No.

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MINISTRY OF AGRICULTURE

DIRECTION OF ANALYSIS,
FORECAST AND STATISTICS

COOPERATION
SENEGALO-JAPANESE

JICA

JAPAN INTERNATIONAL
COOPERATION AGENCY

PROJECT FOR SUSTAINABLE RURAL DEVELOPMENT

Final Report
（Summary）

March 2011

EARTH & HUMAN CORPORATION

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Final Report (Summary)

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Chapter 1 Introduction

1.1 Overview of the Project

1.1.1 Background of the Project

Since 2003, JICA implemented the first phase of a technical cooperation project named: «Safe Water and Support for All and Support to Community Activities » (PEPTAC) phase1 for 3 years. For populations to be able to manage and maintain autonomously water supply in rural area, PEPTAC1 first established the Borehole Users Association (ASUFOR) and implemented « community activities » in three sites which ASUFOR were well managed. It came out from that a possibility of autonomous and sustainable rural development through the ASUFOR. To develop « community activities » in other villages of Louga region, Japan and Senegalese Government concluded the Minutes of Discussions (hereafter referred to as « M/D ») on January 2008 and the implementation of the Project was decided.

1.1.2 Project Framework and evaluation of outcomes

The goals and Expected Outcomes of the Project are as follows:

- Project Goal:

Define benchmarks to achieve community development in Louga region through the maintenance experiences of water supply facilities and collective activities.

- Overall goal

Achieve community development in Louga region through the maintenance experiences of water supply facilities and collective activities.

- Expected outcomes

Outcome -1: The persons responsible for the diffusion of community development are trained.

Outcome -2: Tools (Guidebook & Technical Sheets on community development) are drafted to achieve efficiently community development upon population initiative.

Outcome -3: The diffusion system of the development model elaborated by the Project is strengthened.

The final evaluation of the Project conducted on November 2010 revealed that the project was globally well evaluated upon 5 criteria and the level of achievement of indicators of expected Outcomes is satisfactory. Then, recommendations were made on the intervention of PDRD during the extension period with the hope of having more impacts by the continuation of activities.

1.1.3 Intervention period

The implementation of the present Project lasts from March 2008 to March 2011 that is about 37 months, distributed on four fiscal years.

1.1.4 Project Intervention Zone

The target zones of the Project are all Louga region and the site of Taïba Ndiaye of Thies

region. Target sites are the following:

- Pilote site : Taïba Ndiaye, Moukh Moukh, Mbéyène Négué (PEPTAC 1 activities are carried on)
- New site : Ndate Bélakhore, Bakhaya, Nguith (the sites are chosen in the 2nd year.)
- Guidebook experimentation site : Garky Diaw (The site is chosen in the 4th year.)

1.2 Project implementation scheme

1.2.1 Japanese side

The Project was implemented with the following members in the various fields of intervention.

- Project Manager / Community Development 1
- Community development 2
- Deputy Project manager / Diversification of productive activities 1 (Agriculture)
- Diversification of productive activities 2 (stock breeding)
- Organisation / Village management
- Improvement of living standards / gender
- Administrative coordinator / Social and environment consideration
- Diffusion 1
- Administrative coordinator / Diffusion 2

1.2.2 Senegalese Side

Partner agencies for the execution of the Project (C/P) are DAPS (Analysis, Forecast and Statistics Division, Project coordination agency) at the central level and DRDR (Rural Development Regional Division of Louga, and Rural Development Departmental Services (SDDR), which is a decentralized body of the Ministry of Agriculture. Major cooperating institutions are Operation and Maintenance Division (DEM) of the Ministry of Housing, Construction and Hydraulics (from now on named Ministry of Hydraulics), the Ministry of Stockbreeding, Local Development Support Division (DADL), Education Academy Inspection (IA) and Regional Governance (Regional Council and Regional Agency.

1.2.3 Establishment of the Joint Steering Committee and of the Coordination Committee of the Project

Accordingly to the provisions presented in the Minutes of Discussions (M/D) of the Project, the joint steering committee and the coordination meeting of the Project were established. In the steering committee, we made an expose of the activity report, the confirmation of the results as well as the promotion of the project, which favoured the collaboration between ministries involved by means of counterparts. The coordination committee was composed by structures at the local level, including population representatives and worked in favour of the promotion of project management.

Chapter 2 Rationale of the Project and local situation

2.1 Present condition of the rural development sector in Senegal

2.1.1 Policies in the rural development sector

Poverty reduction strategy documents (PRSP I and II) are considered as basic national policy in Senegal. The Medium Term Sector Expenditure Framework (CDSMT) was drafted for the purpose of a good implementation of the PRSP for each field of activities, including farming. Agricultural sector policies in Senegal are based on the Agro-Sylvo-Pastoral Act (LOASP) drafted in 2004, which commits for the implementation of the programme such as the National Agricultural Development Programme (PNDA), etc. Moreover, the National agricultural infrastructures programme (PNIA, 2011-2015) was elaborated within the framework within the framework of the Comprehensive Africa Agriculture Development Programme (CAADP).

2.1.2 Regional Integrated Development Plan of Louga (PRDI)

The Regional Integrated Development Plan of Louga was elaborated on November 2004, which is centred around four objectives: i) Protection of soils and restoration of the ecosystem, ii) Diversification, modernisation and enhancing of agricultural products, iii) Creation of wealth, iv) Development of human resources and improvement of the living framework.

2.2 Situation of Louga region

Louga region population was 831,390 inhabitants in 2009, it has a yearly demographic growth rate of 2.7 %. In terms of ethnic, the Wolof (64 %) and the Peuls (29 %) are numerous in Louga region. In terms of religious beliefs, most of the population is muslim. Major economic activities in Louga region are the primary sector. As for farming, cereals and groundnuts cropping in rainy season and vegetables cultivation in dry season are dominant. As for livestock, it is composed of grazing in the inland part and intensive livestock of small domestic animals in urban zones. Globally, rural area in Louga region is poor**.** Louga is one of the major immigration sites due to economic reason.

Louga region is located in the Sudanese-Sahelian weather zone having yearly rainfalls between 600 to 900mm. However, the quantity of yearly rainfalls – in the last twenty years – vary between 200 to 500mm. Vegetation is savannah zone which scatted big and medium trees. These days, cause of the reduction of rainfalls, demographic pressure and over grazing, etc., make drought progress.

The global access rate to potable water in Louga region was set at 72 %, nearly 80% of boreholes in the region are managed by ASUFOR.

2.3 Status of rural development in Louga region

2.3.1 Agricultural sector

The general structure of agricultural sector in Louga region is characterized by the cropping of millet (cereal) and the cropping of groundnuts (cash crop) that dependent on rainfalls. The other cash crops are « black eye peas, watermelon, cassava, etc. Market gardening is much practised in the Niayes zone on the Western coastal area.

The main problems to be solved in the agricultural sector are limited water resources and the progress of soil degradation. The zone has a strong on groundnuts and millet productivity in rainy season, but is limited to a small area in the South. This is due to severe production conditions, compared to other regions. As water resources for market gardening in dry season, the population turn to shallow wells or borehole equipped with engine, except in the zone where they can access to surface water. The efficient utilisation of the limited exceeding water of the borehole is an indispensable prerequisite. Moreover, land became poor due to the cultivation for many years. Therefore, its is necessary to put in place improved water saving techniques, the cropping method and the fertilization of soils, taking into consideration the sustainable utilisation of lands.

2.3.2 Livestock Sector

The breeding of animals such as bovine, sheep and goats is the most important in Louga. The system of breeding animals is mixed with traditional sifting pasturage, agricultural and livestock (sedentary). Transhumance is a livestock system that consists yearly in a movement towards the South in dry season, when grazing is no longer enough for feeding the cattle and a return in Louga region in rainy season.

Because of natural conditions are more and more strict, transhumant can no longer provide food and water to the cattle all the year long. On the other hand, in general, livestock has financial difficulties in its management. In those circumstances, it is desirable to set up a livestock system with low invest and water saving in Louga region.

2.3.3 Improvement of living standards and women's group activities

Most women in rural area are involved in farming works, of which many are committed in small trade. The main activities of women's group are the vegetable cultivation, small and medium domestic animals raising, the processing of agricultural products, dyeing and sewing, small trade and management of mill unit. These activities are financed by bank loans or support provided by NGOs, but in many women's groupings carry out these activities by recourse to their own economies.

Generally the woman is busy with household chores. Therefore the time for community activities is very limited for them. They are confronted with problems of access to credit and information. Women in rural area especially have little opportunities to collect necessary information and acquire techniques. Low literacy rate of woman is also one of the hindering factors of activities.

Chapter 3 Overview of the PDRD model

3.1 Necessity and relevance of the PDRD model

In Senegal, the model systematic and adapted to local specificities doesn't exist. Therefore, it is essentially necessary to set up a development method based on the characteristic and problems and make them the rural development model.

Moreover, it seems to us relevant to try to identify measures for the improvement of living standards (development approach) and to set up a rural development model while taking into consideration of natural and socio economic environment of Louga region.

3.2 Major theme and orientations of the PDRD model

PDRD project determined the major theme « **Sustainable development based on autonomous activities of the population and the rational utilisation of borehole water** » as model highly likely to be diffused in rural area in Louga.

The orientation for elaboration of the model centred on the main theme referred to in the box below.

i)	The application field of PDRD model covers sites where water supply installations in rural area is used permanently;
ii)	The techniques proposed by the Project concern <water utilisation>, including partly measure in case of breakdown of water supply facility;
iii)	Development approaches must be relevant with the orientation of national or regional development in order to solve problems faced in rural area in Louga region;
iv)	The sustainability of activities in the future must be taken into consideration;
v)	The respective roles of technical services and populations must be proposed by taking into consideration the actual situation of extension services in rural area in Senegal;
vi)	The improvement of living conditions and income are targeted for the benefit of populations through sustainable rural development.

3.3 Elaboration of PDRD model

An overview of all activities necessary for the drafting of the model is summarized in the following 3 points.

◆ **Design of development tools**

We elaborated the «Guidebook for community development» exposing the approach or the various stages of the community development process, necessary actions and points to take into consideration at each stage of the Project implementation as manual used for reference by diffusers on the field. At the same time, we have finalised «Technical sheets for community development» that gather the technical manual serving as practise for community activities, the presentation of techniques, and the manual on villagers' organisation.

◆ **Human resources training**

The Project trained diffusers of technical services and village leaders to provide them with necessary knowledge and operational and strengthened capacities. The Project aimed at the level by which village leaders provide support for activities to populations through diffusers, the technical initiation of the population, the transfer of techniques to neighbouring villages.

◆ **Establishment of rules and support schemes for a better exploitation of tools and personnel trained**

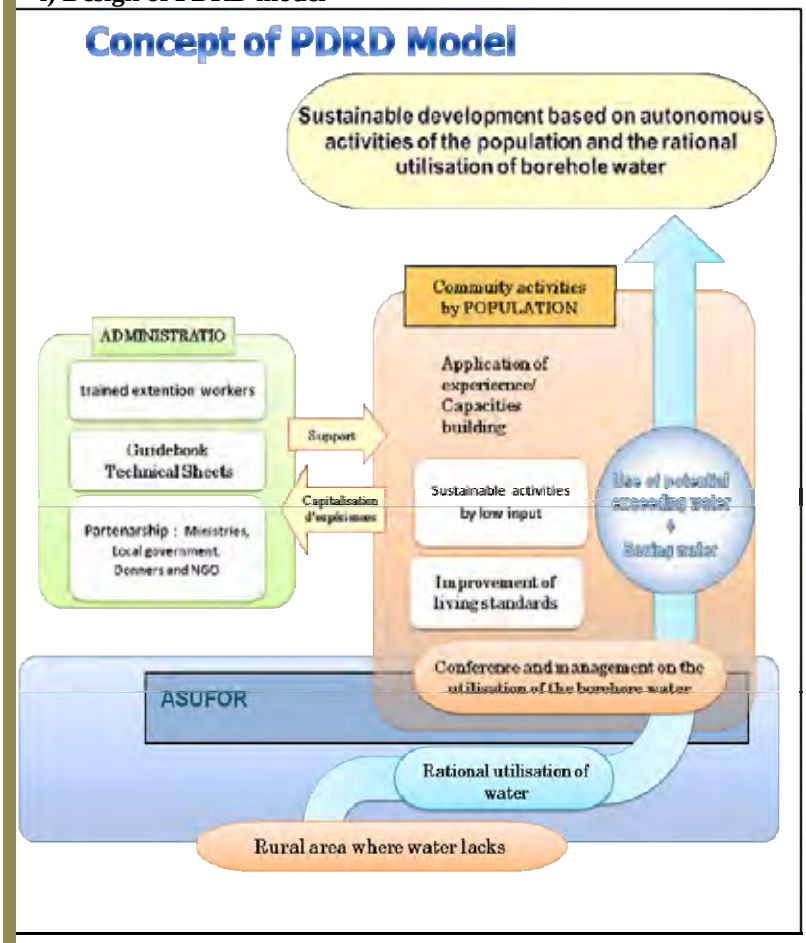
It is indispensable to define rules and a scheme to support the population so as to better exploit tools and the trained personnel. And the establishment of rules and support schemes must be done while relying on the orientations of the Project. It is particularly important to plan community development upon population initiative, the compliance to sustainability and the revision of the roles of administrative services.

3.4 Profile of the PDRD model

This is the overview of the model simplified with the presentation of each of the three

components of the model: i) Design scheme of the model; ii) Elaboration process of the model; iii) Inputs per site (Figure 1).

i) Desigh of PDRD model



ii) Elaboration process

Determination of the major theme and orientations	
Implementation of the partnership and framework for concerted action with structures concerned	
Involvement at the central level	
Diffusion on the field	
1st phase : Sites selection	
1	Preselection
2	Preliminary investigations and final selection
2nd phase : Implementation	
1	Kick off meeting
2	Reference situation
3	Estimation of the borehole water surplus
4	Inventory of needs and selection of activities
5	Planning
6	Application for the utilisation of potential water surplus
7	Deliberation and authorisation issuance
8	Planning of activities
9	Implementation of activities
3rd phase : Monitoring evaluation	
1	Water utilisation control
2	Supervision by technical services
3	Internal monitoring of community activities
4	Periodical internal evaluation of community activities
5	Joint evaluation of interventions
Organisation of villagers	
Human resources training	
Design of tools	

iii) Inputs necessary for the implementation of PDRD model (for example)

(A) Support to population1 activities : Preparatory stage 3 months,		Unit price : CFA F			
	Expenditure	Unit Price	Quantity	Total	Subscription
	Allowances (diffusers)	10.000	26 weeks	260.000	0
	Transportation (diffusers)	5.000	26 weeks	130.000	0
	Elaboration of documents	50.000	3 months	150.000	0
	Total			440.000	0
(A) Support to population 2 activities : Implementation stage 9 months,		Unit price : CFA F			
	Expenditure	Unit Price	Quantity	Total	Subscription
	Allowances (diffusers)	10.000	39 weeks	390.000	0
	Transportation (diffusers)	5.000	39 weeks	195.000	0
	Elaboration of documents	30.000	9 months	270.000	0
	Total			855.000	0
(C) Community development activities		Unit price : CFA F			
	Expenditure	Unit Price	Quantity	Total	Subscription
	Demonstration House (vegetable gardening + poultry farming)	20.000	5 villages	100.000	50.000
	Vegetable garden	2.200	100 households	220.000	20.000
	Poultry farming	20.000	5 households	100.000	50.000
	Milk processing	57.000	5 villages	285.000	28.500
	Cereals processing	64.000	5 villages	320.000	32.000
	Total			1.025.000	180.500

Figure 1 Components of the PDRD model

Chapter 4 Design of the PDRD model

4.1 Elaboration community development Guidebook

4.1.1 Background of Guidebook drafting

A manual exposing the approaches of the community development implementation process, applicable to various usages quite doesn't exist. Moreover, on one part of the target zone, community activities were conducted with water from hydraulic facilities. However, we have never studied theoretically the volume of «potential exceeding water», which is available after satisfaction of needs of the population and livestock and the utilisation method. Considering the lack of water utilisation control system, borehole water use was essential. In this context, the drafting of guidance integrating the rational utilisation of water within community development was indispensable.

4.1.2 Orientation of Guidebook drafting

The «Community development Guidebook» was elaborated by relying on the following orientations:

i) The Guidebook will include necessary information and tools for diffusers to use during the support to population undertaking community development;
ii) The Guidebook takes into consideration the reliability of the utilisation of water supply installations, indicators of rational water utilisation and measures in case of breakdown;
iii) Establish a Guidebook drafting committee composed of the various structures concerned;
iv) Tackle the topics in a concrete way regarding «gender» and «fund raising for activities» during the drafting.

4.1.3 Composition and content of the Guidebook

We determined the composition of the Guidebook, in compliance with the orientations of Guidebook composition by discussion with the members of the drafting committee.

Table 1 Composition of the Guidebook

Chapter	Title	Item
Ch. 1	Background and rationale	National policy relating to water supply in Senegal, The situation of target regions, Sustainable community development
Ch. 2	Basis of the Guidebook	Purpose of the Guidebook, Stages of Guidebook drafting process, Users, utilisation method
Ch. 3	Enhancing of local resources	System of water supply facilities, calculation method - Maintenance and management of water supply facility and role of ASUFOR, Responsibility of population - Enhancing of local resources (natural, human and financial resources)
Ch. 4	Gender Approach.	Gender consideration in community development
Ch. 5	PDRD Approach	Process and method on planning, implementation, monitoring/ evaluation (site selection, introduction and implementation of activities, monitoring/evaluation of activities)

4.1.4 Guidebook drafting and validation process

The Guidebook was drafted by « the Drafting committee » composed of fourteen bodies responsible for community development in Louga region, such as technical services, local government, Project/NGO, so as to integrate the local know-how of bodies concerned who know well field condition serve the public. On the other hand, the «Technical advises» of two levels, at the national and regional levels were put in place to provide for the supervision of the composition and content, in order to improve the precision of the guidebook. The Council validated the Guidebook. A launching ceremony of the Guidebook was chaired by the Minister of Agriculture, upon the lead of DAPS on August 2010.

4.1.5 Experimentation of community development process in compliance with the Guidebook

Community development process was experimented in new sites, based on the draft «Community development Guidebook».We have integrated problems and lessons learnt in activities carried out. Diffusers from Technical Ministries, local government and other Projects participated to this experimentation. They deepened the understanding of the model, and besides, participants benefited from opportunities to consolidate experimentations as human resources responsible of diffusing the model.

4.2 Drafting of community development Technical Sheets

4.2.1 Background of Technical Sheets drafting

Technical manuals applicable to the particularities of Louga region were not much available, namely regarding community development with exceeding water from the borehole. Considering such circumstances, it was urgent to make a census of the systematic order of community development techniques adapted to Louga region specifities.

4.2.2 Orientation of Technical Sheets drafting

All Technical sheets were drafted according to the following orientations.

i) Technical sheets target extension worker (Some sheet can be use by population)
ii) Among the techniques, the Project targets techniques of high utility which efficiency is already verified, only their adaptability to regional specifities must be questioned through the implementation in the sites;
iii) The Sheets must be easily understood by all targets, to that effect, some technical sheets are translated in local languages and made visible (with many photos and illustrations);
iv) Water saving, the low cost of input, the enhancing of local resources, are taken into consideration within all the process of drafting of the sheets
v) Sheets include also case studies on < measures in case of breakdown of the water supply facility/ activities not depending on borehole water>, <original idea of populations> and <lessons and learn from experimentation activities>.

4.2.3 Composition and content of Technical sheets

Technical sheets are constituted of the following elements: Technical sheet on each field, list of resource persons for techniques and annex.

The table 2 presents the items of Technical sheets by section.

Table 2 Items of each Technical Sheet by section

Section	Title of Sheets	Items
Agriculture	■ Sustainable farming 1) Organic fertilizer and compost	Making method of compost (Local method, method with water saving, direct spreading of animal dung)
	Annual cultivation plan	Determination of a annual seasonal time sequence of crops and appropriate period, necessary fertiliser
	■ Vegetable garden (Demonstration House)	Small scale family garden applicable in each household, Rabbit production and Poultry farming, Improvement of living standards
	■ Farming with water saving	i) Drip irrigation by bottle ii) Windbreaks iii) Mulching iv) Cropping with hybrid watering
Livestock	■ Livestock breeding methods 1)Poultry house construction	Poultry house construction with low cost by the utilisation of local materials
	2)Improved farming of local poultry variety	Preparation of the feed, Control of the livestock, Improvement of the breed, Research on profitability
	3) Rabbit production	Hutch construction, Rabbit reproduction, Management of mating
	4) Duck production	Construction of the duck house, Duck breeding, Sanitary control
	■ Silage	Manufacturing of silage at low cost
	■ Disease control and cattle breeding techniques 1) Prevention of disease among small animals	Spraying method, Prevention of New Castle disease, Parasite control, regular preventive measures
	Health measures for the protection of small animals	Sanitary measures for poultry farming and rabbit production, the role of the veterinarian, statement on counter measures
Improvement of living standards	■ Milk processing	Material necessary, the various processing stages, Cow milk processing technique, Packing in plastic bags, Powder milk processing technique
	■ Cereal processing	Cereal processing
	■ Black eye pea (niébé) processing	Black eye pea (niébé) processing
	■ Fruits and vegetables processing	Bisaap juice, Mango marmalade, Mango juice, Pepper concentrate, Preserved vegetables
	■ Teaching water saving at school	Presentation of the pedagogic material for water saving teaching
Organisation and management at village level	■ Community leader's training	Training methodology, Notions on an organisation, Role and responsibilities of a community leader
	■ Strengthening village organisation	Planning of activities, Mid term evaluation, Final evaluation
	■ Establishment of the Community Development Committee (CDC)	Process of approaches for the implementation of the new body : Kick off meeting, Second meeting, Training for CDC implementation, Census of groupings
Water supply	■ Management and measure for water leak	Proposal of leakage management by the population

4.3 Experimentation of community development techniques

4.3.1 Concept of experimentation of techniques

We have chosen techniques to integrate in the Sheets, further to discussion; we set them up and executed them with the population taking into consideration the following points.

- **Water saving**; agriculture consumes a lot of water; it is a section that requires the highest volume of water with the highest water saving possibility. Water saving influences directly the protection of natural resources but also the reduction of inputs and profitability.
- **Low cost input**; activities which technique is already confirmed become the most accessible to population with the integration of the viewpoint « low cost input »
- **Enhancing of local resources**; besides efforts aiming at the creation of objects, it is important to find a new value on existing resources and bring them to get means of livelihood. Through these efforts it is possible to improve living standards by minimising a new investment as much as possible.

4.3.2 Selection process of experimental activities

Before the start of community activities, the PRA (Participatory rural appraisal**)** was conducted in the six target sites to determine the populations' needs. Populations' needs have been examined and summarized.

After we studied measures to propose as Project and determined orientations of the intervention by section. Activities that can improve local productivity directly or indirectly are chosen in priority. In practice, the selection concerns three field that are agriculture, livestock and improvement of living standards.

4.4 Experimental activities by section

4.4.1 Agriculture

- **Farming with water saving**

After the initiation to the basic cropping technique, we shifted to the command of advanced farming technique with water saving. The demonstration of farming with water saving in comparison with that without water saving enabled population's identifying the effect of water saving.

- **Approach at the collective Farm**

According to the comparison of water consumption in 2004 and 2009 at the collective farm in Moukh Moukh, on the same acreage, the water volume consumed was reduced to two third. On the other hand we note also a significant increase of income from sales, this represents 367% compared to initial sales. The results of efforts in the improvement of techniques and water saving for the farm management are not very visible in 1 or 2 years. But the comparison in a 5 years period enables identifying a significant improvement of productivity.

◆ **Vegetable garden**

Vegetable garden started like the practice of the family farm at a very limited scale applicable to the zone where borehole water use for farming is forbidden. We use only recycle waters from the household on a small plot of land (3m x 3m = 9 m^2). We adopted a planting model with a lemon tree which is resistant to disease, around which are planted leguminous plants. The cost is not high, its implementation is easy, and this model of vegetable garden is practised in all sites, in 41 villages around households.

◆ **Compost manufacturing**

Compost manufacturing cost is not high and its land enrichment effect is important. We have now presented the easy method for making manure applicable by women physical power through raw manure collection and efficient watering for speeding up decomposition.

◆ **Utilisation of natural pest control products**

The limitation of chemical pesticides is the general rule for environment protection and the production of safe products. The Project experimented and exposed biological pest control products, but also the appropriate utilisation of chemical products.

◆ **Planning of annual cultivation plan**

At the beginning of the 3 cropping periods, all participants discussed cropping time sequence that is we selected the crops, the cost of necessary materials and farming equipment, as well as the refunding method of purchased inputs. During the meetings on the statement at the end of each period, we checked that sales as well as water cost and utilisation. The planning and verification of works enabled reducing useless works, which improved the efficiency at the economic level.

4.4.2 Stockbreeding

◆ **Introduction of small domestic animals**

In the livestock section, PDRD worked on the water saving view, which concerns in priority rabbit and poultry farming like chicken, ducks and turkey that is translated by the choice of small animal breeding.

◆ **Improved breeding of local chicken**

Chicken breeding is very popular. Open air poultry farming is generally practised by the population and this mode of breeding requires little physical efforts. Chicken are exposed to risks, namely attacks of chicks by predators or by adult chickens, death from disease. Therefore, we presented and tested improved poultry farming techniques which consist in speeding up the egg-laying cycle by the separation of chicks from the hen and in improving the survival rate of chicks.

◆ **Production and conservation of fodder**

The Project undertook fodder cropping at Mbeyene Negue site. This experimental cropping planned to exploit Lac de Guiers surface water, these specifities of the site are not observed in other target sites. The project also introduced silage which materials are grass growing during the rainy season. It’s a method of exploiting local resources at low cost.

4.4.3 Improvement of living standards

◆ **Water saving education**

PDRD organised classes on water saving at elementary school to raise children's awareness on their responsibility in the future of the region. According to the survey on water saving education effect, we have noticed behaviour changes among pupils ; « They don't waste water anymore », « Children use a receptacle to drink and wash their hands », etc.

◆ **Workshop on water saving**

The purpose of the workshop is to <make a diagnosis of water utilisation by the population itself> and to <know water consumption and water saving behaviours by other households>. This workshop enabled noticing that villagers practise water saving gestures in many cases, or even more than planned.

◆ **Milk processing and sale**

A training on milk products processing (yoghourt production) was provided to Moukh Moukh women' groupings with the support of the NGO Hunger Project. In Moukh Moukh, the activity continues all year long with powder milk during the fresh milk shortage period.

From Nguith, a woman came to learn milk processing techniques in Moukh Moukh. Then, she succeeded into selling milk processed products and organised a small group to whom the techniques were transferred. Activities are developed with the sale of products like seasoning, tea, sugar.

◆ **Cereal processing and sale**

Training in Ndate Bélakhore, Bakhaya and Moukh Moukh sites were provided by the trainer who was the leader of the women's group in Taïba Ndiaye, which had experience in cereal and basic products production and sales. Training was focused on the command of concepts of hygiene and quality of the product for the prospect of selling the products. Presently, cereals processing and marketing are practised once or twice per month according to customers demand.

4.4.4 Points to tackle regarding experimental activities by section

(1) Agriculture

The main concern is the strategy to adopt in case of breakdown of water supply installations. The concept of risk management is integrated to PDRD model. As measures, in case of breakdown, we are raising funds to restart cultivation considering still that one or twice a failure of the whole cropping. Population need saving fund for restart activity about 500,000 FCFA.

(2) Breeding of Animals

Marketing is the problem relating to the introduction of small livestock. The population is not used to buying or selling rabbit and duck. In this respect, coherent and integrated activities must be carried out from reproduction to sale.

The silage nutritive value starts deteriorating three days after silage is opened. It is necessary to take preservation and marketing measures.

(3) Improvement of the Livelihood

◆ **Water Saving Education:** There a great variety in the water saving educational methods and supervision capacities among teachers. For this purpose, it is necessary to organize retraining sessions as required to build teachers' supervision capacities.

◆ **Milk Processing:** The use and introduction of substitute materials as well as collective purchase must be accelerated for necessary materials which is not available near villages. It is necessary to pass an exam and be allowed by the Hygiene Division to expand the distribution area of the concerned products. Consequently, there must be a strict hygiene management based on a check list.

◆ **Processing of Cereals**: The introduction of a small-scale cereal bank must be examined point of view for sustainable supply of cereals. The collective or wholesale purchase of plastic packet for cereals processing is efficient.

4.4.5 Intervention Approach in Case of Water Supply Facility Breakdown

Measures meant to reduce the burden of boreholes and deal with their breakdowns were tackled under PDRD by taking the management of water supply facilities into account. Water consumption control measures taken during the planning and implementation of activities come down to the selection of crops and livestock consuming not much water, application of water saving techniques, etc. To anticipate the breakdowns of facilities or stopping of their operation it is efficient, as far as risk distribution is concerned, to introduce in advance activities likely to be carried out in the long-term without water or with not much water or activities that can reduce domestic expenses related to the breakdown of facilities. Those activities are: the provision of a thresher and/or husker, cereal processing and presentation of varied recipes, vegetable gardens (especially with the development of wastewaters), establishment of small domestic animals.

4.5 Capacities building of resource persons

PDRD endeavoured to train the resource persons but made a distinction between "agents of the technical services" and "villagers". As regards agents of technical services, training started by that of counterparts officially appointed by the Governor of Region followed later on by that of agents working in the departments and districts with the aforementioned counterparts.

As for the training of villagers, it first targeted village leaders who were divided into two categories, that is, "organisational leaders" and "technical leaders". This training was provided with the support of counterparts and agents of technical services of the department and district.

4.5.1 Capacities Building of Technical Officer

PDRD identified the capacities needed by technical officer acting as "extension warker" of community development. Those capacities are as follows: Project Management Capacities according to the PDRD model, Capacities to facilitate the support to village activities

PDRD held a training session on "community development" to train the technical services in charge of fields related to the Project and/or regional development plan the objective of which is

to learn the contents of the PDRD model (theory and practice). The transfer of the techniques of each sector to extension agents was carried out by means of an on-the-job-training.

4.5.2 Capacities Building of Village Leaders

PDRD involved agents of the concerned Ministries and attached importance to the population it viewed as human resources for the community development extension. The Project first trained village leaders chosen by the concerned populations and the latter are in charge of popularizing the knowledge and techniques acquired during the training session held for them. Organisational and technical leaders are the types of leaders concerned by the aforementioned training. The Project provided training or supervision according to the needs of each type of leaders.

It aims to create opportunities to develop and promote skills and “fundamental techniques” such as “listening to other people’s opinions”, “conciliation of ideas”, etc.

Topics “technical leaders” must master are as follows.

- Agriculture: Basic farming knowledge, sustainable agriculture, water-saving cultivation
- Livestock: Development of the livestock environment , hygiene management
- Processing of agricultural products: Choice of the processing place, production technique, considaration of hygiene, quality control
- Water Saving Education: Understanding the importance of water saving education and content of the course, teaching methods, understanding educational techniques

The problems that remain to be solved for technical leaders are: administrative services must help these leaders to acquire the required knowledge.

The training of technical leaders is ongoing and yet, the regulation meant to promote this kind of trained leaders is not set yet. For that purpose, administrative services must establish an incentive system to keep them motivated.

4.5.3 Establishment and Management of the Community Development Committee

PDRD proposed the creation of a body in charge of implementing the local community development. This was materialized by the establishment and management of the “Community Development Committee” (CDC) the mission of which is to build the capacities of the population.

PDRD established CDCs in fore out of six target sites following the discussions with DRH and DRDR that assigned the two following missions to CDCs: “promoting and managing the rational water use as part of the community development” and “managing and promoting community programmes led by associations”.

The CDCs’ activities vary according to the situation of sites; but by and large, the Project had the impression that CDCs lack dynamism. In this context the Project made an inventory of CDCs and it turned out among others that: “the populations do not know CDCs”, “the CDCs’ members do not understand their roles”, “there is no funding source to feed their Operating Funds”, etc.

Following these results, it turned out that there is no need to establish a fossilized organisation, what is important is to keep the essential functions such as the “promotion and management organised for the community activity programme”, “promotion of the rational water use for community development”.

4.6 Participation of population

4.6.1 Participation of the Population and Use of Local Human Resources

PDRD developed local human resources such as local influential persons (Chiefs of Villages and elderly people), school teachers, and former officials, supported the activities of associations and made various recommendations.

It also involved Community-Based Organisations (CBOs) such as ASUFOR (Borehole Users’ Association) and Women's Promotion Groups (WPGs)..

ASUFOR is in charge of the sustainable management of rural water supply facilities in collaboration with villagers. Each of PDRD’s target sites has a well-managed ASUFOR. We specified the roles of ASUFOR under PDRD as below and started community activities.

- ASUFOR is the 1st association the Project gets in touch with at the beginning of the community development activities.
- ASUFOR is a model organisation the functions and experiences of which must be shared with the population.
- ASUFOR plays a role in the water resource distribution and water use supervision.

There are many Women’s Promotion Groups in the target villages and most women belong to them. In the community development implementation, WPGs can support efficiently community activities by making the most of their functions, capacities and experience regarding organisation, development of resource persons and preservation of the traditional system.

The problem to be solved is that village organisations such as ASUFORs and WPGs undergo sometimes strong religious and political influence depending on the social context they are involved in. In the face of such external pressure, it seems efficient to establish bye-laws, like those of CDCs, regulating the respective groups.

4.6.2 Participation of Population

The initiations of populations into community development techniques are made by village leaders who transfer them the techniques and information provided by the technical services.

The base population got a technical initiation into agriculture in the collective farms and vegetable gardens, small livestock farming, disease preventive measures, processing of agricultural products, etc.

The remaining problems are the excess of offer and collapse in the price of products due to the increased number of producers, the limited number of participants in the processing of agricultural products, etc. It is necessary to propose the diversification of productions, activities likely to help vulnerable persons and watch over impartiality and transparency in the selection of participants in activities.

Chapter 5 Approach to strengthening extension system of the PDRD model

The extension of the PDRD model carried out by the Project consists of three elements having respectively the following results;

i) "Extension" in /outside the Louga Region led by administrative services,
ii) "Extension" through the technical support and management by extension agents of field activities meant for villagers,
iii) Extension of techniques and knowledge among villagers.

5.1 Establishment of extension system for the PDRD model by administrative services

5.1.1 Orientation

It seems appropriate to adopt a system by which the PDRD model extension is led on the initiative of ARD or the Regional Council in charge of the integrated management of regional services and coordination of the concerned regional organisations. All regional Managements and concerned sub-organisations of each Ministry are expected to act as main actors of the PDRD model extension and implementation.

Regarding the PDRD model extension led by other donors and NGOs, PDRD took measures so that each body can develop this model not only in other Senegalese regions but also in the neighbouring countries.

5.1.2 Approach to Establishment of an Extension System

The memorandum of understanding was signed between PDRD and Regional Council on 2 July 2010 with a view to the PDRD model extension on the initiative of the Senegalese party. The MoU stipulates the Project shall provide technical support to community development and the regional Council shall provide the budget and coordinate collaborate with the competent bodies. After the signature, a discussion was organised with the Regional Council, DRDR, and other concerned organisations on the PDRD model extension, the concrete mode of acquisition and use of the Region's budget, collaboration with other bodies and the model implementation system. We chose 3 sites, one in each of the Louga Region Departments, to apply the PDRD model.

For that purpose, the Project is planning to establish a "Steering Committee" with a view to the model extension. On the other hand, the Project is taking measures to strengthen the consultation framework mainly made up of the editorial staff members of the Guide in order to propose rural development improvements to the concerned persons at regional level.

The resource persons of administrative services and villagers trained to carry out the Project's activities are mentioned on the list. The list is appended to the technical data sheets. From now on, concrete measures must be taken to update and enrich the list.

The Operation and Maintenance Division (knows as DEM) and its local offices (SRH), the Well and Borehole Brigade (known as BPF) as well as the Millennium Village Project are the partner organisations of the Project. The DEM specified, for the attention of the Guide's editorial

staff, the calculation criteria concerning the quantity of water surplus that could be used for community development. The DEM set the criteria to determine the untapped “water volume” in the Guide and participated in training villagers. Millennium Villages Project (MVP) asked PDRD to provide technical support for the enforcement of the Guide and water saving culture. A draft MoU was also elaborated by PDRD and MVP in January 2011.

Cooperation between FONGS, FAPAL, the Women’s Federation, CRCR, and JOCV still needs to be better consolidated to intensify the extension and promotion of the model.

5.2 Strengthening support system to villagers by extension worker

5.2.1 Orientation

It is important to improve the system so that extension agents can make field visits as required, in order to strengthen the support to villagers. PDRD studied the ways and means to “provide sustainable, efficient, and effective support to populations” taking into account the financial constraints and transportation means of extension agents in the field.

5.2.2 Approaches to Strengthen the Support System to the Population and its Effects

PDRD made efforts to strengthen the support system to villagers so that extension agents can support and monitor village activities on their own initiative. As a result, agents at the department and district level improved their understanding of the PDRD model and their motivation to support the concerned populations was stimulated.

PDRD tried to take measures to solve problems such as the insufficiency of transportation means and budget in favour of extension agents. We also introduced an orientation and monitoring system using public transport. We recommended villagers to share the transportation costs of veterinary agents for the vaccination and/or control of epidemics.

For remote sites, it is useful to ask villagers to play partly the role of extension agents. In Moukh Moukh, after the PDRD livestock Expert initiated the representative of villagers into the vaccination method, villagers started to buy vaccines and use them in their village.

The intensification of collaboration between administrative services or within each administration, field visits and increase in the number of active extension agents are the priority problems to be solved from now on in order to carry out better support activities to villagers. The information network must be strengthened to connect sites and agents by mobile phone, etc. after the end of PDRD.

A certain development was confirmed in the agricultural component, more particularly in the periodical monitoring made by extension agents, whereas the livestock and living environment improvement systems have not experienced any improvement. Efforts must be made for the creation of a support system to villagers. Furthermore, there are not enough agriculture agents. So, it is desirable to resort to agents from other bodies appointed to each district and each rural community.

5.3 Promotion of extension of techniques among villagers

5.3.1 Orientation

The following approaches were used to promote the diffusion of techniques among villagers of the PDRD sites.

i) Teaching the techniques to leaders of each village in their collective farms and then popularizing these acquired techniques to local organisations.

ii) Having a demonstration vegetable garden in a house to show neighbouring inhabitants the PDRD specific method with a view to motivating them to start activities.

iii) Paying visits and providing training in advanced sites where good leaders will be asked to act as trainers and give villagers opportunities to exchange information and develop their techniques and methods among them.

5.3.2 Extension Promotion and Effect

For an efficient extension of techniques and knowledge among villagers, PDRD got down to the development of sites as well as the introduction of techniques and know-how so that 6 target sites of the Project can be used as extension bases.

It is estimated that Moukh Moukh, Taïba Ndiaye and Ndate Bélakhore are operational and can be extension bases, whereas Mbéyène Négué, Bakhaya, and Nguith whose functions are believed to be insufficient at the end of the Project can only be used as extension bases if the identified limiting factors are removed.

PDRD got down to spread techniques not only to the ASUFOR central villages but also to the surrounding villages encouraging inhabitants living in the vicinity of sites to take part in training sessions and activities. As a result, the number of surrounding villages participating in the training sessions and activities carried out in the central villages reached 26, while the total number of villages having their own activities comes to 52. As regards livestock and living conditions, we provided technical advice not only to inhabitants of the ASUFOR sites but also to inhabitants of the surrounding sites at their request.

PDRD carried out a technical initiation in Coki, Thiamene, and Boulal located in the vicinity of Moukh Moukh as well as technology transfer to villagers at their request. The reason is these sites have two specificities: they are along the road near Moukh Moukh and they also belong to the same federation of ASUFORs.

The diffusion of techniques and knowledge concerning various fields has been observed within the population. As far as farm management is concerned, techniques and knowledge regarding vegetable gardens and individual market gardening are acquired through practice in the collective farms and demonstration houses. As for livestock, villagers are becoming little by little aware of the necessity and efficiency of the production of pure breeds of poultry and vaccination. Villagers made good exchanges among them as far as milk processing is concerned. The techniques were spread from Moukh Moukh to several villages.

The diffusion of techniques among inhabitants without the support of administrative services is the problem that still needs to be solved. It will be efficient to take measure with a view to making the exchange of information more dynamic between the sites neighbouring ASUFORs.

5.4 Approach to secure the PDRD model extension system

5.4.1 Budgeting of the Senegalese Party

PDRD endeavoured, in consultation with DAPS and DRDR to get a budget from the Ministry of Agriculture and regional authorities that can be contacted more easily. At central level, PDRD tried through DAPS to get itself put on the list of projects under the authority of the Ministry of Agriculture in order to receive the CDSMT funds for 2011 - 2013. However, only projects under the authority of the Ministry of Finance can receive the aforementioned funds. As a result, PDRD is not included in the budgeting at central level since it is a technical assistance project according to JICA standards. At regional level, we tried to get a budget from regional authorities and managed to have the possibility to receive a budget after 2011 by applying the PDRD model to the regional development programme.

5.4.2 Promotion of the Project

We carried out promotion activities through various tools such as the mass media and Website to inform the Senegalese and Japanese general publics about the Project.

The promotion tools include a DVD produced to promote the PDRD model, posters dealing with water saving, Tee-shirts, posters, prospectus and notice boards of the Project.

Regarding the promotion carried out with the help of media, the Project provided information through the newspapers as well as radio and TV programmes. Given the low literacy level in the villages, the Project considers that radio, more particularly the programme of the Louga Station of the Senegalese Radio and Television (RTS) is a very useful and important tool for the Project's promotion. The promotion of the Project was made 16 times within 2 years through the radio in collaboration with RTS- Louga.

The PDRD's Website was created since the beginning of the Project. The Website presented both in Japanese and French the objectives, operations and of current field activities of the Project.

From now on, the promotion of the Project focuses on the transmission of the concrete image of activities, integration of the counterparts and extension agents' view points, the promotion of secondary tools such as photocopies of articles and recording of programmes focussing of the diffusion of the PDRD model.

5.5 Impact of the PDRD's activities

5.5.1 Impact at Level of Central Authorities

The central level agents contributed to PDRD on the initiative of DAPS. For instance, the launching ceremony of the Guide was presided over by the Minister of Agriculture, Mr Gueye, the team in charge of the final evaluation of the Project visited the Ministry of Agriculture and was received by the Minister. Furthermore, the Belgian cooperation asked JICA Senegal Office and DEM information about the PDRD model for the formulation of a new project. Thus, the PDRD has significant effects on some donors.

5.5.2 Application of the PDRD Model to other Donors

PDRD carried out surveys on the possibility to apply the products of PDRD in the programmes/projects of donors and NGOs that participated in the elaboration of the community development Guide. The findings of the surveys revealed that some bodies such as MVP, AQUADEV, FAO, and SOS Sahel are studying the application of the PDRD's products. .

Chapter 6 Recommendations

6.1 Establishment of development and extension system in Louga region

6.1.1 The Expected Extension System

The requests of the Project to the Regional Council and ARD regarding the establishment of an extension system of the PDRD model will be pursued, extended, and developed.

As regards the rural development consultation framework, we will continue regular meetings in order to share information and solve community development problems with the concerned organisations mainly made up of members of the Guide's editorial staff. There will always be consultation on different topics. We would like to make visible the consultation results in order to submit them to the Council or other concerned institutions.

As for the extension system established through the support meant for villagers on the field, the Project will organise more exchange and consultation meetings between the regional and departmental staffs. For instance, there will be periodical meetings devoted to the PDRD model extension. Strengthening the extension system at departmental service level necessitates various measures, that is to say, human resource training, logistic and budget improvements, etc. For instance, a monitoring system by mobile phone is feasible from now on.

Furthermore, PDRD will aim for the involvement of ANCAR. We can expect a stronger support than the one SDDR provides the population with, if a technician or adviser of ANCAR is appointed to a district or Rural Community. PDRD will see how it can involve them in the elaboration and implementation of the PDRD model extension activities.

The Project will make sustained efforts to collaborate and cooperate with the main donors and organisations working in the Louga Region. The Project will provide the Millennium Villages Project (MVP) with technical support since exchange of notes of the protocol for cooperation are signed. It will keep its collaboration and cooperation with NGOs and various federations that are expected to disseminate information of the PDRD model.

6.1.2 Measures to Make the Extension System Operational

The issue to be solved is to know how to establish an exploitation system of the resources persons and tools. It is necessary to establish a sustainable funding system for extension activities and set rules regulating the dispatch of leaders of villagers (determination of working hours) for the list of supervisors to be fully used by persons in charge of development and the population as well. Furthermore, we undertook to experience concrete operation and extension approaches of tools in the field, collect basic information, and make extension agents formulate a test development plan by using the Guide with a view to explaining how tools elaborated by the Project must be used.

6.2 Capacities building of extension worker/technical leaders for the PDRD model

6.2.1 Capacities Building of Extension Worker

Extension agents do not have enough capacities to meet the needs of the population or face the problems encountered during the implementation of field activities because they lack experience in the model application. From now on, the Project aims to offer as many opportunities as possible in the practice of theoretical knowledge in order to master the techniques, knowledge, and implementation capacities.

6.2.2 Capacities Building of Village Leaders

The Project focuses on the capacity building Technical Leaders.

Taking into account the teaching skills of leaders, PDRD plans to develop the human resources as much as possible and will organise retraining courses (accounting, information collection and organisation, keeping of activity registers) as required.

6.3 Steps to get a budget for extension of the PDRD model

6.3.1 Approaches to Central Level

PDRD will promote the approach to the concerned organisations at central level through DAPS (a body of the Ministry of Agriculture), with a view to promoting the PDRD model and getting budget at regional and departmental levels.

6.3.2 Approaches to Regional Level

The budget distribution is carried out by the Regional Council and priority is given to health and hygiene, education, support to the youth activities, and culture. Water saving education was a component of the PDRD activities and participants in these activities include many youth. That is why we do believe it is possible to allocate part of the budget to the PDRD model extension with a view to supporting education and the youth.

ARD has its own financial support resources different from the budget of the Regional Council. They can potentially be used for the PDRD Project. However, we must follow the fund acquisition request procedure at the programme office in Dakar and wait for the approval to use the funds.

Each Rural Community has its own development budget. It is also possible for them to request budget from the Regional Council. When the Project supports the sites, it can get a budget from the RC to cover part of the costs .after signing an agreement.

6.3.3 Approaches to donors/NGOs

Budgeting the rural development plan in which the PDRD model is integrated is what is expected from other donors and NGOs. For that purpose, it is important to promote the PDRD model through site visits. It is also efficient to optimize the status of the PDRD model and have it approved as recommended for rural development by the Ministry of Agriculture and Regional Council.

6.4 Integration of the PDRD model into different development plans

6.4.1 Central Level

The PDRD model is expected to be adopted in the regional development plan. For that purpose, the PDRD model must be recognized officially as a rural development model recommended by the Government. Then, the Project must consult and work with the Ministry of Agriculture and other ministries at central level in close collaboration with DAPS.

6.4.2 Local Level

The involvement of the PDRD model in the local development plans is crucial. It will help the promotion and diffusion of the Project's activities, boost extension and increase the possibilities of getting budgets. It is required to specify the period and persons in charge of elaborating the plans and carry out efficient Project's promotion activities in order to get budgets from local plans such as the Regional Integrated Development Plan and the Local Development Plan.

6.4.3 Elaboration of the Development Plan at Field Level

In addition to the model implementation carried out through the top-down approach starting from the administrative region, it is necessary to experience the bottom-up approach by making the populations participate in the planning process in order to identify the local priority development concerns.

For that purpose, extension agents will elaborate "the community development plan" focussing on the population of the priority sites having strong development needs. The plan will be based on the real needs of the populations. These agents will also formulate the village activity support plan. The Project will support fund raising at regional and community levels, if possible, until the test implementation of the programme.

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6.5 Possibility to integrate other village actors

The ASUFOR is seen in the current phase of PDRD as the main organisation in charge of supervising water use in community activities the Project is relying on for community development. It is desirable to study the development of other efficient personal or organisational resources in the community development. For that purpose, there must be another village organisation to replace the ASUFOR at community or village level. Once the organisation is identified links with it must be strengthened.

6.6 Study on the possibility to extend the model to other regions

6.6.1 Extension of the model to other regions through the central Government

We plan to invite partner organisations embarked on rural development, that is to say donors, present the PDRD model and discuss about its efficiency and precautions to be taken during its implementation.

6.6.2 Situation of Other Regions and Possibility of Extend of the PDRD Model

An interview survey on the possibilities to apply the PDRD model to other regions was carried out previously in the neighbouring regions. ARD and DRDR of each Region were interviewed for that purpose. We noticed that all regions requested the implementation of the Project.

It is proposed to invite the concerned staff of each target region; this will stimulate the comprehension of the PDRD model. At the same time, participants from each region will explain the advantages, difficulties, precautions to be taken, etc. in relation to the model extension. This will help collect the necessary information during the model extension to other regions.