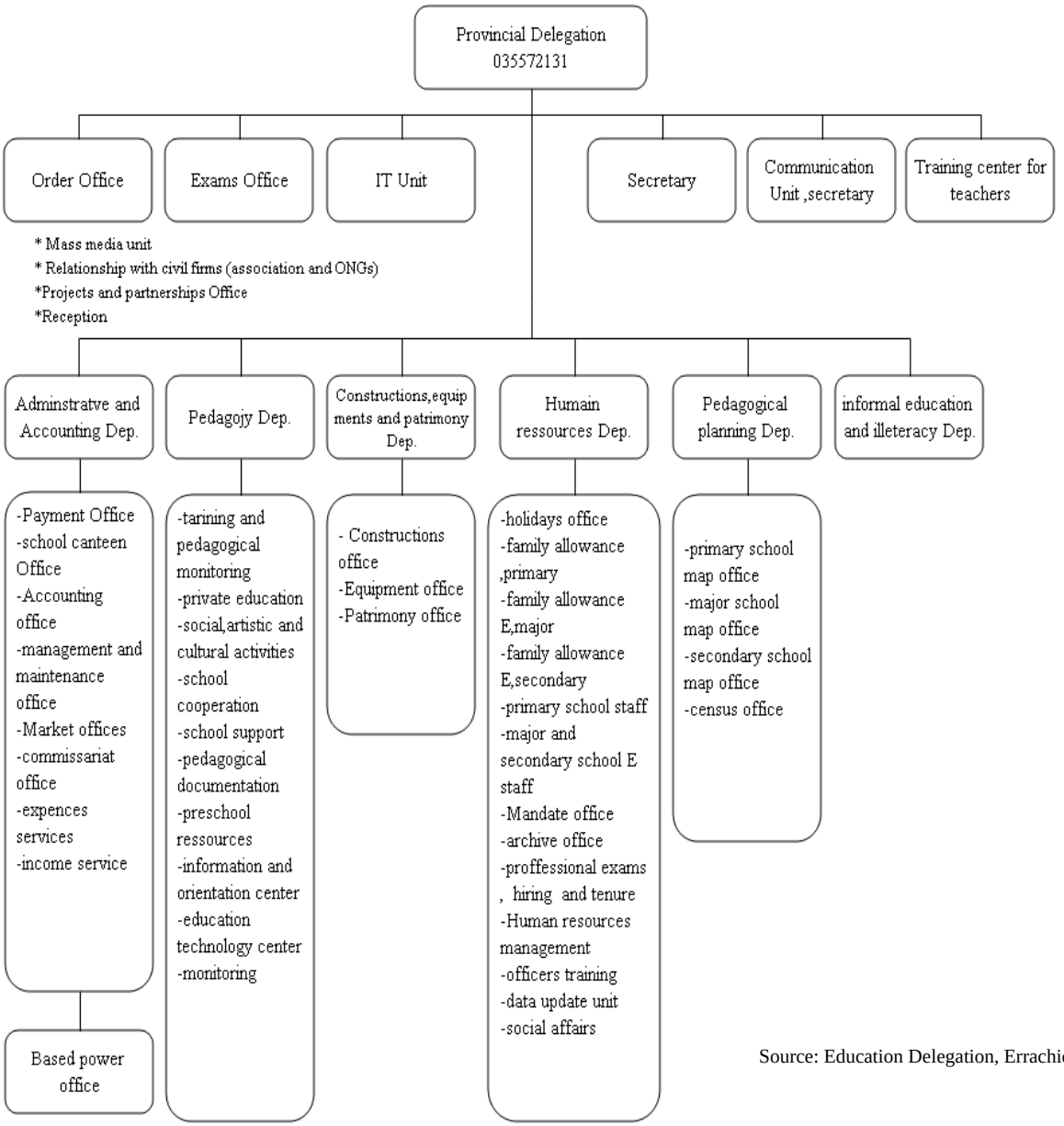
Source: UNESCO,

Figure 1.2.8 Comparison of GER in MENA Countries between 1999 and 2006



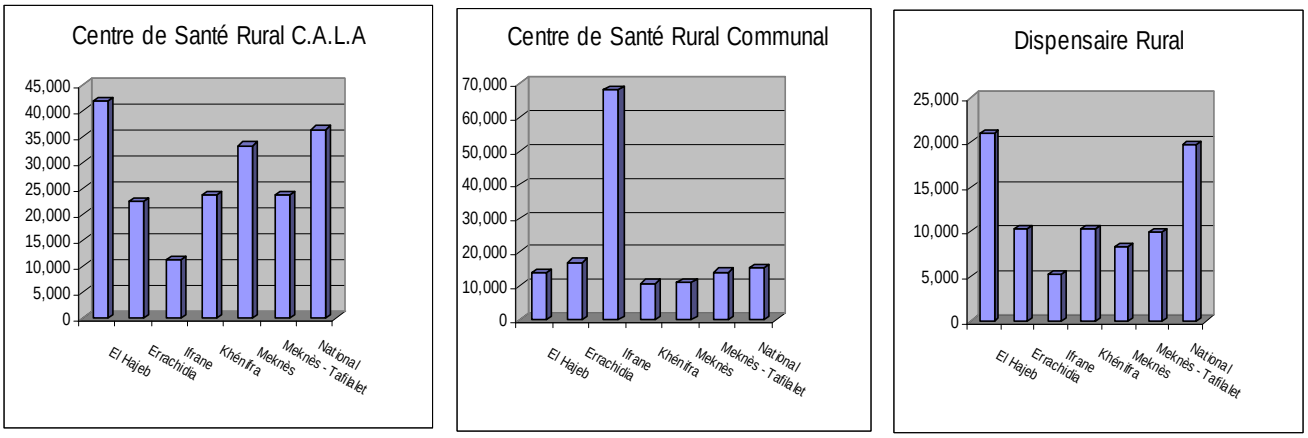
Source: UNESCO,

Figure 1.2.9 Repetition rate in primary schools in 2006 (MENA countries)



Source: Education Delegation, Errachidia

Figure 1.2.10 Organizational Structure of Education Delegation of Errachidia



Source; Annuaire Statistique du Maroc (2008),Haut-Commissariat au Plan

Figure 1.2.11 Ration of Health Service in Rural Areas to Person

Case Study

Imichil is the capital town of the *Cercle* and the center of the surrounding rural area. Surprisingly, there are many English signs in the city and tourists are seen in the shops. Our field survey was done on May 5, 2009.

The following is the information obtained from an owner of a local restaurant.The tourism-related facilities in the town are 10 restaurant-cum-*Auberge* (simple hotel), 3 private houses providing meals and lodging, 6 souvenir shops.The total number of beds is 150-200, and the average cost for accommodation is 150 - 200dh including three meals per day.The main tourist attractions are beautiful nature, a legendary lake, and the events such as music festival and marriage festival held in the last week of August.

There are more foreign tourists than Moroccans, and the nationalities of visitors are diverse (Spain, France, U.S.A., Japan, etc.) The tourist season is from April to August.Tourism became popular in the last 10 years.It was one and a half years ago that electricity was first supplied in *Imichil*.

Figure 1.2.12 Case Study

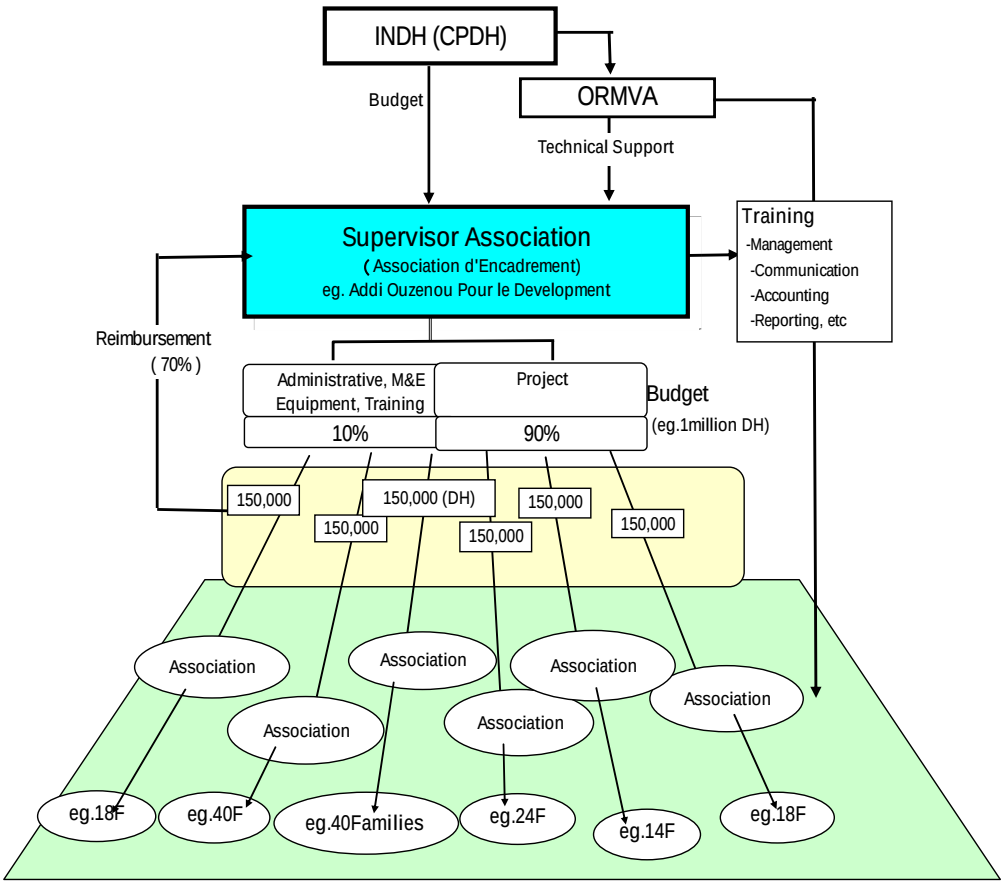
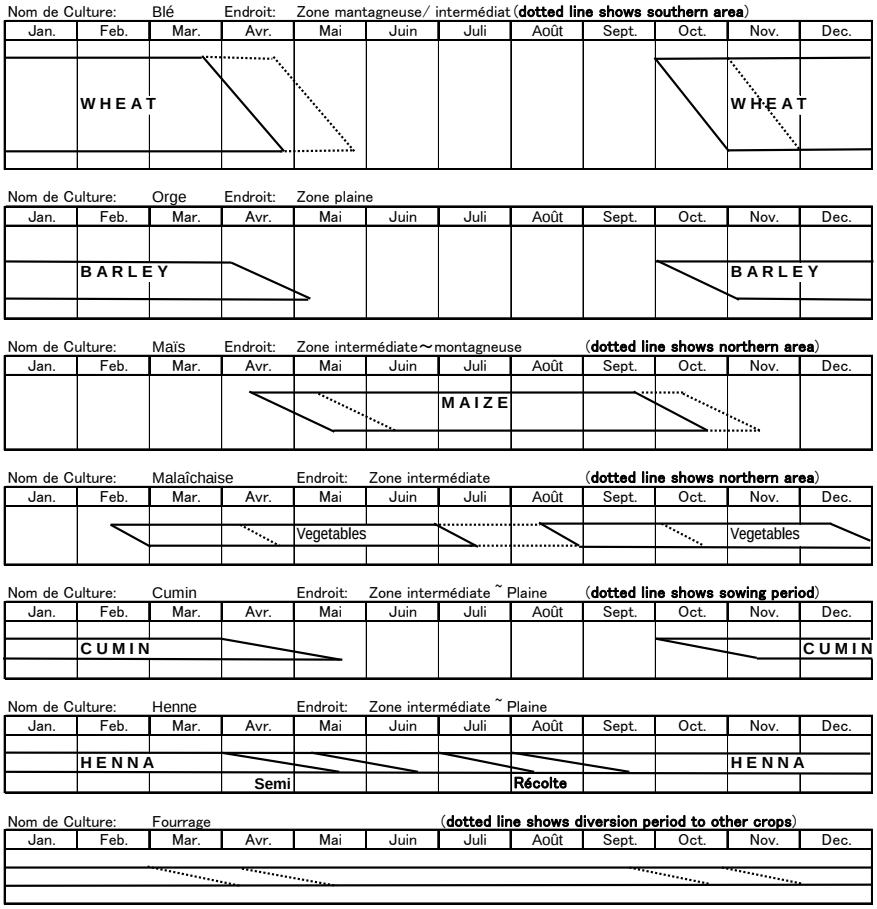


Figure 1.2.13 Relation between INDH Project, Supervisor Association and Associations



Source: ORMVA/TF

Figure 1.2.14 Crop Calendar of Crops in the Study Area

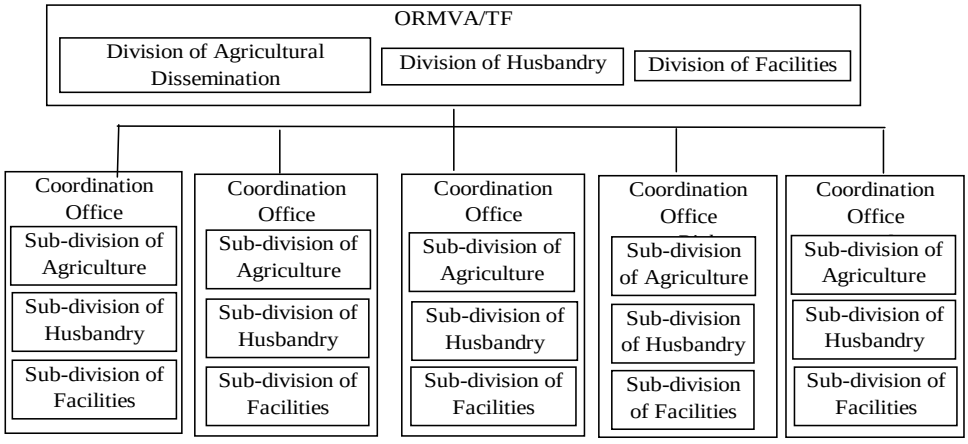


Figure 1.2.15 Core Structures for Dissemination Under the ORMVA/TF

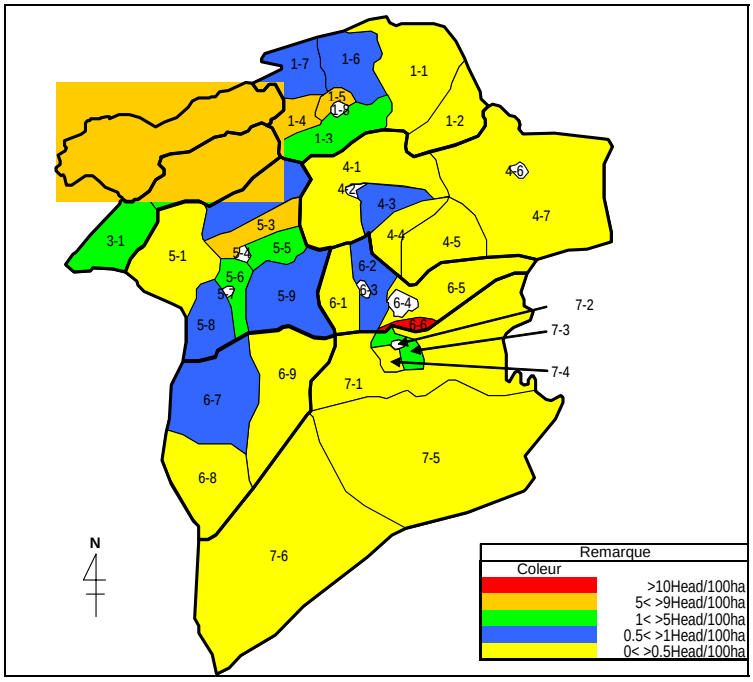


Figure 1.2.16

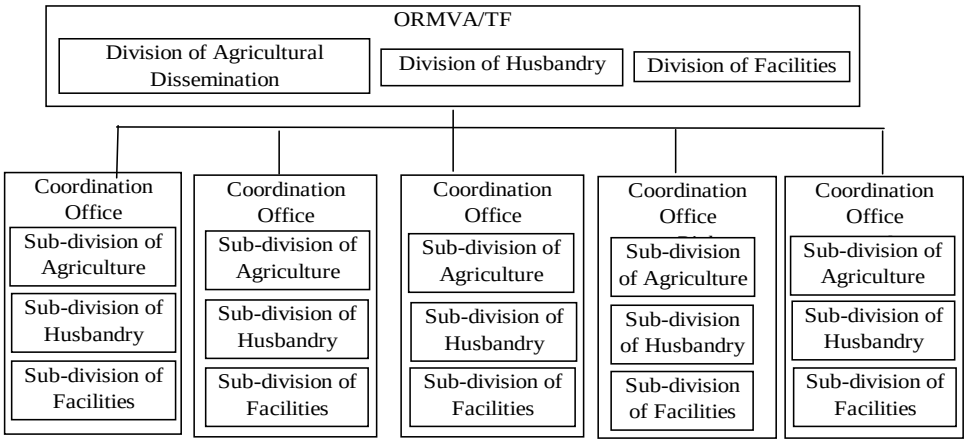


Figure 1.2.17 The Core Structures for Dissemination Under the ORMVA/TF

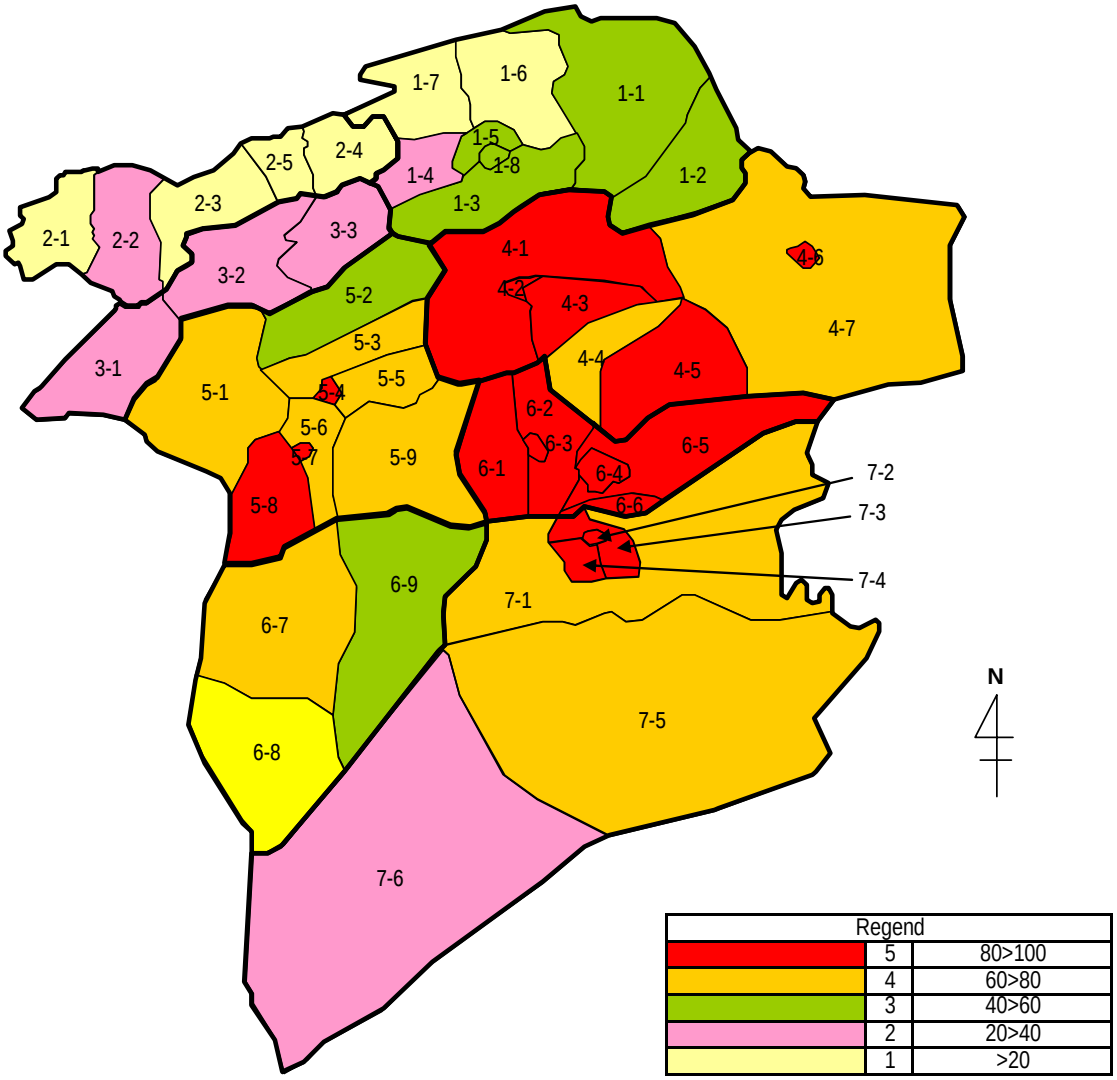


Figure 1.2.18 The State of Consolidating Toilets in the Province (by Haut Commissariat au Plan, RGPH 2004)

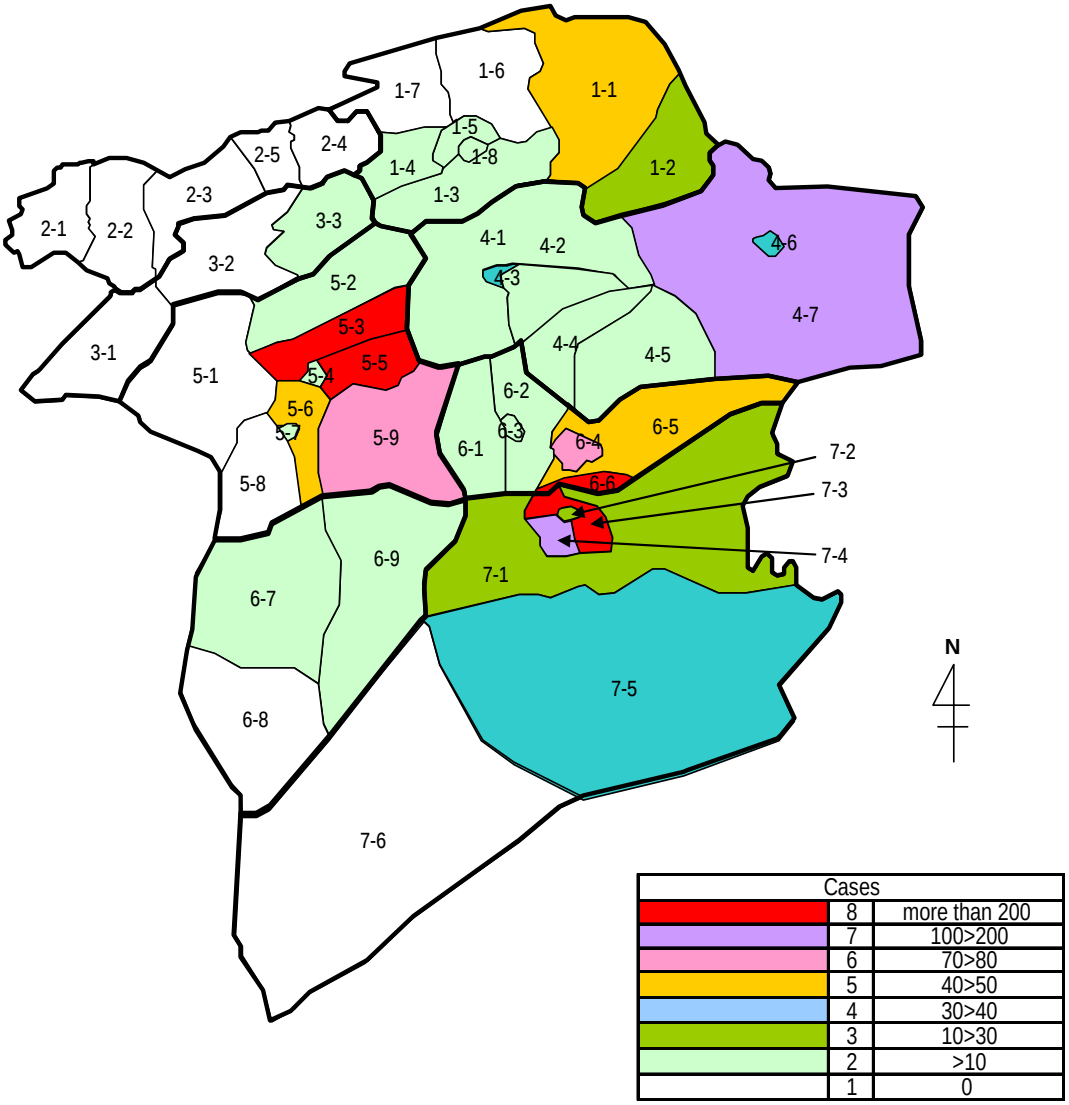


Figure 1.2.19 The geographic distribution of the above referred leashmaniasis (SIAPP, 2008)