

Manual for Formation of the Watershed Management Council



Prepared by

**The Project for Community-Based Sustainable Natural Resource
Management in the Democratic Republic of Timor-Leste**



From
the People of Japan

FOREWORD

Forest degradation and deforestation is one of the critical issues that the Government of Timor-Leste (GoTL) needs to tackle to achieve sustainable socio-economic development in the country. The study made in 2013 shows that approximately 184,000 ha of forest has disappeared between 2003 and 2012 and around 170,000 ha of dense forest has been degraded into sparse canopy forests for the same period.

Community-Based Natural Resource Management (CB-NRM) is an approach to nature conservation by recognizing the rights of local communities to benefit from sustainable management of natural resources (forests, lands, water, and biodiversity) within a designated area. This is an alternative to a top-down regulatory approach, which has not been necessarily effective in many countries, especially when the regulations do not fully cope with the changes in social, cultural, and economic contexts in the countries.

The Project for Community-Based Sustainable Natural Resource Management (the CB-NRM Project) jointly implemented by the Japan International Cooperation Agency (JICA) and the Ministry of Agriculture and Fisheries (MAF), particularly the National Directorate of Forest and Watershed Management (NDFWM), has developed an operative mechanism for CB-NRM in Timor-Leste. The same project has also issued the following manuals over the course of the project to help MAF expand the same mechanism in major river basins in the country.

- ◆ Operation Manual for Establishment of the CB-NRM Mechanism at the Village Level
- ◆ CB-NRM Technical Manuals
 - Vol. 1: Seedling Production and Tree Planting Promotion
 - Vol. 2: Sustainable Upland Farming Promotion
 - Vol. 3: Income Generating/Livelihood Development
- ◆ Manual for Formation of a Watershed Management Council

The Manual for Formation of a Watershed Management Council describes the procedures for formation of a watershed management council, which can function as a collaboration platform for local leaders to coordinate their efforts for proper management of natural resources in a target watershed. Such an institutional framework has proven to be effective in expanding the CB-NRM mechanism from the village to the watershed level. We, representatives of the MAF, therefore strongly recommend that the same approach should be adopted along with the CB-NRM mechanism in major river basins in Timor-Leste.



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About the CB-NRM Manuals

The CB-NRM Manuals have been developed and published by the JICA and MAF Joint Project named the Community-Based Sustainable Natural Resource Management to provide practical and useful tools for planners and practitioners in the forest sector in Timor-Leste to enable them to protect and manage natural resources in a collaborative and sustainable manner. There are three (3) types of manuals as shown below.

- i) Operation Manual for Establishment of the CB-NRM Mechanism at the Village Level
- ii) CB-NRM Technical Manuals
 - Vol. 1: Seedling Production and Tree Planting
 - Vol. 2: Sustainable Upland Farming Promotion
 - Vol. 3: Income Generating/Livelihood Development
- iii) Manual for Formation of the Watershed Management Council

The Operation Manual is the main document which spells out the standard operation procedures for introduction and establishment of the CB-NRM mechanism at the village level. It is designed for use by planners, field practitioners, and researchers working/studying in the forest sector in Timor-Leste, especially those who engage in forest protection, watershed conservation, and community forestry in the National Directorate of Forest and Watershed Management (NDFWM).

The CB-NRM Technical Manuals supplement the Operation Manual by introducing relevant techniques and skills which can help rural communities use and manage natural resources, especially lands and forests, in a productive and sustainable manner. They will be used mainly by field extension workers (such as MAF municipal staff: namely, municipal officers, extension officers, and forest guards) and NGO staff, as technical references for their field works.

The Manual for Formation of the Watershed Management Council introduces the process to develop a collaboration platform/framework for sustainable natural resource management at the sub-municipal or sub-watershed level, which can also lay groundwork for expansion of the CB-NRM mechanism on watershed scale. As one of the key approaches to improvement of environmental governance at the watershed level by enhancing coordination and networking among local stakeholders, this manual can be of help for those who engage in watershed management.

Furthermore, the JICA and MAF Joint Project has also developed and issued simplified versions of those manuals to help users in the field easily follow the procedures or apply the techniques described in the manuals.

It is hoped that these manuals with their simplified versions will serve as practical references for a wide range of stakeholders in the forest sector in Timor-Leste.

Manual for Formation of the Watershed Management Council

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1. Introduction

1.1 Background

Between 1972 and 1999, the Democratic Republic of Timor-Leste (Timor-Leste) had reduced its forest cover at a rate of 1.1% per annum or by 24% in total during the period. The latest assessment made by JICS (Japan International Cooperation System)¹ revealed that about 184,000 ha of forests had disappeared between 2003 and 2012 and about 170,000 ha of dense forests had been degraded to sparse forests for the same period. Due to constant deforestation, the total forest coverage became about 50% of the whole country (740,000 ha) in 2012.

Deforestation and forest degradation have been mainly caused by human economic activities, such as i) burning of forest, ii) tree cutting for firewood collection, iii) shifting cultivation, and iv) uncontrolled illegal logging. Deforestation and forest degradation have further caused soil erosion, landslides and flash floods, which have eventually affected the lives of people residing in not only hilly and mountainous areas but also lowlands. Although the Government of Timor-Leste (the GoTL) has made efforts to reduce the progress of deforestation and forest degradation, the situation has not been improved or rather gotten worse as the GoTL has not been able to take effective measures due to the inadequate institutional setup and lack of human resources in the government.

The Japan International Cooperation Agency (JICA) has assisted the GoTL in sustainable management of forest resources in the Laclo and Comoro river basins introducing a concept of community-based natural resource management (CB-NRM) since November 2005. The Ministry of Agriculture and Fisheries (MAF) and the National Directorate for Forestry (NDF), which split into two national directorates (i.e., the National Directorate of Forest and Watershed Management (NDFWM) and the National Directorate of Forest Conservation (NDFC)) in October 2014, have worked with JICA to tackle this difficult issue since then. As a result of the continuous efforts, a JICA and MAF joint project, named “The Project for Community-Based Sustainable Natural Resource Management” (hereinafter referred to as “the JICA CB-NRM Project”), has developed and demonstrated a mechanism on community-based sustainable natural resource management (hereinafter referred to as “the CB-NRM mechanism”) where forest-based natural resources could be managed and protected by local communities in a sustainable manner.

The JICA CB-NRM Project has also developed several manuals useful for introduction and promotion of the CB-NRM mechanism in major river basins in Timor-Leste, especially in the Laclo and Comoro river basins. This is one of the manuals developed by the same project, which describes the procedures for formation of a collaborative framework/platform where local stakeholders, such as sub-municipal administrative offices and villages, could work together on sustainable natural resource management on a watershed (or sub-watershed) scale. The manual is based on the experiences gained by the JICA CB-NRM Project in the process of forming the watershed management council of the Noru watershed in 2014/2015.

1.2 Objectives of the Manual

The main objective of the manual is to guide field officers and planners in MAF, especially

¹ An forest assessment study was conducted by the consultants hired by JICS under the Japan’s Grant Aid Program named the Forest Conservation Program in the Democratic Republic in Timor-Leste” in 2012.

NDFWM, on how to form a collaboration platform on a watershed (or a sub-watershed) scale in coordination with local leaders at the sub-municipal and village levels and make the platform operational as a council for watershed management (hereinafter referred to as “the watershed management council”). Specifically, this manual specifies the procedures for:

- i) identification and analysis of stakeholders relevant to forest/natural resource management in a target watershed;
- ii) Analysis of current conditions of a target watershed in a participatory manner;
- iii) Determination of vision, missions, objectives, and functions of the watershed management council to be formed; and
- iv) Preparation of the watershed management plan in collaboration with local stakeholders.

1.3 Coverage/Targets of the Manual

This manual targets technical staff of MAF, especially NDFWM and MAF municipal officers, and planners/field officers in any organizations working in the forest sector in Timor-Leste. Particularly, the manual will be useful for those who work on sustainable forest management and watershed conservation in the country.

On the other hand, the watershed defined in this manual should be limited to a manageable size, which is a catchments overlapped with at most two (2) sub-municipalities. In fact, it would be difficult to manage a catchment which extends more than two (2) sub-municipalities due to poor accessibilities. Hence, catchments of the secondary or tertiary tributaries of the major river basins in the country would be the targets of this manual in general.

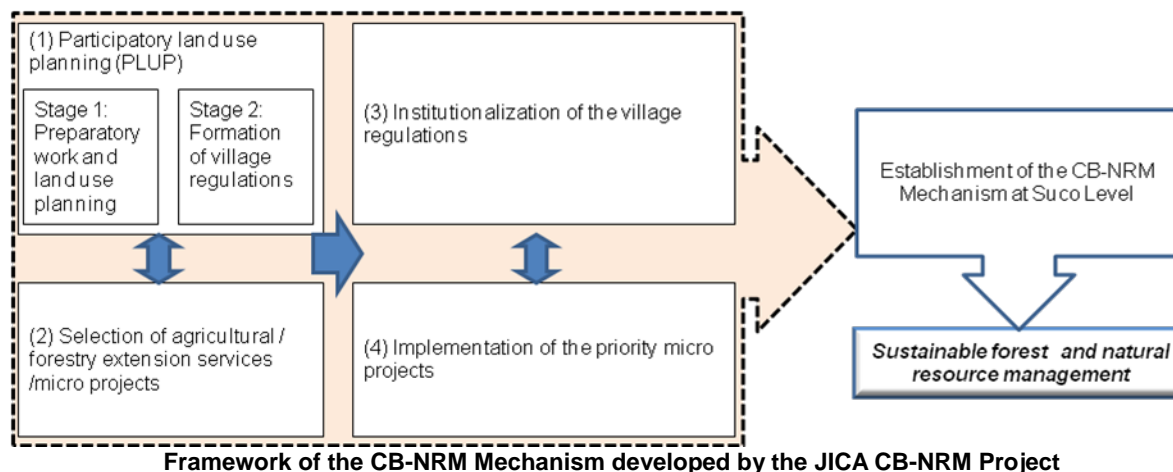
1.4 Composition of the Manual

The manual composed of five (5) chapters. Chapter 1 gives the background and objective of the manual, while Chapter 2 introduces the rationale for formation of the watershed management council. The overall process of and detailed procedures for forming the watershed management council are described in Chapter 3. Chapter 4 outlines the process of making a watershed management plan for a watershed located in the Laclo and Comoro river basins. The last chapter, Chapter 5 describes a proposed institutional framework for implementation of this manual with standard schedules for forming the watershed management council and making a watershed management plan.

2. Rationale for the Formation of the Watershed Management Council

2.1 Rationale

The CB-NRM mechanism developed by the JICA CB-NRM Project aims at enhancement of local governance by reinforcing the customary rules/systems in a village along with introduction of improved agricultural and forestry techniques as illustrated below.



Source: JICA Project Team (2015)

The mechanism has been proven effective in not only reducing illegal activities which have caused forest and land degradation but also improving agricultural and forest production in a village. Although it can generate significant positive impact at the village level, the following limitations have also been confirmed over the course of the CB-NRM Project.

- The mechanism is generally effective only within the territory of a village; therefore, it cannot necessarily influence the activities/attitudes of local communities in the neighboring villages.
- The majority of illegal cases, such as wildfires, illegal cutting, and crop damage caused by grazing animals, have happened along the boundaries with the neighboring villages.
- There has been a need to introduce another mechanism to deal with inter-village issues in coordination with local leaders at the sub-municipal level in addition to introduction of the CB-NRM mechanism at the village level.

It is, therefore, important to introduce and develop a framework where local leaders of villages concerned with a watershed can work together on sustainable management of forest and natural resources in the target area. It is also expected that such a framework can accelerate the expansion of the CB-NRM mechanism on a watershed scale.

In fact, the CB-NRM Project has assisted local leaders in Remexio and Liquidoe Sub-municipalities in Aileu in the formation of the watershed management council for the Noru watershed. The watershed management council has functioned as a collaborative platform where local leaders could cooperate with each other for improvement of natural environment as well as living conditions of local communities in the watershed. Another case of the watershed management council in Lauten has also shown the positive results of such inter-village coordination for sustainable forest management.

2.2 Relevance to the Forest Sector Policy

Watershed conservation is one of the policy objectives of the Forest Sector Policy in Timor-Leste as it contributes to the maintenance of water quality, stabilization of water flows, and reduction of flood risks in the downstream areas in the major river basins. The formation of the watershed management council is expected to contribute to the achievement of the policy objective, as it can enhance local leaders' awareness of forest protection and sustainable management of sloping areas and lay foundation for introduction of the CB-NRM mechanism at the village level. In fact, "public relations," "empowerment of rural communities to protect and manage forest lands," "education of rural and urban communities," and "encouragement of cooperation between rural communities and the Government through technical extension services," which are the strategies enumerated in the policy for watershed conservation, are also elements of the activities proposed for formation of the watershed management council.

2.3 Expected Outcomes from the Formation

The following outcomes are expected to be generated from the formation of the watershed management council based on the experiences in the field.

Long-term

- i) The incidence of wildfires and illegal cutting will be reduced in a target watershed.
- ii) Inter-village disputes caused by animal grazing will be reduced in a target watershed.
- iii) Vegetation cover in a target watershed will be restored.
- iv) Crop production in a target watershed can be stabilized because of less soil erosion in farms.
- v) The incidence of landslides and floods will decline in a target watershed.

Short-term

- i) Local leaders in a target watershed (such as village leaders and sub-municipal administrative officer/s) enhance their awareness of necessity of sustainable forest and natural resource management in general and effectiveness of the CB-NRM mechanism in particular.
- ii) Communications between/among local leaders can be improved so that local leaders could work together for solving inter-village issues.
- iii) Local leaders can collaborate with NDFWM, MAF municipal office, and SAS (National Directorate for Water and Sanitation) for forest protection, reforestation, and improvement of local livelihoods.
- iv) Local leaders will be ready to accept and introduce the CB-NRM mechanism in their villages.

3. Process of and Procedures for Formation of the Watershed Management Council

3.1 Overall Process

The following eight (8) steps shall be taken to form the watershed management council in coordination with local leaders in a target watershed.

Step 1: Consultations with local leaders concerned with a target watershed about the idea on formation of the watershed management council

Step 2: Meeting with the members of the Noru watershed management council

Step 3: Study tour to one of the villages that the JICA CB-NRM Project assisted in the establishment of the CB-NRM mechanism

Step 4: Meeting with local leaders concerned with a target watershed to analyze stakeholders, select members of the watershed management council, and discuss their roles and responsibilities

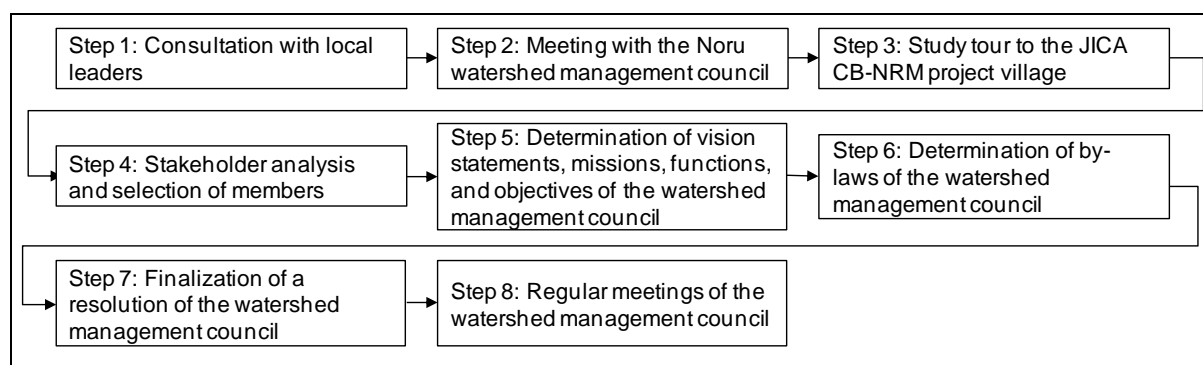
Step 5: Meeting with members of the watershed management council (stakeholders selected as members of the watershed management council) to assess the current situations of a target watershed and discuss vision, missions, and functions of the council

Step 6: Meeting with members of the watershed management council to develop and determine by-laws of the council

Step 7: Meeting with members of the watershed management council to develop and finalize a resolution of the council on its membership, by-laws, vision, missions, and functions

Step 8: Regular meetings of the watershed management council on a quarterly basis

The overall process of the steps listed above is summarized below.



Overall Process of Formation of the Watershed Management Council

The following sections show the overall process of the activities for formation of the watershed management council.

3.2 Procedures for Formation of the Watershed Management Council

【Step 1】 Consultation with Local Leaders

Prior to meetings and discussions with key stakeholders (e.g., village leaders) in a target watershed, consultations meetings shall be held with local leaders at the respective administrative layers, namely the municipal, sub-municipal, and village levels.

(1) Objective

The main objective of the consultation meetings is to obtain prior consent from local leaders at the respective layers on formation of the watershed management council and seek their assistance in the entire process.

(2) Target Groups

Municipal and sub-municipal administrators shall be the counterparts of the meetings at the municipal and sub-municipal levels, respectively, while village leaders shall be the main target of the meetings at the village level.

(3) Timeframe and Venue

A half-day or one-day meeting shall be held each at the respective target levels. If a target watershed is overlapped with two (2) sub-municipalities, a meeting should be held at each sub-municipality. Meetings with village leaders shall be held at the sub-municipal office/s to which villages belong.

(4) Proposed Agenda of the Meeting

The meetings with administrators shall be separately arranged and held at the municipal and sub-municipal offices. In the meetings, the following topics shall be explained.

- a. Aims of the watershed management council
- b. Summary of the results of the CB-NRM mechanism introduced by the JICA CB-NRM Project in its target villages
- c. Schedule of meetings to be held for formation of the watershed management council
- d. Persons/groups to be involved in the process
- e. Expected outputs from formation of the watershed management council

On the other hand, the meetings with village leaders shall be held in the form of a workshop at the sub-municipal office/s concerned. The standard agenda of the meeting is shown below.

Standard Agenda for the Consultation Meeting

Timeframe	Activity	Resource person
10:00-10:30	Session 1: Introduction (Purpose and timeframe of the meeting, objectives of the formation of the watershed management council)	NDFWM/Municipal Forest Officers Facilitators/NGO
10:30-11:00	Session 2: Explanation of concepts and summary of the results of the CB-NRM mechanism (including a coffee break)	ditto
11:00-12:45	Session 3: Introduction of the process of formation of the council and key participants in the meetings	NDFWM/Municipal Forest Officers Facilitators/NGO
12:00-13:00	Session 4: Confirmation of the intentions of village leaders	ditto
13:00-	Lunch and close	-

Source: JICA Project Team (2015)

The meetings shall be convened under the leadership of a/ sub-municipal administrator/s to facilitate their participation in the meetings.

(5) Guidelines for the Meeting/Workshop

The meeting with village leaders shall be conducted in accordance with the following procedures.

Session 1(1): Introduce the members who participate in the meeting and explain the purpose of the meeting to the participants.

Session 1(2): Introduce the objective, concepts and necessity of formation of the watershed management council to the participants.

Session 2: Explain the concepts of the CB-NRM mechanism developed by the JICA CB-NRM Project and the results/experiences in the six (6) project villages which the JICA CB-NRM Project have assisted.

Session 3 (1): Explain the process of forming a watershed management council showing a list and schedule of meetings to be held.



Tips on discussion

*Prior to the meeting, you should prepare a list of the meetings/workshops with topics to be discussed and timelines of the meetings as shown in **Appendix 3-1** in this manual.*

Session 3 (2): Remind the participants that they should participate in the meetings as they are key stakeholders relevant to management of a target watershed.

Session 4: Confirm the participants' willingness to form the watershed management council after discussions.

During the meeting, the discussion shall be noted down in flipcharts and memos.

(6) Inputs (Human Resources and Materials) needed

The following inputs are required for this step.

- Human resources (e.g., NDFWM officer/s, municipal forest officer/s, forest guard/s, and facilitators/NGO)
- Pre-made explanatory materials (flipcharts with a schedule of meetings/workshops to be held in the process)
- Stationary (i.e., flipcharts, felt-type pen, and masking tape)
- Snack, water and lunch for the participants

(7) Expected Outputs

Unanimous consent on the formation of the watershed management council will be obtained from the relevant stakeholders.

【Step 2】 Meeting with the Noru Watershed Management Council

It is important to help local leaders deepen their understanding of the watershed management council to make their discussions in the process efficient and effective.

(1) Objectives

The main objective of the meeting is to help local leaders have a clear picture of a watershed management council, in terms of its functions, effectiveness, and roles/responsibilities of its members, through direct dialogues with members of the Noru watershed management council, which is one of the existing watershed management councils in the country.

(2) Expected Participants

Sub-municipal administrator/s and village leaders concerned with a target watershed shall be invited to the meeting with the Noru watershed management council.

(3) Timeframe and Venue

A half-day or one-day meeting shall be held at the sub-municipal administrative office of Remexio. Another one (1) or two (2) day/s may be needed for travelling from a target watershed to Remexio.

(4) Proposed Agenda of the Session

The following table shows the standard agenda for the meeting.

Standard Agenda for the Meeting with the Noru Watershed Management Council

Timeframe	Activity	Resource person
10:00-10:15	Session 1: Introduction (Participants and objectives of the meeting)	NDFWM/Municipal Forest Officers Facilitators/NGO
10:15-11:15	Session 2: Briefing of the Noru watershed management council - Process of the formation of the watershed management council - Members of the council - Vision, missions, and functions of the council - Outline of the watershed management plan - Major activities that the council has made (including coffee break)	Facilitators/NGO Representatives of the Noru watershed management council
11:15-12:15	Open discussions (questions and answers)	-
12:15-12:30	Closing	NDFWM/Municipal Forest Officers Facilitators/NGO

Source: JICA Project Team (2015)

(5) Guidelines for the Meeting

A meeting with the Noru watershed management council shall be conducted according to the following procedures.

Session 1 (1): Introduce the participants from a target watershed to members/representatives of the Noru watershed management council and vice versa.

Session 1 (2): Explain the purpose, timeframe, and expected outputs of the meeting to the participants.

Session 2: Ask representatives/members of



the Noru watershed management council to explain the following points of the watershed management council to those from a target watershed.

- Process of forming the watershed management council
- Vision, missions, and functions of the council
- Major activities that the council has done
- Outline of the watershed management plan

Session 3: Facilitate the discussions between the participants in the meeting.

During the meeting, the discussion shall be noted down in flipcharts and memos.

(6) Inputs (Human Resources and Materials) needed

The following inputs are required for this step.

- a. Human resources (e.g., NDFWM officer/s, municipal forest officer/s, forest guard/s, and facilitators/NGO)
- b. Meeting materials (i.e., copies of i) the resolution of the Noru watershed management council on membership and by-laws and ii) the watershed management plan for the Noru watershed)
- c. Transportation means for the participants
- d. Snack, water and lunch for the participants
- e. Accommodations for the participants, if necessary

(7) Expected Outputs

The local leaders, namely sub-municipal administrator/s and village leaders, can have a clear idea of what the watershed management council is about.

【Step 3】 Study Tour to the JICA CB-NRM Project Village

Local leaders concerned with a target watershed shall be taken to one of the villages that the JICA CB-NRM Project has assisted so that they could learn the CB-NRM mechanism, which could be introduced in villages after the set-up of the watershed management council.

(1) Objectives

The main objective of the study tour is to help local leaders have a clear picture of how the CB-NRM mechanism has changed local situations and improved livelihoods of communities by having dialogues with communities in the host village and observing the CB-NRM activities in the field.

(2) Expected Participants

Local leaders (i.e., sub-municipal administrator/s and village leaders) concerned with a target watershed shall be the main target groups of the study tour.

(3) Timeframe and Venue

One (1) day is used for a field visit and dialogues with communities in the host village. Another one (1) or two (2) day/s may be needed for travelling from a target watershed to the host village.

(4) Proposed Agenda of the Session

The following table shows the standard agenda for the meeting.

Standard Agenda for the Study Tour

Timeframe	Activity	Resource person
10:00-10:30	Session 1: Introduction (Participants and objectives of the tour)	NDFWM/Municipal Forest Officers Facilitators/NGO
10:30-12:30	Session 2: Sharing of experiences of the CB-NRM activities - Outline and process of introduction of the mechanism - Major activities conducted in the process - Roles and responsibilities of the village leaders - Lessons learned (including coffee break)	Facilitators/NGO Villagers of the Host Village
12:30-13:30	Lunch	-
13:30-14:30	Session 3: Questions and answer	Facilitators/NGO
14:30-15:30	Session 4: Field observation	Ditto
15:30-16:00	Closing	NDFWM/Municipal Forest Officers Facilitators/NGO

Source: JICA Project Team (2015)

(5) Guidelines for the Meeting

A meeting with communities in the host village shall be conducted in accordance with the following procedures.

Session 1 (1): Introduce the participants from a target watershed to communities in the host village and vice versa.

Session 1 (2): Explain the purpose, timeframe, and expected outputs of the tour to the participants.

Session 2: Ask village leaders or communities in the host village to explain to those from a target watershed the outline and results of the CB-NRM mechanism putting emphasis on the following points:

- Major activities done for establishment of the CB-NRM mechanism;
- Effectiveness of the village regulations and the CB-NRM techniques (e.g., reforestation and sloping agricultural land management techniques, for sustainable natural resource management and livelihood development) introduced in the village;
- Major roles of village leaders and other villagers in the process of establishing the CB-NRM mechanism; and
- Lessons learned and good practices obtained from the CB-NRM activities.



Session 3: Facilitate discussions between the participants from a target watershed and those in the host village.

Session 4: Take the participants to farms and/or plantations where CB-NRM techniques.

(6) Inputs (Human Resources and Materials) needed

The following inputs are required for this step.

- Human resources (e.g., NDFWM officer/s, municipal forest officer/s, forest guard/s, and facilitators/NGO)
- Meeting materials (copies of the village regulations with future land use map of the host village)
- Transportation means for the participants
- Chairs and venue for the meeting in the host village
- Snack, water and lunch for the participants
- Accommodations for the participants, if necessary

(7) Expected Outputs

Local leaders, namely sub-municipal administrator/s and village leaders, could deepen their understanding of the CB-NRM mechanism, in terms of its activities, possible outputs, and roles of communities in establishing the CB-NRM mechanism.

【Step 4】 Stakeholder Analysis and Selection of Members

It is essential to analyze the relevance of local stakeholders to natural resource management in a target watershed and selected appropriate members of the watershed management council based on the analysis of stakeholder (stakeholder analysis) so that the council could function as an effective collaboration platform.

(1) Objectives

The main objective of this step is to assist local leaders in i) analyzing stakeholders concerned with a target watershed, ii) selecting members of the watershed management council based on the stakeholder analysis, and iii) determining roles and responsibilities of members selected.

(2) Expected Participants

Local leaders concerned with a target watershed shall be involved in the meeting. It is also advisable to involve relevant government offices at the municipal/sub-municipal levels (e.g., MAF municipal office, Municipal office of National Directorate of Disaster Management, and Municipal/Sub-municipal offices of National Directorate of Water Supply & Sanitation) in the meeting, as they are considered as potential members of the watershed management council.

(3) Timeframe and Venue

A two-day meeting shall be held at the sub-municipal office.

(4) Proposed Agenda of the Session

The following tables show the standard agendas for the meetings.

Standard Agenda for Stakeholder Analysis and Selection of Members

a. 1st day

Timeframe	Activity	Resource person
10:00-10:30	Session 1: Introduction	NDFWM/Municipal Forest Officers Facilitators/NGO
10:30-12:30	Session 2: Stakeholder analysis (including coffee break)	Facilitators/NGO
12:30-13:30	Lunch	-
13:30-15:30	Session 3: Identification of members of the council (including coffee break)	Facilitators/NGO
15:30-16:00	Wrap up of the discussions and closing	NDFWM/Municipal Forest Officers Facilitators/NGO

b. 2nd day

Timeframe	Activity	Resource person
10:00-10:30	Recapturing of the discussions made in the 1 st day	Facilitators/NGO
10:30-12:30	Session 4: Discussions on roles and responsibilities of members (including coffee break)	Facilitators/NGO
12:30-13:30	Lunch	-
13:30-15:30	Session 4: Discussions on roles and responsibilities of members (including coffee break)	Facilitators/NGO
15:30-16:00	Wrap up of the discussions and closing	NDFWM/Municipal Forest Officers Facilitators/NGO

Source: JICA Project Team (2015)

(5) Guidelines for the Meeting

The meeting and discussions shall be conducted in accordance with the following procedures.

- Session 1: Explain the purpose, timeframe, and expected outputs of the meeting to the participants.
- Session 2(1): Ask the participants to identify and enumerate persons/groups/organizations relevant to management of a target watershed, such as villages/communities, sub-municipal administrative office/s, NPTL, MAF, etc.
- Session 2 (2): Ask the participants to assess the relevance and evaluate importance of persons/groups/organizations identified above using the following formats.

Format for Discussion

Name	Relevance (how does the stakeholder relate to management of a watershed?)	Importance (how far is the stakeholder important for management of a watershed?)
	-	-
	-	-
	-	-
	-	-

Tips on discussion

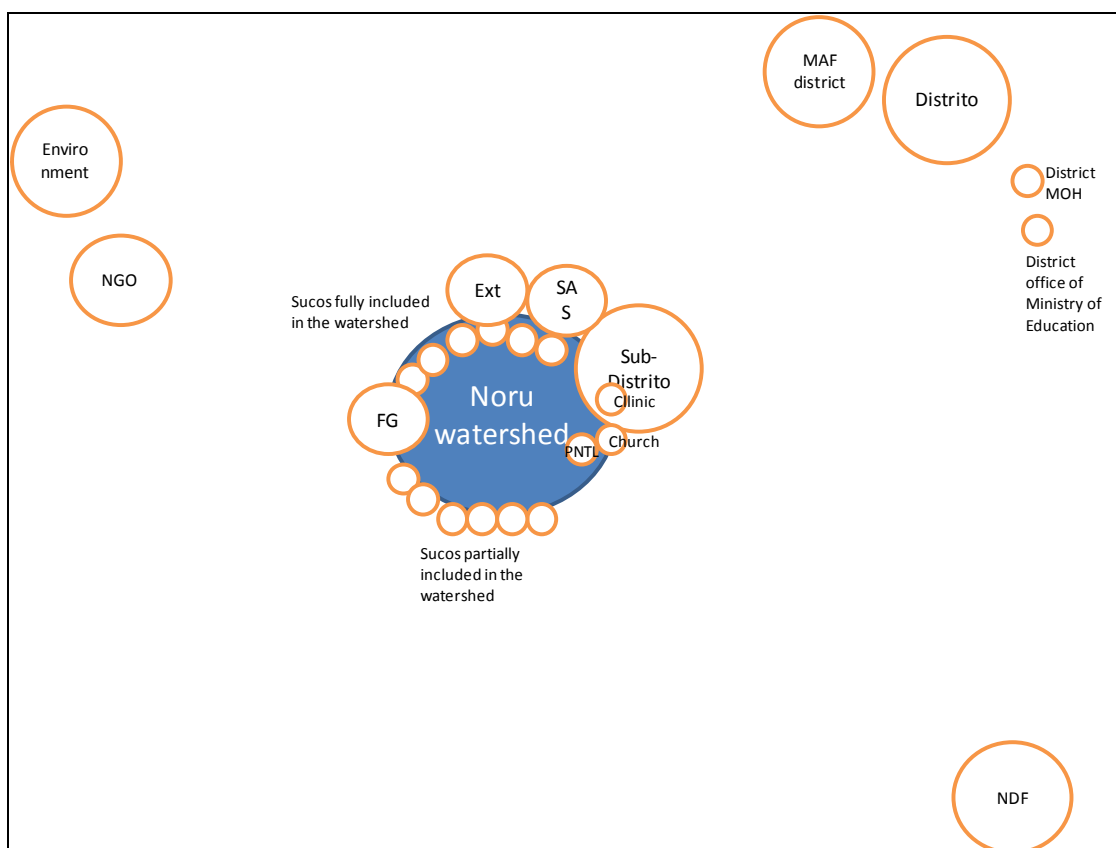
- a. Prior to the meeting, you should prepare a format for discussions in session 2. **Appendix-3.2** shows a sample of the results of discussions.
- b. In case it is difficult for the participants to get a point of discussions, you should give them an example, such as “Forest Guard is highly relevant to watershed management as his main task is to protect forests in a watershed, and he plays an important role in management of a watershed as he is supposed to orient and guide local communities toward sustainable forest management.”

- Session 2 (3): Ask the participants to visualize the relationship/importance of the persons/groups/organizations using a venn diagram method, namely:
- Draw one large circle with a name of a target watershed at the center of a flipchart;
 - Ask the participants to draw a circle of one of the persons/organizations on the same flipchart instructing them to i) make a large circle if the person/organization is important and ii) depict the circle closer to the one of the watershed if the relevance of the person/organization is high (the bigger the circle, the higher the importance, and the closer to the center, higher the relationship with watershed management.); and
 - Do the same for the rest of the persons/groups/organizations identified.



Tips on discussion

- a. You can use different sizes of paper circles instead of directly drawing circles on a flipchart. In fact, the use of paper circles is more easy to change the location or size of circles while discussing the importance and relationship of organizations with the participants. However, you should prepare different sizes of paper circles prior to the meeting.
- b. The sample result of the venn diagram is shown below.



Sample of the Venn Diagram

Session 3: Ask the participants to categorize the persons/groups/organizations identified in Session 2 (1) as “member” or “non-member” based on the results of discussions in Sessions 2 (2) and (3).

Tips on discussion

- a. In principle, local leaders (i.e., sub-municipal administrator/s and village leaders) should be the members of the council in addition to NDFWM and MAF municipal office concerned.
- b. NDFWM and MAF municipal office concerned shall be the secretariat of the council.
- c. In order to facilitate the discussions, you can introduce the case of the Noru watershed management council to them as an example, namely:

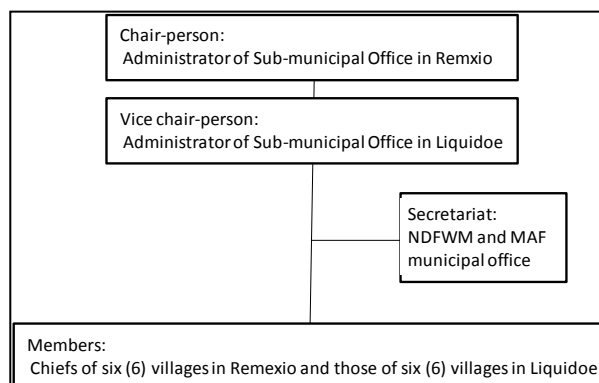
Members: administrators of Remexio and Laulara sub-municipal offices, leaders of 12 villages, NDF, MAF municipal office in Aileu, Department of Environment in Aileu, and Water Supply and Sanitation sub-municipal offices in Remexio and Laulara.

Non-members (Observers): Municipal Office in Aileu, MOH municipal office, clinics, MOE municipal office in Aileu, Representative of church in Remexio, and NGOs.

Session 4 (1): Ask the participants to determine the structure of a watershed management council introducing the same of the Noru watershed management council as shown right.

Session 4 (2): Ask the participants if they like to add any position to the sampled one or change the same.

Session 4 (3) Ask the participants to discuss and determine i) members who should be placed in the respective positions and ii) roles and responsibilities of the members.



Structure of the Noru Watershed Management Council

Tips on discussion

- a. To facilitate the discussions, you can introduce the structure of the Noru watershed management council with roles/responsibilities of the members shown in **Appendix-3.3**. The table shown in **Appendix-3.3** should be transcribed on flipcharts to this end prior to the meeting.
- b. You should ask the participants if they like to revise them or add some other roles/responsibilities to them after introduction of the case of the Noru watershed management council.

During the meeting, the discussion shall be noted down in flipcharts and memos.

(6) Inputs (Human Resources and Materials) needed

The following inputs are needed for this step.

- a. Human resources (e.g., NDFWM officer/s, municipal forest officer/s, forest guard/s, and facilitators/NGO)
- b. Premade explanatory materials (i.e., i) flipcharts with a format for stakeholder analysis, ii) flipcharts with the structure of the Noru watershed management council, and iii) flipcharts with descriptions of roles and responsibilities of the members)
- c. Paper circles with different sizes (if necessary)
- d. Stationary (e.g., flipcharts, felt-type pen, and masking tape)
- e. Snack, water and lunch for the participants

(7) Expected Outputs

Local leader, who would be key members of the watershed management council, will develop an organizational structure of the council and agree on roles and responsibilities of its members.

【Step 5】 Determination of Vision Statements, Missions, Functions, and Objectives of a Watershed Management Council

Vision, missions, and objectives shall be developed and agreed upon by members of the watershed management council since they could be the guiding principles for them.

(1) Objectives

The main objective of this step is to assist local leaders, who are supposed to be selected as members of the watershed management council in Step 4, in determining vision statements, missions, objectives, and functions of the council.

(2) Expected Participants

Stakeholders selected as members of the watershed management council, such as a/ sub-municipal administrator/s, village leaders, and representatives of municipal government offices concerned will be the main participants in the meeting.

(3) Timeframe and Venue

A two-day meeting shall be held at the sub-municipal office.

(4) Proposed Agenda of the Session

The following tables show the standard agendas for the meetings.

Standard Agendas for Determination of Vision, Missions, Objectives, and Functions of the Council

a. 1st day

Timeframe	Activity	Resource person
10:00-10:30	Session 1: Introduction	NDFWM/Municipal Forest Officers Facilitators/NGO
10:30-12:30	Session 2: Situation analysis of a target watershed (including coffee break)	Facilitators/NGO
12:30-13:30	Lunch	-
13:30-15:30	Session 3: Envisioning of the future condition of a watershed (including coffee break)	Facilitators/NGO
15:30-16:00	Wrap up of the discussions and closing	NDFWM/Municipal Forest Officers Facilitators/NGO

b. 2nd day

Timeframe	Activity	Resource person
10:00-10:30	Recapturing of the discussions made in the 1 st day	Facilitators/NGO
10:30-12:30	Session 4: Discussions on vision statements and missions of a watershed management council (including coffee break)	Facilitators/NGO
12:30-13:30	Lunch	-
13:30-15:30	Session 5: Discussions on objectives and functions of the council (including coffee break)	Facilitators/NGO
15:30-16:00	Wrap up of the discussions and closing	NDFWM/Municipal Forest Officers Facilitators/NGO

Source: JICA Project Team (2015)

(5) Guidelines for the Meeting

The meeting and discussion shall be conducted in accordance with the following procedures.

Session 1: Explain the purpose, timeframe, and expected outputs of the meeting to the participants.

Session 2(1): Show to the participants aerial photo maps of a target watershed with boundaries of the watershed as well as villages concerned to help them understand the current vegetation covers of the watershed.

At the same time, show to the participants a vegetation cover/land use map and slope map covering the area, if available, and explain to them the implications of the maps so that they could grasp current situations of a target watershed.



Tips on discussion

- a. Prior to the meeting, you should obtain and process digital data of aerial photos kept in ALGIS and make an A-0 size aerial photo map covering a target watershed.
- b. At the same time, you should make a vegetation cover/land use map and slope map of a target watershed by using the same maps developed by JICS.
- c. The activities written above require skills on the use of GIS software in addition to data of aerial photos, present land use/vegetation cover map, and slope map of the country.
- d. The maps should be printed on A-0 sized papers (or any other materials which must be cheaper than the papers) before the meeting.

Session 2 (2): Help the participants assess: i) how forests and natural resources in a target watershed have been changed and ii) how socio-economic conditions have been influenced by such changes in forests and natural resources asking them to discuss the situations of a target watershed from the following points of view.

Points on natural resources

- Progress of deforestation and forest degradation
- Occurrence of landslides and slope failure
- Deterioration of soil fertility caused by soil erosion
- Changes in sources of water in terms of volume and quality
- Any other incidence of environmental degradation events



Points on socio-economic conditions

- Any changes in living conditions of local communities
- Any impact on local livelihoods
- Any social problems or concerns caused by changes in natural resources in a target watershed

The following format can be used for the discussions described above.

Formats for Discussion

a. Natural resources

Villages	Forest degradation	Landslide	Soil erosion	Influence on water	Others

b. Socio economic conditions

Villages	Living conditions	Livelihoods	Others

Tips on discussion

- a. You should transcribe the formats shown above on flipcharts prior to the meeting, so that you can enter into discussion smoothly.
- b. You should secure sufficient spaces for each topic in the formats to fill all comments given by the participants in the formats as shown in **Appendix-3.4**.

Session 3 (1): Explain the purpose and outline of the session stressing that the participants will draw or express an ideal future of their villages.

Session 3 (2): Ask the participants to freely envision the future of their villages without worrying about resources, money, or time, but do not ask them to consider their own or personal future.

Tips on discussion

- a. You can guide them on how to envision the future of their villages using the following phrases:
 - “i) Please imagine that you have left your village for 10 years, and after 10 yers without contact, you return to find that things have turned out well.
 - ii) Also imagine that you are walking around the village and observing the village as well as communities.
 - iii) Please imagine silently in your mind how the following things could get better:
 - living conditions in the village;
 - scenery of the village;
 - infrastructure of the village, such as road, houses, water, and school;
 - farms, forests, and water sources; and
 - any other things that might show marked changes.”

Session 3 (3): Let the participants imagine the future for ten minutes, and ask them to draw the things that would stand out most in their vision.

Session 3 (4): Give them an A-5/A-4 size paper with a pencil and ask them to depict a drawing on the paper. Ask them to use colored pencils if necessary.



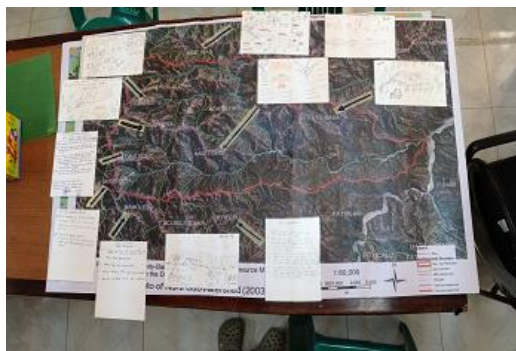
Tips on discussion

- a. It may take 30 minutes or more for the participants to draw pictures unless the participants get used to drawing a picture.
- b. You should wait and allow them to decide how they complete the task without any intervention.

Session 3 (5): Place the aerial photo map of a target watershed and ask the participants to put their drawings at the locations of the respective villages on the map.

Session 3 (6): Ask the participants to introduce their visions to each other.

Session 3 (7): Ask the participants to discuss the future vision of a target watershed.



Tips on discussion

- a. In case some participants cannot make a drawing, you can advise them to make statements of the future vision of their places.
- b. You should note the discussions, especially their visions of their villages as well as the watershed.

Session 4 (1): Recapture the future visions made and discussed by the participants in Session 3 as this session may be conducted on the 2nd day.

Session 4 (2): Ask the participants to discuss and determine a vision statement of the watershed management council referring the same of the Noru watershed management council.



Tips on discussion

- a. You can introduce to them the following vision statement of the Noru watershed management council as an example to facilitate their discussions.

Vision statement of the Noru watershed management council

The Noru watershed management council is a non-profit alliance comprising sucos and sub-district administrative offices concerned and relevant government agencies with an aim to properly protect and manage forests, lands, and water resources in the Noru watershed to improve living conditions and livelihoods of residents in the watershed and stabilize water supply to the downstream areas.

b. The vision statement described above shall be transcribed on flipcharts in advance of the meeting.

Session 4 (3): Discuss and finalize the vision statements of the council referring the sample introduced in Session 4 (2).

Session 4 (4): After determination of the vision statement of the council, ask again them to discuss and determine missions of the council. Likewise, the same of the Noru watershed management council can be used for their discussions.



Tips on discussion

a. Likewise, you can introduce to the missions of the Noru watershed management council to the participants as an example to facilitate their discussions.

Missions of the Noru watershed management council

- to provide guidance and orientation to village leaders in the sucos concerned toward sustainable management of forests and forest-related natural resources (e.g., NTFPs, lands, and water) in the watershed;
- to provide leadership in harmonizing the interests and activities of sucos in the watershed to achieve sustainable forests and forest-related natural resource management in the watershed;
- to take initiative in planning, implementing, and evaluating a watershed management plan to manage forests and forest-related natural resources in a proper and sustainable manner while improving local livelihoods in the watershed;
- to help village leaders in the villages concerned enhance awareness of sustainable forest and forest-related natural resource management among communities in the respective villages;
- to promote necessary actions for sustainable forest and forest-related natural resource management in the watershed in coordination with relevant government and non-government organizations as well as international organizations;
- to help village leaders in the villages concerned hand over the valuable forests and forest-related natural resources to the future generations in the respective villages; and
- to share the experiences in the watershed with local government units (sucos, sub-districts, and districts) in other watersheds in Timor-Leste to promote sustainable forest and forest-related natural resource management at the watershed level.

b. The missions described above shall be transcribed on flipcharts in advance of the meeting.

Session 4 (5): Discuss and finalize the missions of the council referring those introduced to them in Session 4 (4).

Session 5 (1): Furthermore, help them discuss and determine objectives and functions of the watershed management council using those of the Noru watershed management council.

Tips on discussion

a. In the beginning of Session 5 (1), the objectives and functions of the Noru watershed management council shall be shared with the participants as samples to enable them to have ideas on those of their council.

Objectives of the Noru watershed management council

- to reduce the incidence of environmental degradation events, such as forest/wild fire, illegal exploitation, and free grazing in the watershed;
- to improve the conditions of forests and forest-related natural resources, namely, forests, lands/soils, and water, in the watershed;
- to maintain and improve livelihoods of local communities in the watershed; and
- to enhance the capacity of village leaders as well as communities in the respective villages to manage forests and forest-related natural resources in a proper and sustainable manner.

Functions of the Noru watershed management council

- to formulate a watershed management plan with the assistance from relevant government and non-government organizations;
- to prepare an annual action plan to implement the watershed management plan at the beginning of the year;
- to monitor and evaluate the implementation of the annual action plan at the end of the year;
- to coordinate the implementation of the watershed management plan with relevant government and non-government organizations;
- to convene a regular meeting every quarter to monitor the situations of the watershed and discuss any issues relevant to sustainable management of forests and forest-related natural resources in the watershed;
- to adopt a resolution that would encourage all the sucos in the watershed to work on sustainable forest and forest-related natural resource management in the watershed;
- to call a meeting whenever circumstances require it; and
- to organize a working group (or a committee) to tackle any important issues that would affect the management of the watershed.

b. The objectives and functions described above shall be transcribed on a flipchart in advance of the meeting.

Session 5 (2): Finalize the objectives and functions of the council referring the samples shown above.

During the meeting, the discussion shall be noted down in flipcharts and memos.

(6) Inputs (Human Resources and Materials) needed

The following inputs are needed for this step.

- a. Human resources (e.g., NDFWM officer/s, municipal forest officer/s, forest guard/s, and facilitators/NGO)

- b. Aerial photo map of a target watershed
- c. Land use/vegetation cover map and slope map of a target watershed (if available)
- d. A-5 size cardboards
- e. Premade explanatory materials (i.e., i) flipcharts with formats for discussions on current situations of a target watershed and ii) flipcharts with the vision statement, missions, objectives, and functions of the Noru watershed management council)
- f. Stationary (e.g., pencils, colored pencils, flipcharts, felt-type pen, and masking tape)
- g. Snack, water and lunch for the participants

(7) Expected Outputs

Local leader, who would be key members of the watershed management council, will determine and unanimously agree on the vision statements, missions, objectives, and functions of the council.

(8) Follow-up Activities

The secretariat (NDFWM and MAF municipal office concerned) with the assistance from facilitators/NGO shall draft a document stating vision statements, missions, objectives, and functions of the watershed management council based on the results of discussions made in Step 5. **Appendix-3.5** shows the same document for the Noru watershed management council, which can be used as reference for making the document.

【Step 6】 Determination of By-laws of the Watershed Management Council

In addition to vision, missions, functions, and objectives of the watershed management council, it is necessary to put in place by-laws of the council for its operations and management.

(1) Objectives

The main objective of this step is to assist members of the watershed management council in developing a set of managerial rules of the council, which should also constitute a resolution on formation of the watershed management council.

(2) Expected Participants

All members of the watershed management council, especially local leaders, shall participate in the meeting.

(3) Timeframe and Venue

A one-day meeting shall be held at the sub-municipal office.

(4) Proposed Agenda of the Session

The following table shows the standard agenda for the meeting.

Standard Agenda for Development of By-laws of the Watershed Management Council		
Timeframe	Activity	Resource person
10:00-10:30	Session 1: Introduction	NDFWM/Municipal Forest Officers Facilitators/NGO
10:30-11:00	Session 2: Introduction of the by-laws of the Noru watershed management council	Facilitators/NGO
11:00-11:15	Coffee break	-
11:15-12:30	Session 3: Discussions of by-laws	Facilitators/NGO
12:30-13:30	Lunch	-
13:30-15:30	Session 3: Discussions of by-laws (including coffee break)	Facilitators/NGO
15:30-16:00	Wrap up of the discussions and closing	NDFWM/Municipal Forest Officers Facilitators/NGO

(5) Guidelines for the Meeting

The meeting and discussions shall be conducted in accordance with the following procedures.

- Session 1: Explain the purpose, timeframe, and expected outputs of the meeting to the participants.
- Session 2: Introduce to the participants the by-laws of the Noru watershed management council, which are shown in **Appendix-3.6**.
- Session 3 (1): Introduce to the participants the results of discussions in Step 4, which can be used for the section of “membership” in by-laws.
- Session 3 (2): Ask the participants to check the sample by-laws one line by one line whether or not they would accept or revise them to draft those of the council.

Tips on discussion

- a. The results of discussions in Step 4, especially a structure of the council and roles and responsibilities of the members, shall be transcribed on flipcharts so that the participants could recapture what they discussed and decided before.

*b. You should transcribe the by-laws of the Noru watershed management council shown in **Appendix-3.6** prior to the meeting.*

All the discussions made by the participants shall be noted down in flipcharts and memos.

(6) Inputs (Human Resources and Materials) needed

The following inputs are needed for this step.

- a. Human resources (e.g., NDFWM officer/s, municipal forest officer/s, forest guard/s, and facilitators/NGO)
- b. Premade explanatory materials (i.e., i) flipcharts with the results of discussions in Step 4 and ii) flipcharts with the by-laws of the Noru watershed management council)
- c. Stationary (e.g., flipcharts, felt-type pen, and masking tape)
- d. Snack, water and lunch for the participants

(7) Expected Outputs

By-laws or a set of managerial rules of the watershed management council will be developed and agreed on by members of the council in a participatory manner.

【Step 7】 Finalization of a Resolution of the Watershed Management Council

In the end of the process, all the results, such as vision statements, missions, objectives, functions, and by-laws of the watershed management council, shall be put together into a resolution of the watershed management council with signatures of its members.

(1) Objectives

The main objective of this step is to finalize a resolution on the set-up of the watershed management council, which spell outs i) members, ii) vision statements, missions, objectives, and functions, and iii) by-laws of the watershed management council with a unanimous consent from its members.

(2) Expected Participants in the Meeting

All members of the watershed management council shall participate in the meeting.

(3) Timeframe and Venue

A one-day meeting shall be held at the sub-municipal office.

(4) Proposed Agenda of the Session

The following table shows the standard agenda for the meeting.

Standard Agenda for Finalization of a Resolution of the Council

Timeframe	Activity	Resource person
10:00-10:30	Session 1: Introduction	NDFWM/Municipal Forest Officers Facilitators/NGO
10:30-11:00	Session 2: Introduction of a draft resolution of the watershed management council	Facilitators/NGO
11:00-11:15	Coffee break	-
11:15-12:30	Session 3: Discussions and finalization of the resolution	Facilitators/NGO
12:30-13:30	Lunch	-
13:30-14:00	Session 4: Signing of the resolution	Facilitators/NGO
14:30-15:00	Wrap up of the discussions and closing	NDFWM/Municipal Forest Officers Facilitators/NGO

(5) Preparatory Work

Prior to the meeting, a resolution which contains i) vision statements, missions, functions, and objectives and ii) by-laws of the council shall be drafted by NDFWM officers and/or MAF municipal officers with the technical assistance from facilitators/NGO based on the results of discussions in the previous step. A sample of the resolution on the set-up of the watershed management council shown in **Appendix-3.7** shall be fully referred for making a draft resolution. The draft resolution shall be transcribed on flipcharts prior to the meeting with members of a council.

(6) Guidelines for the Meeting

The meeting and discussions shall be conducted in accordance with the following procedures.

- Session 1: Explain the purpose, timeframe, and expected outputs of the meeting to the participants.

Session 2: Introduce and explain to the participants the draft resolution with its attachments.

Session 3 (1): Ask the participants to scrutinize the draft resolution and its attachments by checking one line by one line whether or not they would accept or revise them.

Session 3 (2): Finalize the resolution based on comments and feedbacks from the participants.



Tips on discussion

a. You should bring a laptop computer with a portable printer in the meeting so that you can finalize the resolution while having discussions with members.

Session 4: Ask the participants to sign the resolution.

(7) Inputs (Human Resources and Materials)

needed The following inputs are needed for this step.

- a. Human resources (e.g., NDFWM officer/s, municipal forest officer/s, forest guard/s, and facilitators/NGO)
- b. Meeting materials (Copies of draft resolution on the watershed management council on its members, vision, missions, functions, and objectives, and by-laws)
- c. Premade explanatory materials (i.e., flipcharts with the draft resolution)
- d. A laptop computer and a printer
- e. Stationary (e.g., flipcharts, felt-type pen, and masking tape)
- f. Snack, water and lunch for participants

(8) Expected Outputs

A resolution on the set-up of the watershed management council will be finalized and issued with signatures of all its members.

(9) Follow-up Activities

Copies of the finalized resolution shall be prepared by the secretariat (NDFWM/MAF municipal office) with the assistance from facilitators/NGO to hand out the same to each member.

【Step 8】 Regular Meetings of the Watershed Management Council

After establishment of the watershed management council, the council shall have a meeting every quarter to monitor and discuss any issues on natural resource management in the area.

(1) Objectives

The main objective of this step is to help the watershed management council have a meeting on a quarterly basis and coordinate their actions to solve any issues on natural resource management and improve livelihoods of communities living in the area.

(2) Expected Participants in the Meeting

All members of the watershed management council shall participate in the meeting.

(3) Timeframe and Venue

A one-day meeting shall be held at the sub-municipal office.

(4) Proposed Agenda of the Session

The following table shows the standard agenda for the meeting.

Standard Agenda for Regular Meeting of a Watershed Management Council

Timeframe	Activity	Resource person
10:00-10:30	Session 1: Confirmation of participants, introduction of agenda, and opening remarks from Chairperson	NDFWM/Municipal Forest Officers Facilitators/NGO
10:30-12:00	Session 2: Reports on any issues on natural resource management from the members	Facilitators/NGO
12:00-12:30	Session 3: Discussions on any issues	Facilitators/NGO
12:30-13:30	Lunch	-
13:30-14:00	Session 3: Discussions on any issues	Facilitators/NGO
14:00-15:00	Session 4: Any special topics	Facilitators/NGO
15:00-15:30	Wrap up of the discussions and closing	NDFWM/Municipal Forest Officers Facilitators/NGO

(5) Guidelines for the Meeting

The regular meeting shall be conducted in accordance with the following procedures.

Session 1 (1): Count the number of members attending the meeting to check if the quorum is reached.

Session 1 (2): Introduce the agenda of the meeting and ask Chairperson to open the meeting.

Session 2 (1): Ask members, especially leaders of villages concerned with a target watershed, to report if there is any issue on natural resource management (e.g., occurrence of wildfire, illegal cutting, landslide, or crop damage caused by free



grazing) in their areas,.

Session 3 (1): Discuss any issues and concerns which cannot be solved/settled on the initiative of a single village and need to coordinate their efforts with other villages.

Session 3 (2): Assist members in developing an action plan/resolution/proposal for solving such issues and concerns.

Session 4: Discuss any other topics as needed.

All the discussions should be noted down in flipcharts and memos.

(6) Inputs (Human Resources and Materials) needed

The following inputs are needed for this step.

- a. Human resources (e.g., NDFWM officer/s, municipal forest officer/s, forest guard/s, and facilitators/NGO)
- b. Stationary (e.g., flipcharts, felt-type pen, and masking tape)
- c. Snack, water and lunch for the participants

(7) Expected Outputs

The watershed management council can function as a collaboration platform where local leaders can solve any inter-village issues, such as wildfires, illegal cutting, and animal grazing, in cooperation with each other.

(8) Follow-up Activities

A memo or minute of the meeting shall be prepared by the secretariat (NDFWM/MAF municipal office) with the assistance of facilitators/NGO. The memo shall be shared with members of the council in the next meeting.



4. Process of Development of a Watershed Management Plan (only for Watersheds within the Laclo and Comoro River Basins)

A watershed management plan is to be used as a guiding document by the watershed management council to manage forest and land resources in a target watershed in a proper and sustainable manner. It should be developed by the watershed management council in a participatory manner after its establishment, so that its members could enhance their awareness of current situations of a target watershed and necessary actions to be taken for improvement of watershed environment. It is, however, advisable that this process should be applied only to watersheds located within the Laclo and Comoro river basins, as the watershed management plan developed by the JICA Study¹ for the same river basins can be fully utilized as reference. In fact, it would not be easy to develop a management plan for those which have no existing plan at present, as it requires some surveys and studies for making a plan in general.

4.1 Overall Process

A watershed management plan shall be developed by taking the following four (4) steps together with members of the watershed management council.

- Step 1: Introduction of the process and objective of making a watershed management plan
- Step 2: Development of a draft watershed management plan for a target watershed in line with the management plan for the Laclo and Comoro river basins
- Step 3: Meetings with members of the council to review and revise the draft watershed management plan for a target watershed
- Step 4: Preparation and finalization of a resolution of the watershed management council on approval and submission of the finalized watershed management plan

¹ The Study on Community-Based Integrated Watershed Management in Laclo and Comoro River Basins in the Democratic Republic of Timor-Leste, 2010.

4.2 Procedures for Development of a Watershed Management Plan

【Step 1】 Introduction of the Process and Objective of Development of a Watershed Management Plan

Prior to the meetings, members of the watershed management council shall be given a clear explanation of the process and objective of making a watershed management plan so that they could accept the activities planned for this purpose.

(1) Objective

The main objective of the meeting is to obtain prior consent to the idea on development of a watershed management plan and its associated activities from members of the watershed management council.

(2) Target Groups

All members of the watershed management council, especially local leaders of villages, shall participate in the meeting, as a watershed management plan is expected to be used as a guiding document for them to manage lands and forests in a target watershed while improving livelihoods of local communities.

(3) Timeframe and Venue

A half-day meeting shall be held at the sub-municipal office.

(4) Proposed Agenda of the Meeting

The following table shows the standard agenda for the meeting.

Standard Agenda for the Meeting

Timeframe	Activity	Resource person
10:00-10:30	Session 1: Introduction of the meeting	NDFWM/Municipal Forest Officers Facilitators/NGO
10:30-11:00	Session 2: Introduction and explanation of the objectives and process of making a watershed management plan	ditto
11:00-11:15	Coffee break	-
11:15-11:45	Session 3: Outline of the watershed management plan for the Lacle and Comoro river basins	NDFWM/Municipal Forest Officers Facilitators/NGO
11:45-12:30	Discussions and answers	ditto
12:30-	Lunch and closing	-

Source: JICA Project Team (2015)

(5) Guidelines for the Meeting/Workshop

The meeting shall be conducted as follows.

Session 1: Introduce the objectives and timeframe of the meeting to the participants.

Session 2: Explain the objectives and necessity of a watershed management plan using the material attached in **Appendix-4.1** to the participants.



Session 3: Explain to the participant the watershed management plan for the Lacro and Comoro river basins using a presentation material shown in **Appendix-4.2** stressing that the same must be used as a master plan for watersheds located within the same river basins.

Tips on discussion

- a. Prior to the meeting, you should transcribe the material shown in **Appendix-4.1** on flipcharts.
- b. You should bring a laptop computer and a projector with you in the meeting for the presentation of the watershed management plan for the Lacro and Comoro river basins using the material shown in **Appendix-4.2**.

During the meeting, the discussion shall be noted down in flipcharts and memos.

(6) Inputs (Human Resources and Materials) needed

The following inputs are required for this step.

- a. Human resources (e.g., NDFWM officer/s, municipal forest officer/s, forest guard/s, and facilitators/NGO)
- b. Pre-made explanatory materials (i.e., flipcharts with the objectives and process of making a watershed management plan)
- c. A laptop computer and a projector
- d. Stationary (e.g., flipcharts, felt-type pen, and masking tape)
- e. Snack, water and lunch for the participants

(7) Expected Outputs

Members of the watershed management council will accept an idea on development of a watershed management plan and agree to participate in a series of meetings planned for making the plan.

【Step 2】 Development of a Watershed Management Plan

A watershed management plan for a target watershed shall be developed in line with the management plan for the Lacle and Comoro river basins, which is a master plan for management of lands and forests in the said river basins in an integrated and sustainable manner.

(1) Objectives

The main objective of the step is to develop a watershed management plan for a target watershed referring the management plan developed for the Noru watershed by the JICA CB-NRM Project based on the master plan for the Lacle and Comoro river basins.

(2) Persons/Groups responsible for the Step

NDFWM and MAF municipal office shall be responsible for development of a watershed management plan. The work can be contracted out to an external organization (e.g., NGO) or an/ expert/s who is/are capable to do so.

(3) Timeframe and Venue

It would take one (1) to two (2) month/s to draft a watershed management plan.

(4) Proposed Contents of the Watershed Management Plan

It is advisable to use the watershed management plan for the Noru watershed as a template for the same for a target watershed. The proposed contents of the plan are shown below.

Proposed Contents of the Watershed Management Plan

Chapter	Sections
Chapter 1 Introduction	1.1 Introduction 1.2 Objectives of the Document 1.3 Scope of the Watershed Management Plan 1.4 Composition of the Plan
Chapter 2 Present Conditions of the Watershed	2.1 Location and Administrative Situation of the Watershed 2.2 Natural Conditions 2.2.1 Climate (Rainfalls and Temperature) 2.2.2 Slopes 2.2.3 Elevation 2.2.4 Land Use and Vegetation Covers 2.2.5 Potential of Soil Erosion 2.3 Socio-economic Conditions 2.3.1 Demography 2.3.2 Agricultural Production 2.3.3 Animal Population 2.3.4 Food Security 2.3.5 Estimated Income Level 2.4 Vulnerability to Climate Changes 2.4.1 Projected Climate Changes 2.4.2 Potential Impacts on Communities in the Watershed 2.4.3 Vulnerability of the Watershed to Climate Changes
Chapter 3 Issues on Watershed Management and Stakeholders relevant to Watershed Management	3.1 Issues on Watershed Management 3.1.1 History of Forest Degradation 3.1.2 Current Issues in Watershed 3.2 Stakeholders relevant to Watershed Management 3.2.1 Major Stakeholders 3.2.2 Watershed Management Council
Chapter 4 Goal and Strategic Objectives of the Watershed Management Plan	4.1 Goal and Strategic Objectives 4.2 Overall Guidelines on Land Management in the Watershed
Chapter 5 Watershed Management	5.1 Overall Framework of the Watershed Management Plan

Chapter	Sections
Plan	5.2 Land Use Program 5.2.1 Objectives 5.2.2 Strategies 5.2.3 Participatory Land Use Planning Sub-program (PLUP-SP) 5.3 Farm and Livestock Management Program 5.3.1 Objectives 5.3.2 Strategies and Approaches 5.3.3 Sub-programs 5.4 Reforestation and Forest Protection Program 5.4.1 Objectives 5.4.2 Strategies and Approaches 5.4.3 Sub-programs 5.5 Livelihood Improvement Program 5.5.1 Objectives 5.5.2 Strategies and Approaches 5.5.3 Sub-programs 5.6 Public Awareness Raising Program 5.6.1 Objectives 5.6.2 Strategies and Approaches 5.6.3 Public Awareness Campaign Sub-program (PAC-SP) 5.7 Institutional Strengthening Program 5.7.1 Objectives 5.7.2 Strategies and Approaches 5.7.3 Actions to be Taken for Strengthening of the Watershed Management Council
Chapter 6 Implementation Plan	6.1 Basic Concept 6.2 Implementation Method 6.2.1 Process of Implementation of the Sub-programs 6.2.2 Grouping of the Sucos 6.3 Institutional Framework for Implementation 6.3.1 Organizations to be involved in the Implementation 6.3.2 Proposed Organizational Structure for Implementation 6.4 Necessary Support and Arrangements for Implementation 6.5 Implementation Schedule

Source: Watershed Management Plan for the Noru Watershed (2015)

(5) Points of Discussions/Deliberation

Although the watershed management plans for the Noru watershed as well as the Lacio and Comoro river basins can be fully used as references for making the one for a target watershed, the following points shall be further deliberated to tailor the plan to the conditions of a target watershed.

Points of Discussions	
Chapter and Sections	Points of discussions
Chapter 1 Introduction 1.1 Introduction 1.2 Objectives of the Document 1.3 Scope of the Watershed Management Plan 1.4 Composition of the Plan	◆ “1.1 Introduction” and “1.3 Scope of the watershed management plan” should be revised and adjusted with the conditions of a target watershed.
Chapter 2 Present Conditions of the Watershed 2.1 Location and Administrative Situation of the Watershed 2.2 Natural Conditions 2.2.1 Climate (Rainfalls and Temperature) 2.2.2 Slopes 2.2.3 Elevation 2.2.4 Land Use and Vegetation Covers 2.2.5 Potential of Soil Erosion	◆ “2.1 Location and Administrative Situation” should be revised based on the geographic and administrative data of a target watershed as well as villages concerned. ◆ Climate data in “2.2.1 Climate” should be updated with the latest ones or replaced with those of the nearest weather stations from a target watershed. ◆ Several types of map, namely slope map, elevation map, land use map, and soil erosion potential map, should be developed and prepared by using the master data (GIS data) of the watershed management plan for the Lacio and Comoro river basins. Data of slopes, elevation, land use, and soil erosion potential in 2.2.2~2.2.5 should be replaced with those newly developed for a target watershed.

Chapter and Sections	Points of discussions
2.3 Socio-economic Conditions 2.3.1 Demography 2.3.2 Agricultural Production 2.3.3 Animal Population 2.3.4 Food Security 2.3.5 Estimated Income Level 2.4 Vulnerability to Climate Changes 2.4.1 Projected Climate Changes 2.4.2 Potential Impacts on Communities in the Watershed 2.4.3 Vulnerability of the Watershed to Climate Changes	<ul style="list-style-type: none"> ◆ Data of demography, agricultural production, animal population, food security and estimated income level in 2.3.1~2.3.5 should be revised and replaced with those of villages concerned with a target watershed. ◆ “2.4 Vulnerability to Climate Changes” can be basically used for a plan for a target watershed as they describe the general conditions in the mountainous areas in Timor-Leste.
Chapter 3 Issues on Watershed Management and Stakeholders relevant to Watershed Management 3.1 Issues on Watershed Management 3.1.1 History of Forest Degradation 3.1.2 Current Issues in Watershed 3.2 Stakeholders relevant to Watershed Management 3.2.1 Major Stakeholders 3.2.2 Watershed Management Council	<ul style="list-style-type: none"> ◆ “3.1 Issues on Watershed Management” can be used for a plan for a target watershed as the causes of forest degradation are generally common in the Laclo and Comoro river basins. ◆ “3.2 Stakeholders relevant to Watershed Management” should be replaced with the results of discussions in the process of forming the watershed management council, such as stakeholder analysis and vision statements, missions, functions, and objectives of the council.
Chapter 4 Goal and Strategic Objectives of the Watershed Management Plan 4.1 Goal and Strategic Objectives 4.2 Overall Guidelines on Land Management in the Watershed	<ul style="list-style-type: none"> ◆ Descriptions in Chapter 4 can be used for a plan for a target watershed since the goal, strategies, and guidelines employed for the Noru watershed are based on the same for the Laclo and Comoro river basins, which could be commonly shared by watersheds within the river basins.
Chapter 5 Watershed Management Plan 5.1 Overall Framework of the Watershed Management Plan 5.2 Land Use Program 5.3 Farm and Livestock Management Program 5.4 Reforestation and Forest Protection Program 5.5 Livelihood Improvement Program 5.6 Public Awareness Raising Program 5.7 Institutional Strengthening Program	<ul style="list-style-type: none"> ◆ The objectives, strategies, approaches, and sub-programs proposed in Chapter 5 can be basically used for a plan for a target watershed. ◆ The programs/sub-programs should be reviewed and verified in terms of their adaptability and applicability to the situations of a target watershed.
Chapter 6 Implementation Plan 6.1 Basic Concept 6.2 Implementation Method 6.2.1 Process of Implementation of the Sub-programs 6.2.2 Grouping of the Sucos 6.3 Institutional Framework for Implementation 6.3.1 Organizations to be involved in Implementation 6.3.2 Proposed Organizational Structure for Implementation 6.4 Necessary Support and Arrangements for Implementation 6.5 Implementation Schedule	<ul style="list-style-type: none"> ◆ “6.2 Implementation Method” should be revised and adjusted with the conditions of a target watershed. ◆ Likewise, “6.3 Institutional Framework for Implementation” should be revised and adjusted with the structure and organization of the watershed management council. ◆ “6.4 Necessary Support and Arrangement for Implementation” and “6.5 Implementation Schedule” can be used for those of the plan for a target watershed.

Source: *Watershed Management Plan for the Noru Watershed (2015)*

Tips on discussion

- a. *The two (2) watershed management plans, the plan for the Laloc and Comoro river basins and the other for the Noru watershed, shall be fully referred for making a plan for a target watershed.*

b. You do not necessarily make a whole set of chapters of the plan at once. In fact, you can make one chapter after the other simultaneously with consultations with members of the watershed management council as explained in Step 3.

(6) Inputs (Human Resources and Materials) needed

The following inputs are required for this step.

- a. Human resources (e.g., NDFWM officer/s, municipal forest officer/s, and facilitators/NGO)
- b. A laptop/desktop computer and a printer

(7) Expected Outputs

A watershed management plan similar to the one for the Noru watershed, which is shown in **Appendix-4.3**, will be drafted.

【Step 3】 Review and Revision of the Draft Watershed Management Plan

The draft plan shall be introduced to members of the watershed management council for their review and deliberation. It is important to involve them in the process of finalizing a watershed management plan to foster a sense of ownership of the plan among members.

(1) Objectives

The main objective of this step is to discuss and deliberate the draft version of a watershed management plan with members of the watershed management council and obtain their feedbacks, opinions, and ideas for finalization.

(2) Expected Participants

All members of the watershed management council shall participate in the meetings.

(3) Timeframe and Venue

Four (4) sets of one-day workshop/meeting shall be held at the sub-municipal office.

(4) Proposed Agenda of the Session

The following tables show the standard agendas for the meetings

Standard Agenda for Introduction of the Draft Watershed Management Plan

a. 1st meeting

Timeframe	Activity	Resource person
10:00-10:30	Session 1: Introduction	NDFWM/Municipal Forest Officers Facilitators/NGO
10:30-12:30	Session 2: Presentation of a summaries of Chapters 1 and 2	Facilitators/NGO
12:30-13:30	Lunch	-
13:30-15:30	Session 3: Discussions on Chapters 1 and 2	Facilitators/NGO
15:30-16:00	Wrap up of the discussions and closing	NDFWM/Municipal Forest Officers Facilitators/NGO

b. 2nd meeting

Timeframe	Activity	Resource person
10:00-10:30	Session 1: Introduction	Facilitators/NGO
10:30-12:30	Session 2: Presentation of summaries of Chapters 3 and 4	Facilitators/NGO
12:30-13:30	Lunch	-
13:30-15:30	Session 3: Discussions on Chapters 3 and 4	Facilitators/NGO
15:30-16:00	Wrap up of the discussions and closing	NDFWM/Municipal Forest Officers Facilitators/NGO

c. 3rd meeting

Timeframe	Activity	Resource person
10:00-10:30	Session 1: Introduction	Facilitators/NGO
10:30-12:30	Session 2: Presentation of a summary of Chapter 5	Facilitators/NGO
12:30-13:30	Lunch	-
13:30-15:30	Session 3: Discussions on Chapter 5	Facilitators/NGO
15:30-16:00	Wrap up of the discussions and closing	NDFWM/Municipal Forest Officers Facilitators/NGO

d. 4th meeting

Timeframe	Activity	Resource person
10:00-10:30	Session 1: Introduction	Facilitators/NGO
10:30-12:30	Session 2: Presentation of a summary of Chapter 6	Facilitators/NGO
12:30-13:30	Lunch	-
13:30-15:30	Session 3: Discussions on Chapter 6	Facilitators/NGO
15:30-16:00	Wrap up of the discussions and closing	NDFWM/Municipal Forest Officers Facilitators/NGO

Source: JICA Project Team (2015)

(5) Guidelines for the Meetings

Discussions in the respective meetings shall be conducted in accordance with the following procedures.

- Session 1: Explain the purpose, timeframe, and expected outputs of the meetings to the participants.
- Session 2: Introduce summaries of the respective chapters using presentation materials prepared before the meetings. Samples of the materials are shown in **Appendix-4.4**.



Tips on discussion

- a. Prior to the meeting, you should prepare presentation materials which are summaries of the respective chapters of the draft version of a watershed management plan. The materials used for introduction of the draft watershed management plan for the Noru watershed are shown in **Appendix-4.4**.
- b. You should also hand out the draft version of each chapter to the participants so that they could go over a whole content of the respective chapters.

Session 3 (1): Ask the participants for their opinions, ideas, and comments on the draft versions.

Session 3 (2): If there are opinions and comments given by the participants, discuss how to revise and improve the draft versions.

All the discussions made in the meetings shall be noted down in flipcharts and memos.

(6) Inputs (Human Resources and Materials) needed

The following inputs are needed for this step.

- Human resources (e.g., NDFWM officer/s, municipal forest officer/s, forest guard/s, and facilitators/NGO)
- Premade presentation materials (i.e., i) summaries of chapters of the draft watershed management plan)
- Meeting materials (i.e., copies of chapters of the draft watershed management plan)
- A Laptop computer and a projector
- Stationary (e.g., flipcharts, felt-type pen, and masking tape)
- Snack, water and lunch for participants

(7) After the Meetings with the Council

The draft watershed management plan shall be revised by NDFWM with the technical assistance of NGO/facilitator on the basis of discussions in the meetings.

(8) Expected Outputs

The draft watershed management plan will be finalized in a participatory manner.

【Step 4】 Preparation and Finalizations of a Resolution on the Watershed Management Plan

The finalized watershed management plan shall be approved by the watershed management council as a guiding document and also submitted to relevant offices which might be able to help the council implement the plan in future.

(1) Objectives

The main objective of this step is to help the watershed management council approve the final version of a watershed management plan and submit the same to relevant offices/organizations for implementation.

(2) Expected Participants

All members of a watershed management council shall participate in the meeting.

(3) Timeframe and Venue

A one-day meeting will be held at the sub-municipal office.

(4) Proposed Agenda of the Session

The following table shows the standard agenda for the meeting.

Standard Agenda for Preparation of a Resolution on the Watershed Management Plan
a. 1st day

Timeframe	Activity	Resource person
10:00-10:30	Session 1: Introduction	NDFWM/Municipal Forest Officers Facilitators/NGO
10:30-11:30	Session 2: Presentation of the finalized watershed management plan (including coffee break)	Facilitators/NGO
11:30-12:30	Session 3: Discussion on f a draft resolution on approval and submission of the watershed management plan	Facilitators/NGO
12:30-13:30	Lunch	-
13:30-14:30	Session 3: Discussion on f a draft resolution on approval and submission of the watershed management plan	Facilitators/NGO
14:30-15:30	Session 4: Discussion on submission of the watershed management plan	Facilitators/NGO
15:30-16:00	Wrap up of the discussions and closing	NDFWM/Municipal Forest Officers Facilitators/NGO

Source: JICA Project Team (2015)

(5) Guidelines for the Meeting

The meeting and discussions shall be conducted in accordance with the following procedures.

Session 1: Explain the purpose, timeframe, and expected outputs of the meeting to the participants.

Session 2: Introduce the final version of a watershed management plan stressing revisions made in the draft version.

Tips on discussion

a. You shall bring a laptop computer with a projector and make a presentation showing the parts revised in the draft version of a watershed management plan to the participants in the meeting.

b. At the same time, you should circulate one copy of the watershed management plan in the meeting so that the participants could have a clear image of the final version which will be submitted to relevant organizations.

Session 3(1): Introduce a draft resolution of the council on approval and submission of the watershed management plan.

Tips on discussion

- a. You should prepare a draft resolution referring the same of the Noru watershed management council shown in **Appendix-4.5** prior to the meeting.*
- b. The draft resolution should be preferably transcribed on flipcharts so that all the participants/members could catch up the discussions. In addition to the flipcharts, you should hand out a copy of the draft resolution to the participants in the meeting.*

Session 3 (2): Ask the participants for their opinions, ideas, and comments on the draft resolution.

Session 3 (3): If there are opinions and comments given by the participants, discuss how to revise and improve the resolution.

Session 3 (4): Finalize the resolution and ask members of the watershed management council to sign the resolution.

Session 4: Assist the participants in i) determining offices/organizations to which the council should submit the plan and ii) developing an action plan for submission of the watershed management plan using the following format.



Sample Format for an Action Plan

Activities	Organizations	Timelines	Persons responsible
Printing of the watershed management plan			
Finalization of the resolution with signatures of the members			
Submission of the watershed management plan with the resolution	1.		
	2.		
	3.		

Source: JICA Project Team (2015)

Tips on discussion

- a. You should transcribe a format shown above on a flipchart prior to the meeting.*

<p><i>b. You should add a few more lines in the format in case the members would identify other activities to be done after finalization of the resolution.</i></p>

All the discussions made in the meeting shall be noted down in flipcharts and memos.

(6) Inputs (Human Resources and Materials) needed

The following inputs are needed for this step.

- a. Human resources (e.g., NDFWM officer/s, municipal forest officer/s, forest guard/s, and facilitators/NGO)
- b. Meeting materials (i.e., i) a copy of the finalized watershed management plan and ii) copies of a draft resolution on approval and submission of the watershed management plan)
- c. Pre-made explanatory materials (i.e., i) flipcharts with descriptions of the draft resolution and ii) flipchart with a format for an action plan)
- d. A Laptop computer and a projector
- e. Stationary (e.g., flipcharts, felt-type pen, and masking tape)
- f. Snack, water and lunch for participants

(7) Expected Outputs

A watershed management plan will be approved as guidelines for the watershed management council and submitted to relevant organizations for further support.

(8) Follow-up Activities

The secretariat (NDFWM and MAF municipal office concerned) shall assist the council in the production and submission of the watershed management plan according to the action plan, as it would not be easy for the council to do so without any external support.

5. Framework for Implementation

5.1 Organizations and Persons responsible for the Works

The National Directorate of Forest and Watershed Management (NDFWM) shall be the principal agency who initiates the formation of the watershed management council. MAF municipal offices concerned and the National Directorate of Nature Conservation (NDNC) shall function as co-implementing agencies as their tasks closely relate to sustainable watershed management. Like in the cases of other CB-NRM activities, NGOs will play an important role over the course of the works, since they would have competent facilitators who have long experience in working with communities.

The expected roles and responsibilities of key players involved in the process of forming the watershed management council and making a watershed management plan are shown below.

Expected Roles and Responsibilities of the Key Players

Key players	Expected roles and responsibilities
1. Central Level	
(1) NDFWM (NDFWM officers)	<ol style="list-style-type: none"> 1. Develop a work plan for formation of the watershed management council with development of a watershed management plan for a target watershed. 2. Secure necessary budget to implement the work plan. 3. Provide necessary administrative and technical support to the officers (including those working in the municipal office concerned) responsible for the work. 4. Hire facilitators/NGO for the field works. 5. Monitor and supervise facilitators'/NGO's works with municipal forest officers and forest guards.
(2) NDNC (NDNC officers)	<ol style="list-style-type: none"> 1. Assist the NDFWM in the conducts of field activities for formation of the watershed management council and development of a watershed management plan. 2. Provide necessary administrative and financial support to its officers who would work with the NDFWM.
2. District Level	
(1) MAF municipal office (District Director)	<ol style="list-style-type: none"> 1. Assist the NDFWM in the conducts of field activities for formation of the watershed management council and development of a watershed management plan. 2. Provide necessary administrative and financial support to municipal forest officer/s and forest guard/s who would work with the NDFWM.
(2) Municipal forest officer	<ol style="list-style-type: none"> 1. Work together with facilitators/NGO over the course of the work. 2. Monitor facilitators'/NGO's activities together with NDFWM officers and forest guards. 3. Provide guidance and orientation to local leaders together with facilitators/NGO.
(3) Forest guards	<ol style="list-style-type: none"> 1. Provide guidance and orientation to local leaders together with municipal forest officer/s and facilitators/NGO 2. Monitor facilitators'/NGO's activities together with NDFWM and municipal forest officer/s
(4) Facilitators/NGO	<ol style="list-style-type: none"> 1. Be responsible for the field works as a contractor. 2. Perform as a main facilitator throughout the field works. 3. Arrange and organize a series of meetings with local leaders and facilitate their discussions in the meetings. 4. Provide necessary guidance and orientation to local leaders in coordination with NDFWM/MAF municipal officers in the meetings.

Source: JICA Project Team (2015)

5.2 Necessary Supports

In order for the key players to fulfill their responsibilities, it is necessary to ensure the following arrangements:

- a. The necessary budget enough to carry out field activities should be allocated for the works;
- b. Transportation means should be secured for the officers responsible for the works;
- c. An NGO or a group of facilitators should be hired to assist the NDFWM in the conducts of field activities; and
- d. Sufficient guidance should be given to the officers responsible and facilitators/NGO hired for the work by using this manual.

5.3 Standard Implementation Schedule

The following table shows the standard implementation schedule of the whole processes of forming the watershed management council and making a watershed management plan.

Steps: Activities		Year 1												Year 2		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1. Formation of the Watershed Management Council																
Step 1	Consultation with local leaders	■														
Step 2	Meeting with the Noru Watershed Management Council	■														
Step 3	Study tour to the JICA project village		■													
Step 4	Stakeholder Analysis and Selection of Members		■													
Step 5	Determination of Vision Statements, Missions, Functions, and Objectives of the Watershed Management Council			■												
Step 6	Determination of By-laws of the Watershed Management Council			■												
Step 7	Finalization of a Resolution of the Watershed Management Council				■											
Step 8	Regular Meetings of the Watershed Management Council				■			■			■				■	
2. Development of a Watershed Management Plan																
Step 1	Introduction of the Process and Objective of making a Watershed Management Plan				■											
Step 2	Development of a Watershed Management Plan					■	■	■	■	■						
Step 3	Review and Revision of the Draft Watershed Management Plan					■	■	■	■							
Step 4	Preparation and Finalizations of a Resolution on the Watershed Management									■	■	■	■			

**Standard Implementation Schedule for Formation of the Watershed Management Council
and Development of a Watershed Management Plan**

Source: JICA Project Team (2015)

Appendix-3.1

***Process of Forming a Collaboration
Platform/Framework on a Watershed
Scale (or the Watershed Management
Council)***

Appendix-3.1: Process of Forming a Collaboration Platform/Framework on a Watershed Scale (or the Watershed Management Council)

1. Objectives

The main objective of forming the watershed management council is to develop and institutionalize a collaboration platform/framework where local leaders concerned with a target watershed can work together on sustainable management of forests and other natural resources and improvement of local livelihoods in a target watershed.

2. Target Groups

Local leaders concerned with a target watershed, namely sub-municipal administrator/s and village leaders, shall be involved in the entire process as they would be key members of the watershed management council.

3. Overall Timeframe

The total length of the process is expected to be about one and a half year (1.5 year). More details of the activities and their timelines are shown in the following sections.

4. Major Activities

The following three (3) types of the activities shall be carried out for the works:

- i) Meetings with local leaders, namely, sub-municipal administrators, village leaders, and representatives of relevant government offices to form the watershed management council
- ii) Meeting with members of the watershed management council to develop a watershed management plan for a target watershed
- iii) Meetings with members of the watershed management council to monitor and solve any issues on natural resource management in a target watershed

4.1 Meetings for Formation of the Watershed Management Council

The following meetings with local leaders and other relevant stakeholders shall be arranged and held to form the watershed management council.

No.	Meetings	Participants	Venue	Timeframe
1	Meeting to introduce the idea of a watershed management council to the Sub-district Administrative Office	Sub-district Administrator, Representative of MAF municipal office, Representative of NDFWM, Facilitators/NGO	Sub-municipal Administrative Office	One day in xxx (month), xxxx (year)
2	Consultation with village leaders of sucos concerned	Chiefs de sucos, Sub-municipal Administrator, Representative of MAF municipal office, Representative of NDFWM, Facilitators/NGO	v	One day in xxx (month), xxxx (year)
3	Meeting with the Noru watershed management council	ditto	Sub-municipal Administrative Office of Remexio	One day in xxx (month), xxxx (year)
4	Study tour the JICA CB-NRM Project village	ditto	One of the JICA CB-NRM Project villages	1~3 day in xxx (month), xxxx (year)
5	Meeting to analyze stakeholders, select members of the council and discuss roles/responsibilities of members	ditto	Sub-municipal Administrative Office	1~2 day in xxx (month), xxxx (year)

No.	Meetings	Participants	Venue	Timeframe
6	Meeting to assess the current situations of a target watershed and discuss vision, missions, functions, and objectives of the council	Chiefs de sucos, Sub-municipal Administrator, Representative of MAF municipal office, Representative of NDFWM, Representatives of other government offices selected as members, Facilitators/NGO	Sub-municipal Administrative Office	Two day in xxx (month), xxxx (year)
7	Meeting to develop and determine by-laws of the council	ditto	ditto	One day in xxx (month), xxxx (year)
8	Meeting to develop and finalize a resolution of the council on the establishment of the council	ditto	ditto	One day in xxx (month), xxxx (year)

4.2 Meetings for Development of a Watershed Management Plan

On the other hand, the following activities shall be carried out for development of a watershed management plan by referring the ones developed for the Laclo and Comoro river basins and the Noru watershed.

No.	Activities	Participants	Venue	Timeframe
1	Meeting to introduce the process and objective of development of a watershed management plan	Members of the watershed management council, Facilitators/NGO	Sub-municipal Administrative Office	One day in xxx (month), xxxx (year)
2	Development of a watershed management plan	Secretariat (NDFWM and MAF municipal office concerned), Facilitators/NGO, etc.	NDFWM office	A / month/s in xxxx (year)
3	Meetings to review and revise the draft watershed management plan 1 st meeting 2 nd meeting 3 rd meeting 4 th meeting	Members of the watershed management council, Facilitators/NGO Deliberation of Chapters 1 and 2 Deliberation of Chapters 3 and 4 Deliberation of Chapter 5 Deliberation of Chapter 6	Sub-municipal Administrative Office	One day each in xxx (month), xxxx (year)
4	Meeting to finalize a resolution of the council on the watershed management plan	Members of the watershed management council, Facilitators/NGO	ditto	One day in xxx (month), xxxx (year)

4.3 Meetings for Monitoring and Solution of Issues in a Target Watershed

After the set-up of the watershed management council, members of the council shall have a plenary meeting on a quarterly basis to monitor the situations of a target watershed and discuss/solve any issues/concerns on natural resource management in the area in a collaborative manner.

No.	Activities	Participants	Venue	Timeframe
1	Regular meeting on a quarterly basis	Members of the watershed management council, Facilitators/NGO	Sub-municipal Administrative Office	One day every three months
2	Annual meeting at the end of the year to review its activities and make a plan for the following year	ditto	ditto	One day at the end of the year

End of document

Appendix-3.2

***Results of the Analysis of
Stakeholders relevant to
Management of the Noru Watershed
(Results of the Stakeholder Analysis)***

Appendix-3.2 Results of the Analysis of Stakeholders relevant to Management of the Noru Watershed (Results of the Stakeholder Analysis)

No.	Name	Relevance to (Involvement in) watershed management	Importance in the management of watershed
1.	District Administrative Office	- Not directly involved in watershed management	- Highly important as its tasks are to give approval for the sub-district administrative offices to work on watershed management and to provide guidance for the same on relevant activities for watershed management.
2.	Sub-district offices of Remexio & Liquidoe	- High relevant - Directly involved in watershed management because of location	- Highly important as they have authority over activities in the watershed.
3.	Sucos located inside the watershed	- High relevant - Directly involved in watershed management because communities in sucos are the landowners of the area.	- High important as chef de suco is responsible for activities at suco level and communities are the actual managers of lands and forests in the watershed.
4.	District MAF/NDF	- Not directly involved in watershed management	- Highly important as District Administrative Office is.
5.	Extensionists	- High relevant - Directly involved in watershed management as they work in the watershed.	- Highly important as they work with communities.
6.	Forest Guard	<u>FG in Remexio</u> - High relevant - Directly involved in watershed management as he lives in the watershed. <u>FG in Liquidoe</u> - Not directly involved in watershed management as he does not live in the watershed and not easy to commute to the watershed.	- Highly important as they are the ones who orient communities towards sustainable forest and watershed management.
7.	District MOH (Health)	- Less relevant - Not directly involved	- Less important
8.	Clinic	- Less relevant - Likely involved directly.	- Less important
9.	Education	- Less relevant - Not directly involved	- Less important
10.	Teachers/principles	- Less relevant	- Less important
11.	ND for Environment	- Not directly involved as there is no branch office at the sub-district level.	- Highly important as the ND for environment is also working for forest conservation.
12.	PNTL	- Directly involved in watershed management as PNTL is working with communities to prevent illegal activities including forest fires.	- Less important as the watershed management is not the task of PNTL.
13.	SAS sub-district in Remexio & Liquidoe	- High relevant as one of SAS tasks is to protect water sources. - Directly involved as the branch offices are located in the respective sub-districts.	- Highly important as SAS would advise and help communities to protect forests and areas around water sources.
14.	Church	- High relevant as its task is to orient local communities.	- Less important as Church has nothing to do with watershed management.
15.	NGO (AMAR, WV, Plan, Haburas, RAEBIA)	- Not directly or continuously involved in watershed management as they are not based in the watershed.	- High important as the NGOs have implemented some activities relevant to watershed management.

Appendix-3.3

***Structure of the Noru Watershed
Management Council and
Roles/Responsibilities of the
Members of the Council***

Appendix-3.3 Structure of the Noru Watershed Management Council and Roles/Responsibilities of the Members of the Council

1. Identification of Members of the Watershed Management Council

Based on the discussions of the stakeholder analysis, the participants determined that the following organizations should be the members of the council.

- ▶ Sub-district administrative offices of Remexio and Liquidoe
- ▶ 12 sucos in Remexio and Liquidoe
- ▶ NDF
- ▶ District MAF
- ▶ District office of National Directorate for Environment (NDE)
- ▶ Sub-district offices of National Directorate for Water Supply and Sanitation (NDWSS) in Remexio and Liquidoe

Among the organizations selected as members of the council, it was agreed that the possibility of the involvement of the offices of NDE and NDWSS in the council should be confirmed with the district offices of the relevant NDs prior to finalization of the membership of the council.

On the other hand, the participants decided that the following organizations should be treated as observers at this moment.

- ▶ District representative (District administrator & Focal point)
- ▶ District MOH (Health)
- ▶ Clinic
- ▶ Education
- ▶ Church (Sub-district)
- ▶ NGOs (AMAR, Worldvision, Plan, Haburas, and RAEBIA)

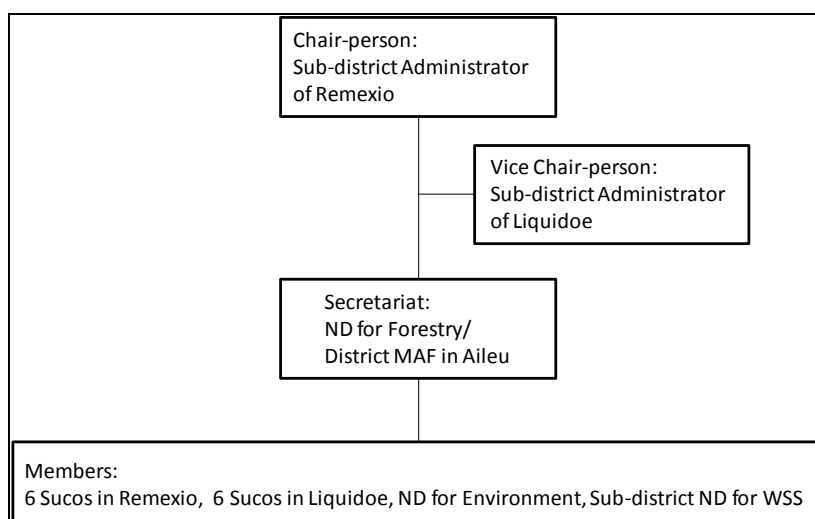
2. Structure of the Watershed Management Council

It was also agreed that the watershed management council was composed of Chair-person, Vice Chair-person, Secretariat, and other members. The members decided to share the responsibilities among the members as follows.

Framework of the Council and Organizations Appointed to Key Positions

Position	Name of organization
Chair person	Sub-district administrator of Remexio
Vice Chair person	Sub-district administrator of Liquidoe
Council members	12 chefe de sucos Environment (Optional) SAS sub-district in Remexio & Liquidoe (Optional)
Secretariat	NDF /District MAF

The following chart shows the organizational structure of the watershed management council.



Organizational Structure of the Noru Watershed Management Council

3. Roles and Responsibilities of the Members

The members determined the roles and responsibilities of the respective members/positions of the watershed management council as follows.

Roles of Responsibilities of the Members of the Watershed Management Council

Position	Roles/Responsibilities
Chair person (Sub-District Administrator of Remexio)	<ul style="list-style-type: none"> ● Convene the regular meeting and ad hoc meeting by the request from the members; ● Issue an invitation to the members; ● Chair the meeting of the council by facilitating and directing discussions, ensuring basic rules in discussions, putting a question to the vote, and announcing decisions. ● Set agenda of the meeting in coordination with Secretariat; ● Give guidance and orientation to the members of the council towards sustainable watershed management; ● Encourage the members of the council to keep on making efforts to achieve sustainable watershed conservation and management; and ● Communicate with other agencies, ministries, national directorates, and other organizations for ensuring of proper watershed management.
Vice Chair person (Sub-District Administrator of Liquidoe)	<ul style="list-style-type: none"> ● Support chair person in fulfilling his/her duties; ● Act as chairperson when chairperson is not aviable; ● Give guidance and orientation to the members of the council towards sustainable watershed management in collaboration with Chairperson; and ● Encourage the members of the council to keep on making efforts to achieve sustainable watershed conservation and management in collaboration with Chairperson.
Secretariat (NDF/District MAF)	<ul style="list-style-type: none"> ● Assist Chairperson/Vice Chairperson in convening the meeting. issuing and delivering invitation letters to members, and handling the meeting; ● Draft agenda of the meeting in coordination with Chairperson and Vice Chairperson; ● Be responsible for documentation activities, such as note taking, preparation of resolution/decision,, etc.; and ● Help Chairperson and Vice Chairperson communicate with other agencies, ministries, national directorates, and organizations for ensuring of proper watershed management.
Council members (Chefs de Sucos)	<ul style="list-style-type: none"> ● Participate in activities arranged by the council, such as meetings and study tours; ● Share ideas and exchange opinions actively in the meetings of the council to solve and settle any issues/problems that would obstruct the achievement of sustainable watershed management; ● Follow the rules and regulations agreed upon by the members; ● Guide communities in the respective villages to ensure that they would follow

Position	Roles/Responsibilities
	<p>agreements made by the council; and</p> <ul style="list-style-type: none"> ● Encourage communities in the respective villages to protect and manage forest and natural resources in a sustainable manner.
Council members (Environment)	<ul style="list-style-type: none"> ● Same as the roles and responsibilities for the council members (chefes de sucos); and ● Support communities in sucos in the watershed in the conducts of environmental protection activities, such as Tara Bandu ceremony, seedling production & reforestation, and environmental education.
Council members (SAS)	<ul style="list-style-type: none"> ● Same as the role and responsibilities for the council members (chefes de sucos); and ● Support communities in sucos in the watershed in the protection of sources of water in the respective villages.
Observer (NGOs, etc.)	<p>Observers can possess rights to:</p> <ul style="list-style-type: none"> ● Participate in the meetings/activities organized by the council; ● Give advise/suggestion to the members of the council; and ● Assist the members of the council in carrying out activities related to watershed management. <p>Observers might be able to be a member of the council in the future when the council extends its functions and missions aside from forest and natural resource management in the future. Being a member is subject to approval of the council.</p>

Appendix-3.4

***Results of the Situation Analysis
(Natural Conditions) of the Watershed***

Appendix-3.4 Results of the Situation Analysis (Natural Conditions) of the Watershed

a. Natural Conditions

Suco	Forest	Soil Fertility	Landslide	Water	Others
Asumau	Fully covered with the dense forest in the Portuguese era. Progress of deforestation during the Indonesian times due to large scale tree cutting	Decline of soil fertility due to shifting cultivation	Occurrence of many landslide	Reduction of volume of water	Decrease of wild animals, such as deer and cockatoo
Faturasa	Expansion of dense forests as medium forests have recovered and become dense forest.	Increase of soil fertility because of land conservation	Occurrence of landslide (still)	Increase of water sources and water volume	Same as above
Fahisoi	Reduction of forest coverage in the area	Decline of soil fertility	Increase of occurrence of landslides	No change in terms of volume and quality	No wild animals
Maumeta	Decrease of medium forests in the area	Same as above	Increase of occurrence of landslides due to cutting trees and shifting cultivation	Same as above	Same as above
Hautoho	Expansion of dense forests owing to the village regulations	Same as suco Faturasa	Decrease of landslide because of less tree cutting	Same as above	Same as above
Fadabloco	Same as above.	Same as above	Decrease of landslide	Same as above	Decrease of wild animals
Fahisoi	Increase of forest cover owing to reduction of shifting cultivation	Increase of soil fertility owing to introduction of soil conservation measures introduced by NGOs.	Some landslides	Increase of volume of water volume Good quality of water during the rainy season	Existence of the village regulations developed in 2003 with the one-month support from World Vision
Manucasa	Increase of forest cover	Same as above	Reduction of occurrence of landslide	No change in volume of water in the 10 major sources in the village	Existence of the village regulations developed in 2013 with the support from World Vision and PNTL
Namoleso	Same as above	Some improvement of soil fertility owing to application of soil conservation measures with the support from WV	Occurrence of landslides, which caused damage to the sources of water in the village	There are 7 sources in the village, which are currently used by the communities.	Existence of the village regulations developed in 2009 with the support from World Vision
Bereleu	Decrease of forest cover due to illegal cutting and shifting cultivation	Decline of soil fertility due to no application of soil conservation measures	Occurrence of landslides	Decrease of volume of water	No village regulations
Asubilitoho	Some improvement of forest conditions because of seedlings distributed by MAF	Some improvement of soil fertility	Increase of landslides	No significant change in water in terms of volume and quality	Village regulations were developed this year.
Fatrilau	Decrease of forest cover due to lack of	Decrease of soil fertility	Occurrence of landslides close to	No significant change in water,	No village regulations

Suco	Forest	Soil Fertility	Landslide	Water	Others
	village regulations		the river,	but more water facilities are needed	

b. Socio-economic Conditions

Sub-district	Living condition	Livelihood
Remexio	<ul style="list-style-type: none"> - Improvement of accessibility to the sources of water - Changing of farming practice from shifting cultivation to fixed farming - Less free grazing - Less wild fire 	<ul style="list-style-type: none"> - Reduction of time to fetch water - Increase of crop production - Reduction of the volume of trees cut for animal fences - Reduction of the incidence of landslide - Reduction of villagers' expenditure for farming
Liquidoe	<ul style="list-style-type: none"> - Improvement of living condition owing to the village regulations - Improvement of road conditions which facilitate the access to market - Improvement of accessibility to the sources of water - Reduction of shifting cultivation - Increase of soil fertility because of introduction of terrace - Reduction of the number of violence cases 	<ul style="list-style-type: none"> - Increase in the selling prices of animals - Increase of production of crops owing to soil conservation - Increase of vegetable production - Increase of income from vegetable roduction

Appendix-3.5

***Vision, Missions, Objectives, and
Functions of the Watershed
Management Council of the Noru
Watershed***

Appendix-3.5 Vision, Missions, Objectives, and Functions of the Watershed Management Council of the Noru Watershed

Section 1: Vision Statement

The Noru watershed management council is a non-profit alliance comprising sucos and sub-district administrative offices concerned and relevant government agencies with an aim to properly protect and manage forests, lands, and water resources in the Noru watershed to improve living conditions and livelihoods of residents in the watershed and stabilize water supply to the downstream areas.

Section 2: Missions

The missions of the Watershed Management Council are set as follows:

- 2-1 to provide guidance and orientation to village leaders in the sucos concerned toward sustainable management of forests and forest-related natural resources (e.g., NTFPs, lands, and water) in the watershed;
- 2-2 to provide leadership in harmonizing the interests and activities of sucos in the watershed to achieve sustainable forests and forest-related natural resource management in the watershed;
- 2-3 to take initiative in planning, implementing, and evaluating a watershed management plan to manage forests and forest-related natural resources in a proper and sustainable manner while improving local livelihoods in the watershed;
- 2-4 to help village leaders in the sucos concerned enhance awareness of sustainable forest and forest-related natural resource management among communities in the respective sucos;
- 2-5 to promote necessary actions for sustainable forest and forest-related natural resource management in the watershed in coordination with relevant government and non-government organizations as well as international organizations;
- 2-6 to help village leaders in the sucos concerned hand over the valuable forests and forest-related natural resources to the future generations in the respective villages; and
- 2-7 to share the experiences in the watershed with local government units (sucos, sub-districts, and districts) in other watersheds in Timor-Leste to promote sustainable forest and forest-related natural resource management at the watershed level.

Section 3: Objective

The Watershed Management Council shall fulfill the missions listed in the preceding section to achieve the following objectives:

- 3-1 to reduce the incidence of environmental degradation events, such as forest/wild fire, illegal exploitation, and free grazing in the watershed;
- 3-2 to improve the conditions of forests and forest-related natural resources, namely, forests, lands/soils, and water, in the watershed;

- 3-3 to maintain and improve livelihoods of local communities in the watershed; and
- 3-4 to enhance the capacity of village leaders as well as communities in the respective villages to manage forests and forest-related natural resources in a proper and sustainable manner.

Section 4: Functions

The Watershed Management Council shall perform the following functions necessary for proper management of the Noru watershed.

- 4-1 to formulate a watershed management plan with the assistance from relevant government and non-government organizations;
- 4-2 to prepare an annual action plan to implement the watershed management plan at the beginning of the year;
- 4-3 to monitor and evaluate the implementation of the annual action plan at the end of the year;
- 4-4 to coordinate the implementation of the watershed management plan with relevant government and non-government organizations;
- 4-5 to convene a regular meeting every quarter to monitor the situations of the watershed and discuss any issues relevant to sustainable management of forests and forest-related natural resources in the watershed;
- 4-6 to adopt a resolution that would encourage all the sucos in the watershed to work on sustainable forest and forest-related natural resource management in the watershed;
- 4-7 to call a meeting whenever circumstances require it; and
- 4-8 to organize a working group (or a committee) to tackle any important issues that would affect the management of the watershed.

Appendix-3.6

***By-Laws of the Watershed
Management Council of the Noru
Watershed***

Appendix-3.6 By-Laws of the Watershed Management Council of the Noru Watershed

Section 1: Name of the Council

- 1.1 The name of the watershed management council of the Noru watershed shall be “the Noru Watershed Management Council.”

Section 2: Scope and Definition

- 2.1 The Watershed Management Council shall be a non-profit alliance which comprises sub-district administrative offices and sucos whose jurisdictions fully or partly overlap with the coverage of the Noru watershed located in Sub-district Remexio and Liquidoe, District Aileu.
- 2.2 The following terms used in this document, unless otherwise specified herein, shall have the meanings described below.
- (1) “CB-NRM” stands for community-based natural resource management, which is an approach introduced by the JICA and MAF joint project to sustainable forest and forest-related natural resource management in Timor-Leste;
 - (2) “Chef de Suco” means the person officially elected as a head of village according to Decree No. 20/II on the Community Leadership and the Election;
 - (3) “Chair-person” means the person who shall be in charge of meetings of the Council and give directions to the members of the Council.
 - (4) “Forest-related natural resources” means the natural resources closely relating to forests, such as water, lands, and non-timber forest products.
 - (5) “Secretariat” means the person or a group of people which shall function to serve as a secretary for the Council.
 - (6) “Watershed” means the hydrological boundaries of the secondary or tertiary tributary of the main river.

Section 3: Membership

- 3.1 All the sucos of which territories overlap with the coverage of the Noru watershed shall be the members of the Noru Watershed Management Council.
- 3.2 Sub-district Administrators of Remexio and Liquidoe and the district/sub-district branches of the relevant National Directorates, namely the National Directorate of Forestry (NDF), the National Directorate of Environment (NDE), and the National Directorate of Water Supply and Sanitation (NDWSS), should be involved in the Council as the members.
- 3.3 The Council shall be composed of the following members:
- (1) Sub-district Administrators of Sub-districts Remexio and Liquidoe;
 - (2) Chef de Suco of Six (6) Susos in Sub-district Remexio;
 - (3) Chef de Suco of Six (6) Susos in Sub-district Liquidoe;
 - (4) Representative of the National Directorates of Forestry (NDF), MAF;

- (5) Representative of the District Office in District Aileu, MAF;
 - (6) Representative of the District Office of National Directorate of Environment (NDE) in District Aileu; and
 - (7) Representatives of Sub-District Offices of National Directorate of Water Supply and Sanitation (DNWSS) in Sub-district Remexio and Liquidoe.
- 3.4 When any of the members are replaced with the successors as a result of suco election and organizational changes in the Government of Timor-Leste, The membership shall be renewed in response to the changes.
- 3.5 If Anyone deemed to be relevant to or have a stake in management and protection of forests and forest-related resources in the Noru watershed express an interest in being a member of the Watershed Management Council, the Council shall examine his/her eligibility and decide if the membership should be granted.

Section 4: Organization

- 4.1 The Watershed Management Council shall be composed of one (1) Chair-person, one (1) Vice Chair-person, one (1) Secretariat and other members. The organizational structure of the Council is shown in **Figure 1**.

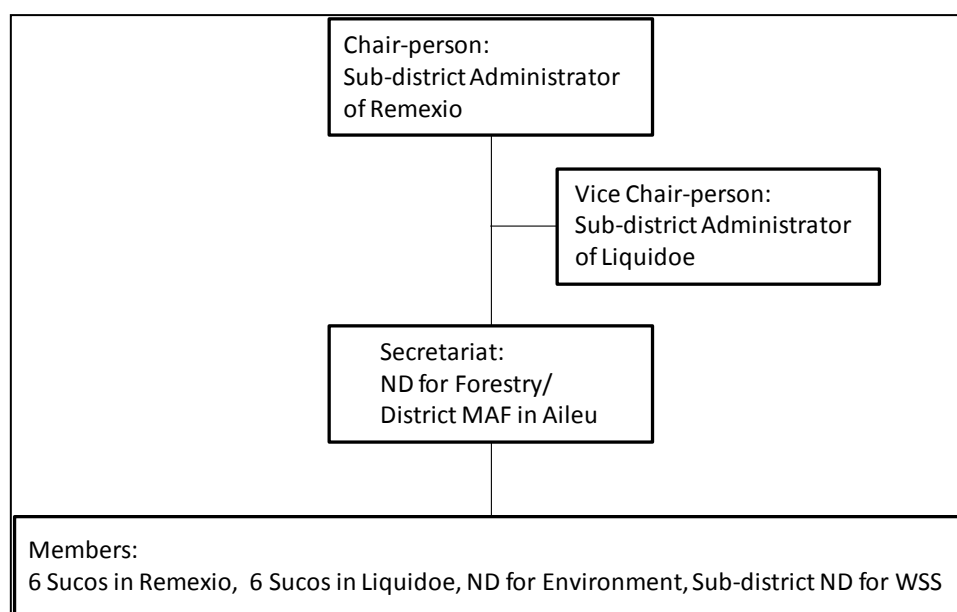


Figure 1 Organizational Structure of the Noru Watershed Management Council

- 4.2 Sub-district Administrator of Remexio shall function as a chair person of the Council, while Sub-district Administrator of Liquidoe shall function as a vice chair person of the same.
- 4.3 NDF and MAF, or its district office in Aileu, shall perform as a secretariat of the Council.
- 4.4 Chefs de Suco of the 12 sucos (e.g., six (6) sucos in Remexio and another six (6) sucos in Lequidoe), sub-district branch offices of NDWSS, and district branch office of NDE shall be other members of the Council.
- 4.5 In case Chair-person cannot fulfill his/her responsibilities for any reason, Vice Chair-person shall take over its roles.

4.6 All members of the Council shall fulfill the roles and responsibilities of the designated positions to which they are appointed. The roles and responsibilities of the respective positions of the Watershed Management Council are presented in **Table 1**.

Table 1 Roles of Responsibilities of the Members of the Watershed Management Council

Position	Roles/Responsibilities
Chair person (Sub-District Administrator of Remexio)	<ul style="list-style-type: none"> ● Convene the regular meeting and ad hoc meeting by the request from the members; ● Issue an invitation to the members; ● Chair the meeting of the council by facilitating and directing discussions, ensuring basic rules in discussions, putting a question to the vote, and announcing decisions. ● Set agenda of the meeting in coordination with Secretariat; ● Give guidance and orientation to the members of the council towards sustainable watershed management; ● Encourage the members of the council to keep on making efforts to achieve sustainable watershed conservation and management; and ● Communicate with other agencies, ministries, national directorates, and other organizations for ensuring of proper watershed management.
Vice Chair person (Sub-District Administrator of Liquidoe)	<ul style="list-style-type: none"> ● Support chair person in fulfilling his/her duties; ● Act as chairperson when chairperson is not aviable; ● Give guidance and orientation to the members of the council towards sustainable watershed management in collaboration with Chairperson; and ● Encourage the members of the council to keep on making efforts to achieve sustainable watershed conservation and management in collaboration with Chairperson.
Secretariat (NDF/District MAF)	<ul style="list-style-type: none"> ● Assist Chairperson/Vice Chairperson in convening the meeting. issuing and delivering invitation letters to members, and handling the meeting; ● Draft agenda of the meeting in coordination with Chairperson and Vice Chairperson; ● Be responsible for documentation activities, such as note taking, preparation of resolution/decision,, etc.; and ● Help Chairperson and Vice Chairperson communicate with other agencies, ministries, national directorates, and organizations for ensuring of proper watershed management.
Council members (Chefs de Sucos)	<ul style="list-style-type: none"> ● Participate in activities arranged by the council, such as meetings and study tours; ● Share ideas and exchange opinions actively in the meetings of the council to solve and settle any issues/problems that would obstruct the achievement of sustainable watershed management; ● Follow the rules and regulations agreed upon by the members; ● Guide communities in the respective villages to ensure that they would follow agreements made by the council; and ● Encourage communities in the respective villages to protect and manage forest and natural resources in a sustainable manner.
Council members (Environment)	<ul style="list-style-type: none"> ● Same as the roles and responsibilities for the council members (chefes de sucos); and ● Support communities in sucos in the watershed in the conducts of environmental protection activities, such as Tara Bandu ceremony, seedling production & reforestation, and environmental education.
Council members (SAS)	<ul style="list-style-type: none"> ● Same as the role and responsibilities for the council members (chefes de sucos); and ● Support communities in sucos in the watershed in the protection of sources of water in the respective villages.

4.7 The Council, or Secretariat specifically, can be assisted by any competent organizations, such as NGOs, in the operations of the Council.

4.8 No member of the Council shall receive any compensation for the performance of his/her duties under the Council.

Section 5: Meetings

- 5.1 The meetings of the Council shall be held at the Sub-district Administrative Offices in Remexio or Liquidoe alternately in principle. The members at the preceding meeting of the Council shall decide and agree with where the next meeting shall be convened.
- 5.2 The Council shall hold the following meetings with its members on a regular basis.
- (1) Quarterly Meeting
 - (2) Annual Meeting
- 5.3 The quarterly meeting shall be held every quarter of the year (e.g., at the beginning of March, June, September, and December). At the meeting, the members of the Council shall discuss any issues and concerns to be addressed to properly manage forests and forest-related natural resources in the watershed and protect livelihoods of communities living in the same.
- 5.4 The annual meeting shall be held at the end of the year or beginning of the year (e.g., at the middle/end of December or beginning of January). At the meeting, the members of the Council shall review and evaluate the situation of the watershed and the activities conducted by the Council for a year.
- 5.5 Special meetings of the Council may be called at any time by Chairperson or a majority of the members if he/they deem/s it necessary to do for the interest of the members as well as the Council.
- 5.6 Notices of the meetings shall be distributed to all members at least one (1) week before the date set for the meetings. The notice shall state the objectives/purposes, time and venue of the meetings.
- 5.7 In case any of the members is not able to attend the meeting, he/she shall designate a proxy for the meeting.
- 5.8 At the meetings, the presence of more than 50% (or more than 9 persons) of the members and their proxies shall be necessary and sufficient to constitute a quorum for official discussions of the Council in addition to the presence of either Chairperson or Vice Chairperson. If the quorum is not present at any meeting, it may be adjourned by the members.

Section 6: Decision Making

- 6.1 Resolutions and any decisions of the Council shall be made, adopted, and effective with the approval of more than 50 % (more than 9 persons) of the official members of the Council at the meeting sufficient to constitute a quorum and duly convened with the presence of Chairperson or Vice Chairperson.
- 6.2 Any decision made without the presence of Chairperson or Vice Chairperson shall be deemed invalid.

Section 7: Committee

- 7.1 The Council, by resolution adopted by a majority of the members, may create a special committee which shall work on specific tasks delegated to it. The members of the special committee shall be appointed by the members of the Council in the meeting.
- 7.2 Meetings of the committee shall be held at such times and places as shall be fixed by the respective committee chairperson or by consensus of a majority of the members of

the committee. Prior notice shall be given to all members of the committee before each meeting.

- 7.3 Unless otherwise provided by resolution of the Council, more than half of the official members of the committee shall constitute a quorum for discussions of the committee.
- 7.4 Any decision of the committee shall be made with approval of a majority of the official members of the committee.

Section 8: Amendments

- 8.1 These bylaws may be altered, amended, repealed or added to with the approval of not more than 50 % of the official members..

Appendix-3.7

***Resolution of the Watershed
Management Council of the Noru
Watershed***

Appendix-3.7 Resolution of the Watershed Management Council of the Noru Watershed

Whereas, the Noru watershed is one of the watersheds which constitute the Laclo river basin and has an important role in the watershed management of the same basin owing to its forest cover and topographic conditions;

Whereas, three (3) sucos in the Noru watershed have developed a mechanism to manage and protect forests and forest-related resources in a sustainable manner with the assistance from a joint project between the Ministry of Agriculture and Fisheries (MAF) and the Japan International Cooperation Agency (JICA);

Whereas, MAF/NDF and Sub-district Administrators of Remexio and Liquidoe have realized that forests and forests-related resources in the Noru watershed should be properly protected and managed by introducing and disseminating the same mechanism in all the sucos concerned with the watershed;

Whereas, All the 12 sucos of which territories fully or partly overlap with the coverage of the Noru watershed have confirmed with each other that sustainable management of forest and forest-related resource management, as well as watershed management are common goal of communities in the respective sucos; and

Whereas, Sub-district Administrators of Remexio and Liquidoe and village leaders of the same 12 sucos have agreed to establish a watershed management council to achieve the aforementioned goal for the future generations of the villages.

NOW, THEREFORE, BE IT RESOLVED by the members of the Watershed Management Council of the Noru Watershed as follows:

Section 1: The following persons are selected as members of the Watershed Management Council until their respective successors are appointed and qualified or until their earlier resignations:

- a. Sub-district Administrator of Sub-district Remexio
- b. Sub-district Administrator of Sub-district Liquidoe
- c. Chef de Suco of Suco Faturasa, Sub-district Remexio
- d. Chef de Suco of Suco Fadabloco, Sub-district Remexio
- e. Chef de Suco of Suco Hautoho, Sub-district Remexio
- f. Chef de Suco of Suco Maumeta, Sub-district Remexio
- g. Chef de Suco of Suco Fahisoi, Sub-district Remexio
- h. Chef de Suco of Suco Asumau, Sub-district Remexio
- i. Chef de Suco of Suco Fahisoi, Sub-district Liquidoe
- j. Chef de Suco of Suco Fatrilau, Sub-district Liquidoe
- k. Chef de Suco of Suco Bereleu, Sub-district Liquidoe
- l. Chef de Suco of Suco Acubili Toho, Sub-district Liquidoe
- m. Chef de Suco of Suco Namcleso, Sub-district Liquidoe
- n. Chef de Suco of Suco Manucasa, Sub-district Liquidoe

- o. Head of Department for Reforestation / Head of Department for Watershed Management, NDF
- p. District Director of MAF District Office in Aileu of MAF
- q. District Officer of National Directorate for Environment in Aileu
- r. Sub-district Officer of National Directorate for Water Supply and Sanitation (NDWSS) in Sub-district Remexio
- s. Sub-district Officer of NDWSS in Sub-district Liquidoe

Section 2: The members of the Watershed Management Council hereby declare and share the vision, missions, objectives, and functions of the Council as presented hereto as **“Vision Statement, Missions, Objectives, and Functions of the Watershed Management Council”** in **Annex-1**.

Section 3: The members of the Watershed Management Council hereby approve the By-laws of the Council, in the form attached hereto as **Annex -2**.

Section 4: These resolutions shall take effect immediately.

Dated: XX XX, 201X

Chairperson

Vice Chairperson

 Sub-district
 Administrator of
 Remexio

 Sub-district
 Administrator of
 Liquidoe

Secretariat

 District Director of
 MAF District Office
 in Aileu

 Chief of Department
 of Reforestation,
 NDF

 Chief of Department
 of Soil and Water
 Conservation, NDF

Members

 Chef de Suco
 Asumau

 Chef de Suco
 Fadabloco

 Chef de Suco
 Fahisoi

XXXXXXXXXX

Chef de Suco
Faturasa

XXXXXXXXXX

Chef de Suco
Hautoho

XXXXXXX

Chef de Suco
Maumeta

XXXXXXXXXX

Chef de Suco
Acubili

XXXXXXXXXX

Chef de Suco
Bereleu

XXXXXXX

Chef de Suco
Fahisoi

Alberto Henrique
Chef de Suco
Fatrila

Manuel Mendonca
Chef de Suco
Manucasa

Aleixo da Costa
Chef de Suco
Namcleso

XXXXXXXXXX

Representative
District Office of
NDE in Aileu

XXXXXXXXXX

Representative
Sub-district Office of
NDWSS in Remexio

XXXXXXX

Representative
Sub-district Office of
NDWSS in Liquidoe

Annex-1: Vision, Missions, Objectives, and Functions of the Watershed Management Council of the Noru Watershed

Section 1: Vision Statement

The Noru watershed management council is a non-profit alliance comprising sucos and sub-district administrative offices concerned and relevant government agencies with an aim to properly protect and manage forests, lands, and water resources in the Noru watershed to improve living conditions and livelihoods of residents in the watershed and stabilize water supply to the downstream areas.

Section 2: Missions

The missions of the Watershed Management Council are set as follows:

- 2-1 to provide guidance and orientation to village leaders in the sucos concerned toward sustainable management of forests and forest-related natural resources (e.g., NTFPs, lands, and water) in the watershed;
- 2-2 to provide leadership in harmonizing the interests and activities of sucos in the watershed to achieve sustainable forests and forest-related natural resource management in the watershed;
- 2-3 to take initiative in planning, implementing, and evaluating a watershed management plan to manage forests and forest-related natural resources in a proper and sustainable manner while improving local livelihoods in the watershed;
- 2-4 to help village leaders in the sucos concerned enhance awareness of sustainable forest and forest-related natural resource management among communities in the respective sucos;
- 2-5 to promote necessary actions for sustainable forest and forest-related natural resource management in the watershed in coordination with relevant government and non-government organizations as well as international organizations;
- 2-6 to help village leaders in the sucos concerned hand over the valuable forests and forest-related natural resources to the future generations in the respective villages; and
- 2-7 to share the experiences in the watershed with local government units (sucos, sub-districts, and districts) in other watersheds in Timor-Leste to promote sustainable forest and forest-related natural resource management at the watershed level.

Section 3: Objective

The Watershed Management Council shall fulfill the missions listed in the preceding section to achieve the following objectives:

- 3-1 to reduce the incidence of environmental degradation events, such as forest/wild fire, illegal exploitation, and free grazing in the watershed;
- 3-2 to improve the conditions of forests and forest-related natural resources, namely, forests, lands/soils, and water, in the watershed;

- 3-3 to maintain and improve livelihoods of local communities in the watershed; and
- 3-4 to enhance the capacity of village leaders as well as communities in the respective villages to manage forests and forest-related natural resources in a proper and sustainable manner.

Section 4: Functions

The Watershed Management Council shall perform the following functions necessary for proper management of the Noru watershed.

- 4-1 to formulate a watershed management plan with the assistance from relevant government and non-government organizations;
- 4-2 to prepare an annual action plan to implement the watershed management plan at the beginning of the year;
- 4-3 to monitor and evaluate the implementation of the annual action plan at the end of the year;
- 4-4 to coordinate the implementation of the watershed management plan with relevant government and non-government organizations;
- 4-5 to convene a regular meeting every quarter to monitor the situations of the watershed and discuss any issues relevant to sustainable management of forests and forest-related natural resources in the watershed;
- 4-6 to adopt a resolution that would encourage all the sucos in the watershed to work on sustainable forest and forest-related natural resource management in the watershed;
- 4-7 to call a meeting whenever circumstances require it; and
- 4-8 to organize a working group (or a committee) to tackle any important issues that would affect the management of the watershed.

**Annex-2: By-Laws
of
the Watershed Management Council of the Noru Watershed**

Section 1: Name of the Council

- 1.1 The name of the watershed management council of the Noru watershed shall be “the Noru Watershed Management Council.”

Section 2: Scope and Definition

- 2.1 The Watershed Management Council shall be a non-profit alliance which comprises sub-district administrative offices and sucos whose jurisdictions fully or partly overlap with the coverage of the Noru watershed located in Sub-district Remexio and Liquidoe, District Aileu.
- 2.2 The following terms used in this document, unless otherwise specified herein, shall have the meanings described below.
- (1) “CB-NRM” stands for community-based natural resource management, which is an approach introduced by the JICA and MAF joint project to sustainable forest and forest-related natural resource management in Timor-Leste;
 - (2) “Chef de Suco” means the person officially elected as a head of village according to Decree No. 20/II on the Community Leadership and the Election;
 - (3) “Chair-person” means the person who shall be in charge of meetings of the Council and give directions to the members of the Council.
 - (4) “Forest-related natural resources” means the natural resources closely relating to forests, such as water, lands, and non-timber forest products.
 - (5) “Secretariat” means the person or a group of people which shall function to serve as a secretary for the Council.
 - (6) “Watershed” means the hydrological boundaries of the secondary or tertiary tributary of the main river.

Section 3: Membership

- 3.1 All the sucos of which territories overlap with the coverage of the Noru watershed shall be the members of the Noru Watershed Management Council.
- 3.2 Sub-district Administrators of Remexio and Liquidoe and the district/sub-district branches of the relevant National Directorates, namely the National Directorate of Forestry (NDF), the National Directorate of Environment (NDE), and the National Directorate of Water Supply and Sanitation (NDWSS), should be involved in the Council as the members.
- 3.3 The Council shall be composed of the following members:
- (1) Sub-district Administrators of Sub-districts Remexio and Liquidoe;
 - (2) Chef de Suco of Sixx (6) Susos in Sub-district Remexio;
 - (3) Chef de Suco of Sixx (6) Susos in Sub-district Liquidoe;

- (4) Representative of the National Directorates of Forestry (NDF), MAF;
 - (5) Representative of the District Office in District Aileu, MAF;
 - (6) Representative of the District Office of National Directorate of Environment (NDE) in District Aileu; and
 - (7) Representatives of Sub-District Offices of National Directorate of Water Supply and Sanitation (DNWSS) in Sub-district Remexio and Liquidoe.
- 3.4 When any of the members are replaced with the successors as a result of suco election and organizational changes in the Government of Timor-Leste, The membership shall be renewed in response to the changes.
- 3.5 If Anyone deemed to be relevant to or have a stake in management and protection of forests and forest-related resources in the Noru watershed express an interest in being a member of the Watershed Management Council, the Council shall examine his/her eligibility and decide if the membership should be granted.

Section 4: Organization

- 4.1 The Watershed Management Council shall be composed of one (1) Chair-person, one (1) Vice Chair-person, one (1) Secretariat and other members. The organizational structure of the Council is shown in **Figure 1**.

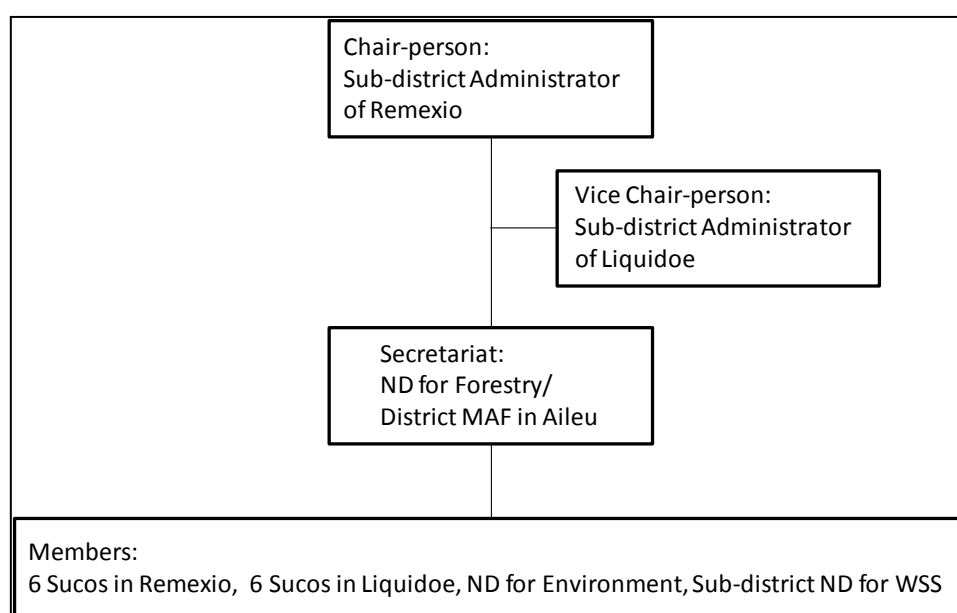


Figure 1 Organizational Structure of the Noru Watershed Management Council

- 4.2 Sub-district Administrator of Remexio shall function as a chair person of the Council, while Sub-district Administrator of Liquidoe shall function as a vice chair person of the same.
- 4.3 NDF and MAF, or its district office in Aileu, shall perform as a secretariat of the Council.
- 4.4 Chefs de Suco of the 12 sucos (e.g., six (6) sucos in Remexio and another six (6) sucos in Liquidoe), sub-district branch offices of NDWSS, and district branch office of NDE shall be other members of the Council.
- 4.5 In case Chair-person cannot fulfill his/her responsibilities for any reason, Vice

Chair-person shall take over its roles.

- 4.6 All members of the Council shall fulfill the roles and responsibilities of the designated positions to which they are appointed. The roles and responsibilities of the respective positions of the Watershed Management Council are presented in **Table 1**.

Table 1 Roles of Responsibilities of the Members of the Watershed Management Council

Position	Roles/Responsibilities
Chair person (Sub-District Administrator of Remexio)	<ul style="list-style-type: none"> ● Convene the regular meeting and ad hoc meeting by the request from the members; ● Issue an invitation to the members; ● Chair the meeting of the council by facilitating and directing discussions, ensuring basic rules in discussions, putting a question to the vote, and announcing decisions. ● Set agenda of the meeting in coordination with Secretariat; ● Give guidance and orientation to the members of the council towards sustainable watershed management; ● Encourage the members of the council to keep on making efforts to achieve sustainable watershed conservation and management; and ● Communicate with other agencies, ministries, national directorates, and other organizations for ensuring of proper watershed management.
Vice Chair person (Sub-District Administrator of Liquidoe)	<ul style="list-style-type: none"> ● Support chair person in fulfilling his/her duties; ● Act as chairperson when chairperson is not available; ● Give guidance and orientation to the members of the council towards sustainable watershed management in collaboration with Chairperson; and ● Encourage the members of the council to keep on making efforts to achieve sustainable watershed conservation and management in collaboration with Chairperson.
Secretariat (NDF/District MAF)	<ul style="list-style-type: none"> ● Assist Chairperson/Vice Chairperson in convening the meeting. issuing and delivering invitation letters to members, and handling the meeting; ● Draft agenda of the meeting in coordination with Chairperson and Vice Chairperson; ● Be responsible for documentation activities, such as note taking, preparation of resolution/decision,, etc.; and ● Help Chairperson and Vice Chairperson communicate with other agencies, ministries, national directorates, and organizations for ensuring of proper watershed management.
Council members (Chefs de Sucos)	<ul style="list-style-type: none"> ● Participate in activities arranged by the council, such as meetings and study tours; ● Share ideas and exchange opinions actively in the meetings of the council to solve and settle any issues/problems that would obstruct the achievement of sustainable watershed management; ● Follow the rules and regulations agreed upon by the members; ● Guide communities in the respective villages to ensure that they would follow agreements made by the council; and ● Encourage communities in the respective villages to protect and manage forest and natural resources in a sustainable manner.
Council members (Environment)	<ul style="list-style-type: none"> ● Same as the roles and responsibilities for the council members (chefes de sucos); and ● Support communities in sucos in the watershed in the conducts of environmental protection activities, such as Tara Bandu ceremony, seedling production & reforestation, and environmental education.
Council members (SAS)	<ul style="list-style-type: none"> ● Same as the role and responsibilities for the council members (chefes de sucos); and ● Support communities in sucos in the watershed in the protection of sources of water in the respective villages.

- 4.7 The Council, or Secretariat specifically, can be assisted by any competent organizations, such as NGOs, in the operations of the Council.
- 4.8 No member of the Council shall receive any compensation for the performance of his/her duties under the Council.

Section 5: Meetings

- 5.1 The meetings of the Council shall be held at the Sub-district Administrative Offices in Remexio or Liquidoe alternately in principle. The members at the preceding meeting of the Council shall decide and agree with where the next meeting shall be convened.
- 5.2 The Council shall hold the following meetings with its members on a regular basis.
 - (1) Quarterly Meeting
 - (2) Annual Meeting
- 5.3 The quarterly meeting shall be held every quarter of the year (e.g., at the beginning of March, June, September, and December). At the meeting, the members of the Council shall discuss any issues and concerns to be addressed to properly manage forests and forest-related natural resources in the watershed and protect livelihoods of communities living in the same.
- 5.4 The annual meeting shall be held at the end of the year or beginning of the year (e.g., at the middle/end of December or beginning of January). At the meeting, the members of the Council shall review and evaluate the situation of the watershed and the activities conducted by the Council for a year.
- 5.5 Special meetings of the Council may be called at any time by Chairperson or a majority of the members if he/they deem/s it necessary to do for the interest of the members as well as the Council.
- 5.6 Notices of the meetings shall be distributed to all members at least one (1) week before the date set for the meetings. The notice shall state the objectives/purposes, time and venue of the meetings.
- 5.7 In case any of the members is not able to attend the meeting, he/she shall designate a proxy for the meeting.
- 5.8 At the meetings, the presence of more than 50% (or more than 9 persons) of the members and their proxies shall be necessary and sufficient to constitute a quorum for official discussions of the Council in addition to the presence of either Chairperson or Vice Chairperson. If the quorum is not present at any meeting, it may be adjourned by the members.

Section 6: Decision Making

- 6.1 Resolutions and any decisions of the Council shall be made, adopted, and effective with the approval of more than 50 % (more than 9 persons) of the official members of the Council at the meeting sufficient to constitute a quorum and duly convened with the presence of Chairperson or Vice Chairperson.
- 6.2 Any decision made without the presence of Chairperson or Vice Chairperson shall be deemed invalid.

Section 7: Committee

- 7.1 The Council, by resolution adopted by a majority of the members, may create a special committee which shall work on specific tasks delegated to it. The members of the special committee shall be appointed by the members of the Council in the meeting.

- 7.2 Meetings of the committee shall be held at such times and places as shall be fixed by the respective committee chairperson or by consensus of a majority of the members of the committee. Prior notice shall be given to all members of the committee before each meeting.
- 7.3 Unless otherwise provided by resolution of the Council, more than half of the official members of the committee shall constitute a quorum for discussions of the committee.
- 7.4 Any decision of the committee shall be made with approval of a majority of the official members of the committee.

Section 8: Amendments

- 8.1 These bylaws may be altered, amended, repealed or added to with the approval of not more than 50 % of the official members..

Appendix-4.1

Objective and Process of the Formulation of the Watershed Management Plan

Appendix-4.1 Objective and Process of the Formulation of the Watershed Management Plan

Day____Month____Year____

1. Objective

The main objective of the formulation of a watershed management plan is to provide the watershed management council the guidelines for watershed management of the xxxxxx watershed in a proper and sustainable manner. Furthermore, the watershed management plan is expected to be used as a basis of a proposal to be submitted to MAF, other ministries/national directorates, NGOs, and international funding institutions for further financial and technical support in the future.

2. Outlines of the Watershed Management Plan

The watershed management plan will comprise the following six (6) chapters:

- Chapter 1 Introduction
- Chapter 2 Present conditions of the watershed
- Chapter 3 Major issues on watershed management
- Chapter 4 Goals, objectives, and approaches
- Chapter 5 Action plan
- Chapter 6 System of and procedures for implementation

3. Process of the Formulation of the Watershed Management Plan

The watershed management councils will have the following meetings/sessions to discuss the content of the watershed management plan.

No.	Purpose of meeting	Participants	Venue	Timeframe
1	Introduction of the present conditions of the watershed	Members of the watershed management council, NDFWM, MAF Municipal office	Sub-municipal Administrative Office	One day
2	Discussion on the goal and guiding principles of the watershed management plan	ditto	ditto	One day
3	Discussion on major activities of the plan	ditto	ditto	One day
4	Discussion on institutional framework and implementation schedule of the plan	ditto	ditto	One day

4. Procedures for the Formulation/Finalization of the Plan

NDFWM with facilitators/NGO will draft the chapters of the watershed management plan. The watershed management council will discuss the chapters drafted by tn NDFWM in the meetings listed above. Having reflected feedbacks or comments from the members, the watershed management plan would be finalized.

End of document

Appendix-4.2

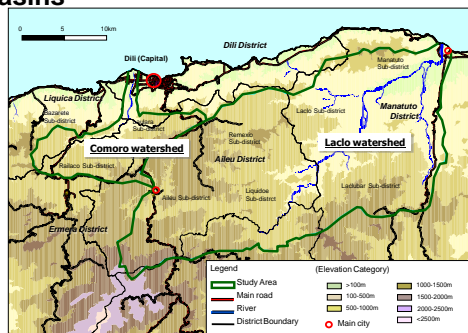
Summary of the Watershed Management Plan for the Laclo and Comoro River Basins

Appendix-4-2: Summary of the Watershed Management Plan for the Lacro and Comoro River Basins

1. Background

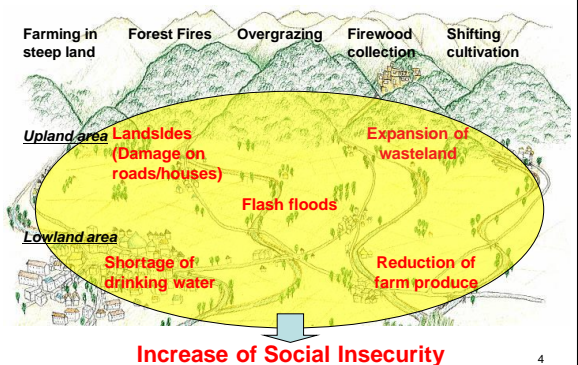
- JICA together with NDF had carried out the development study named "The Study on Community-Based Integrated Watershed Management in Lalo and Comoro River Basins from November 2005 to March 2010.
- As a result of the study, a community-based integrated watershed management plan (hereinafter referred as "the watershed management plan") for the said river basins were developed.
- The watershed management plan is to be used as a master plan for management of forests and other natural resources in the said river basins.

2. Location of Laclo and Comoro River Basins

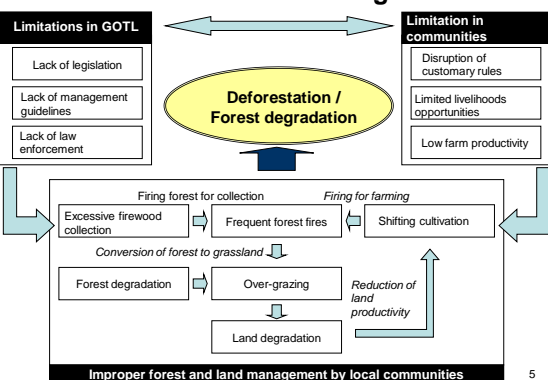


Laclo River Basin (130,000 ha)
Comoro River Basin (20,000 ha)

3. Current Situations of the River Basins



4. Issues on Watershed Management



5. Basic Concepts of the Management Plan

5.1 Goal and Objectives of the CBIWMP

Goal:

to protect and improve watershed environment of the target watersheds

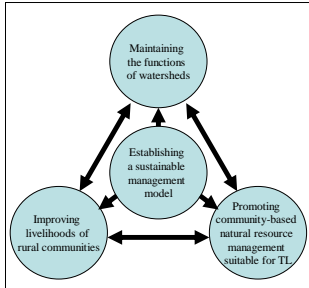
Project Purpose:

to attain sustainable and integrated watershed management by balancing proper land/forest management with poverty alleviation

5. Basic Concepts of the Management Plan

5.2 Basic Approaches to CBIWM

- (1) Maintaining the functions of watersheds
- (2) Improving livelihoods of rural communities
- (3) Promoting community-based natural resource management suitable for Timor-Leste
- (4) Establishing an institutional framework model for watershed management



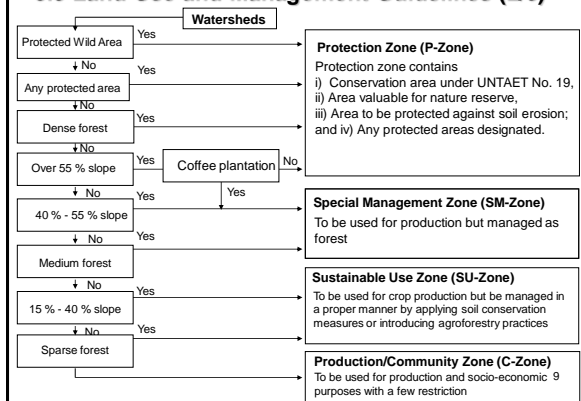
5. Basic Concepts of the Management Plan

5.3 Land Use and Management Guidelines (1/3)

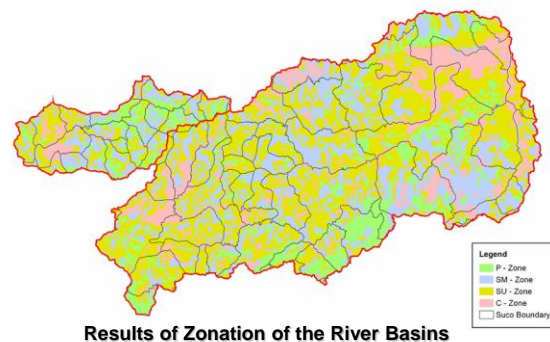
The CBIWMP proposes introducing “zonation” in the management of the target watersheds and classifying the area into four (4) zones according to the geographical features and present land use.

Zone	Possible land use
Protection Zone (P-Z)	Dense forest
Special Management Zone (SM-Z)	Medium forest, Coffee/Fruit tree plantation, Production forest
Sustainable Use Zone (SU-Z)	Coffee/Fruit tree plantation, Upland farm with soil conservation measures or agroforestry techniques, Grazing land under silvo-pastoral management
Community/ Production Zone (C-Z)	Any types of land use

5.3 Land Use and Management Guidelines (2/3)

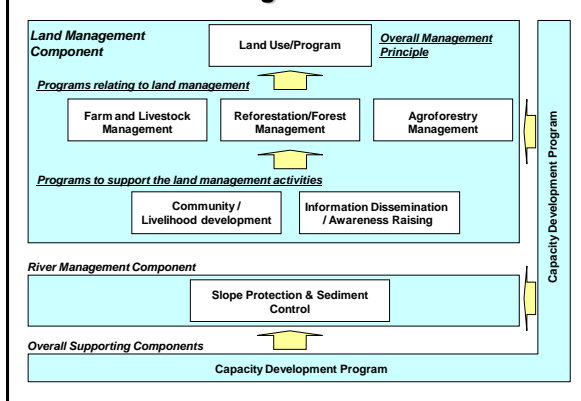


5.3 Land Use and Management Guidelines (3/3)



10

6. Watershed Management Plan



7. Priority Programs/Sub-programs

A total of 12 sub-programs were selected as priority ones among 21 sub-programs.

Program	Priority Sub-program
1. Land Use	1) Participatory Land Use Planning
2. Reforestation/Forest Management	2) Tree Planting Promotion 3) Seedling Production
3. Farm and Livestock Management	4) Community-based Seed Extension 5) Home Garden 6) Grazing Control
4. Agroforestry Management	7) Sustainable Upland Farming Promotion 8) Coffee Plantation Rehabilitation
5. Slope Protection and Sediment Control	9) Initial Gully Control
6. Livelihood Development	10) Income Generation/Cost Saving
7. Information Dissemination / Awareness Rasing	11) Public Awareness Raising
8. Capacity Development	12) Capacity Development

Potential CB-NRM Activities: Participatory Land Use Planning



Present land use mapping



Discussion on
suro rules



Explanation of
draft regulations



Monthly monitoring meeting



Tara Bandu ceremony

13

Potential CB-NRM Activities: Seedling Production and Tree Plantation



Filling soils into pots



Seeding



Establishment of plantation



Land preparation



Planting of seedlings

14

Potential CB-NRM Activities: Community-Based Seed Extension



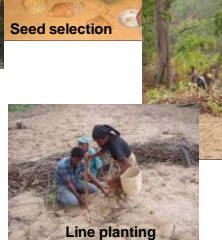
Compost making



Seed selection



Improved farming



Line planting



Land preparation

15

Potential CB-NRM Activities: Home Garden/Vegetable Production



Seedling and Nursery making



Natural pesticide
making & application



Vegetable production



Land preparation



Watering & management

16

Potential CB-NRM Activities: Sloping Agriculture Promotion



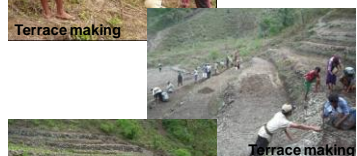
Making and use of A-frame



Terrace making



Crop production in slope land



Terrace making



Land preparation

17

Potential CB-NRM Activities: Coffee Rehabilitation/Improvement



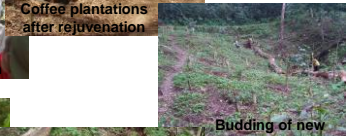
Training on rehabilitation



Coffee plantations
after rejuvenation



Planting of seedlings



Budding of new
branches



Coffee seedling production

18

Potential CB-NRM Activities: Grazing Control



Compost Making



Planting Fodder Crops



Fencing an area for grazing



Protein Bank (Fodder Crop Farm)

Potential CB-NRM Activities: Initial Gully Erosion Control



Gully erosion on a small scale
(or at the initial stage)



Erosion control with wattles

20

8. Implementation Order of the Priority Program/Sub-programs

1st Step:

Participatory Land
Use Planning Sub-
program

2nd Step:

Land Management-related Programs

- Tree Planting Promotion
- Seedling Production Promotion
- Community-based Seed Extension
- Home Garden Sub-program
- Grazing Control with Protein Bank
- Sustainable Upland Farming Promotion
- Coffee Plantation Rehabilitation

Supporting Programs

- Income Generating/Cost Saving
- Public Awareness Campaign

Capacity
Development
Program

21

END

Thank you!

Obrigada barak

22

Appendix-4.3

***The Watershed Management Plan for
the Noru Watershed***

**Watershed Management Plan
for the Noru Watershed in District Aileu,
Timor-Leste**

January 2015

**Noru Watershed Management Council
with the Assistance with
The Project for Community-Based Sustainable Natural Resource
Management jointly implemented by JICA and MAF**

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Chapter 1 Introduction

1.1 Background

Forest degradation/deforestation has rapidly progressed in Timor-Leste. The recent study made by NDF with the assistance from JICS in 2013 indicates that approximately 184,000 ha of forests have been disappeared for the last decade. The same study also reports that about 170,000 ha of dense forests have been degraded into sparse forests for the same period. The rapid forest degradation and deforestation have caused the natural disasters, such as soil erosion, landslides and flash floods, and therefore, further affected the lives of people in the country, especially those living in the critically degraded river basins.

The Laclo river basin is one of the crucially deteriorated watersheds due to the prevalence of wildfire, illegal cutting, fuel wood collection, and cattle grazing in the upper part of the watershed. As it has a crucial function as a source of water to one of the major rice production areas in the country, the restoration of watershed's functions, namely, reduction of sedimentation and stabilization of river flow, is requisite to maintaining rice production in the country. Under such circumstances, the Government of Timor-Leste (GoTL), particularly the Ministry of Agriculture and Fisheries (MAF), has implemented a joint project to reduce the tendency of deforestation and degradation of forests introducing an approach of community-based forest/natural resource management with technical assistance from Japan International Cooperation Agency (JICA) since 2011.

MAF and JICA Project Teams selected the Noru watershed, which is a catchment of one of the 10 tributaries of the Lalco river, as one of the target watersheds for the project because of its importance for maintenance of river flow/water quality in the main stream of the Laclo river. The Project Teams have worked on development of a model for sustainable forest and natural resource management in collaboration with local communities in three (3) sucos located in the Noru watershed in partnership with the NGO, namely RAEBIA-Timor Leste.

Having confirmed that the model has been able to reduce the incidence of wildfire and illegal exploitation of forest resources in the three (3) villages; the MAF and JICA Project Teams decided to further assist other sucos concerned with the Noru watershed in the introduction of the same model in the respective villages to protect forests and natural resources in the watershed.

In May 2014, the MAF and JICA team started consultations with the parties concerned (i.e., sub-district administrative offices, sucos, and district offices in the relevant sectors) about the formation of the watershed management council of the Noru watershed. As a result of a series of discussions, the framework of the Noru Watershed Management Council, which consisted of its vision, missions, functions, and by-laws of the council, was finalized and resolved by the member organizations.

In order to protect and manage forests and its related natural resources in the Noru watershed in a proper and sustainable manner, the Noru watershed management council decided to develop a watershed management plan. The watershed management council with the assistance from the Project Teams and NGO has assessed the present natural and socio-economic conditions, especially vulnerability of the area to climate changes, and

causes of deforestation and forest degradation in the area. The council has also discussed the basic concepts of the watershed management plan, guiding principles for proper watershed management, and activities necessary for watershed management. In the end, the council formulated the watershed management plan described in this document.

1.2 Objectives of the Document

The main objective of this document is to introduce and describe the watershed management plan with necessary actions to be taken and optimum procedures and system for implementation of the plan, so that the plan can be further used as a proposal to be submitted to the GoTL as well as any other funding institutions for financial and technical support in the future.

1.3 Scope of the Watershed Management Plan

The plan targets the Noru watershed, which extends over about 12,000 ha in Sub-districts Remexio and Liquidoe in District Aileu. The main aim of the watershed management plan is to protect and manage forests and forest-related natural resources in a proper manner; therefore, its focus is put on agriculture and forestry works rather than engineering ones for sediment control/river control.

1.4 Composition of the Watershed Management Plan

The Noru watershed management plan is composed of the following six (6) chapters:

- Chapter 1: Introduction
- Chapter 2: Present Conditions of the Noru Watershed
- Chapter 3: Current Issues on Watershed Management
- Chapter 4: Goal, Objectives, and Basic Approaches
- Chapter 5: Action plan
- Chapter 6: Procedures for and System of Implementation

As shown above, Chapter 1 introduces the background and overall scope of the watershed management plan. Chapter 2 describes the current situations of the watershed including its vulnerability to climate changes. Major difficulties in management of the watershed are analyzed in Chapter 3. Chapter 4 explain the overall framework of the watershed management plan (i.e., goal, objectives, and approaches to be taken), while Chapter 5 proposes the necessary actions/interventions to be taken for achievement of the goal of the watershed management plan. The last chapter, Chapter 6, give details of how the plan should be implemented.

Chapter 2 Present Conditions of the Noru Watershed

2.1 Location and Administrative Situations of the Watershed

The Noru river is one of the tributaries of the Lacleo river. It starts from the borders between Sub-district Aileu and Sub-districts Remexio as well as Liquidoe and flows along the border between Sub-district Remexio and Liquidoe up to the conjunction with another tributary of the Lacleo river, the Eraibanaubere river, which is located at the border with Sub-district Lacleo/Laclubar as shown in Figure 2-1. The total length of the Noru river is approximately 25 km and its catchment covers about 12,852 ha of the area.

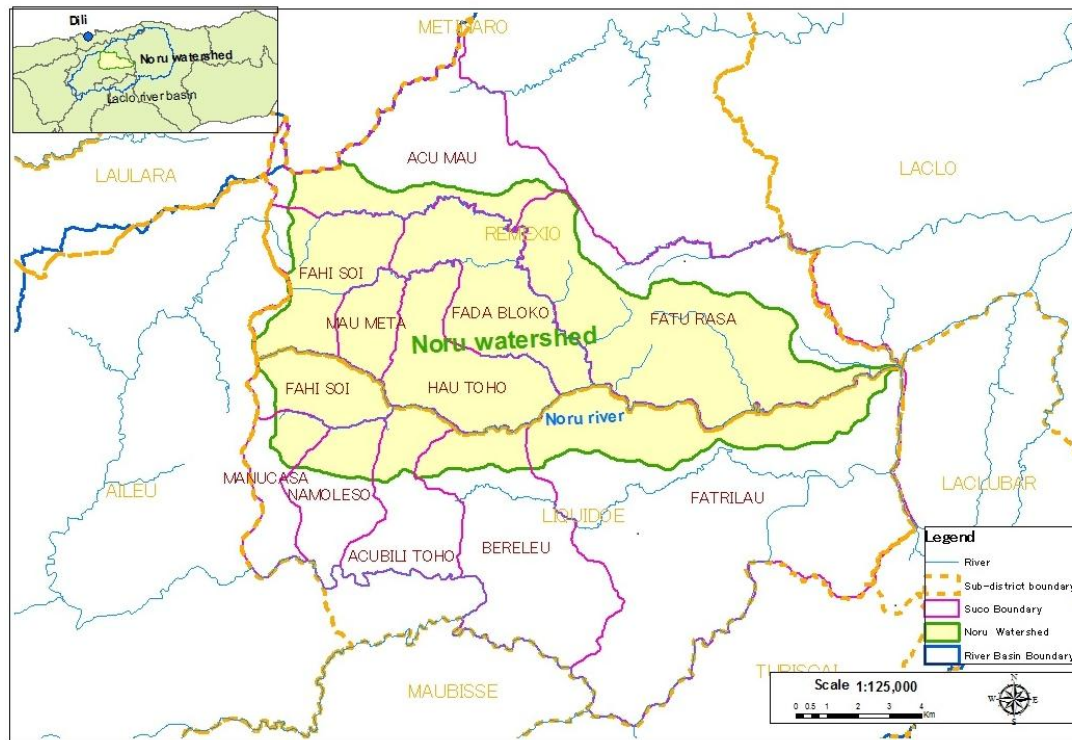


Figure 2-1 Location of the Noru Watershed

Administratively, the catchment extends a total of 12 sucos in two (2) sub-districts, namely six (6) sucos in Sub-district Remexio and another six (6) sucos in Sub-district Liquidoe as tabulated below.

Table 2-1 Sucos related to the Watershed

Sub-district	Sucos	Total Area	Area under the watershed
Remexio	Acumau	3,875 ha	742 ha
	Fadabloco	1,766 ha	1,766 ha
	Fahisoi	1,404 ha	1,200 ha
	Faturasa	4,819 ha	3,334 ha
	Hautoho	1,528 ha	1,528 ha
	Maumeta	533 ha	533 ha
Liquidoe	Acubilitoho	1,272 ha	361 ha
	Belereu	2,685 ha	411 ha
	Fahisoi	803 ha	713 ha
	Faturilau	7,791 ha	1,700 ha
	Manucasa	784 ha	215 ha
	Nameloso	1,045 ha	338 ha
Remexio/Liquidoe	Others (Suco Saboria, etc)		11 ha
Total		28,316 ha	12,852 ha

Source:

2.2 Natural Conditions

2.2.1 Climate (Rainfalls and Temperature)

Like in other parts in Timor-Leste, the watershed is under the monsoon type climate characterized by clear distinction between wet and dry seasons. Northwest monsoon winds prevail from November to March, (4~5 months) bringing the principal wet season to the area. The dry season is caused by southeast trade winds which prevail from May until October (7~8 months).

As no rainfall measurement has been made in the area, even in the Indonesian time, there is no data of rainfalls in the watershed. The rainfall data collected at the stations in the vicinity of the watershed, namely Dili, Aileu, and Manatutu, are used for characterization of the rainfall pattern in the area.

Table 2-2 Monthly Rainfall Distribution and Annual Average at District Capital

(Unit: mm)

District central	Jan	Feb	Mar	April	May	June	July	Aug	Sept.	Oct.	Nov	Dec	Average	Elevation (m)
Dili	156	125	147	115	74	43	22	17	15	26	70	138	940	0~100
Aileu	326	248	179	108	3	33	7	8	5	190	184	225	1,514	900
Manatutu	116	118	84	57	38	23	12	1	6	11	27	80	573	0~60

Source: ALGIS, based on the data between 1962 and 1974 except for Dili (1953-1999) and Aileu (2004-2005).

Although there is available rainfall data at the rainfall stations of MAF between 2006 and 2009, it was not taken into consideration due to lack of reliability.

The data can suggest that the watershed might have the following characteristics in its rainfall pattern:

- ▶ The average annual rainfall may be more or less 1,000 mm ranging from 600 mm to 1,000 mm;
- ▶ The higher the elevation in the area is, the higher the rainfall has;
- ▶ The lower part close to the conjunction with the Eraibanaubere river may be the driest part in the watershed; and
- ▶ The rainfalls mainly concentrate on five (5) months from December to April.

Likewise, there is no other climate data collected in the area. The average temperature in the watershed is assumed rather hotter than the one in Aileu town, which is 21 °C, but lower than the one in Dili, which is 26 °C.

2.2.2 Slopes

As the watershed is located in the upper to middle part of the Lacro river basin, the steep lands which have more than 25 % occupy more than 60 % of the total area of the watershed. The slope composition of the watershed is summarized as follows.

Table 2-3 Degree of Slopes in the Noru Watershed

Sloping ranges	Area (ha)	Ratio (%)
0-8 %	372	2.9
8-15%	990	7.7
15-25%	2,817	21.9
25-40%	5,122	39.9
40-55%	2,560	19.9
> 55%	991	7.7
Total	12,852	100.0

Source: JICA Study Team

Figure 2-2 shows the distribution of sloping areas in the watershed.

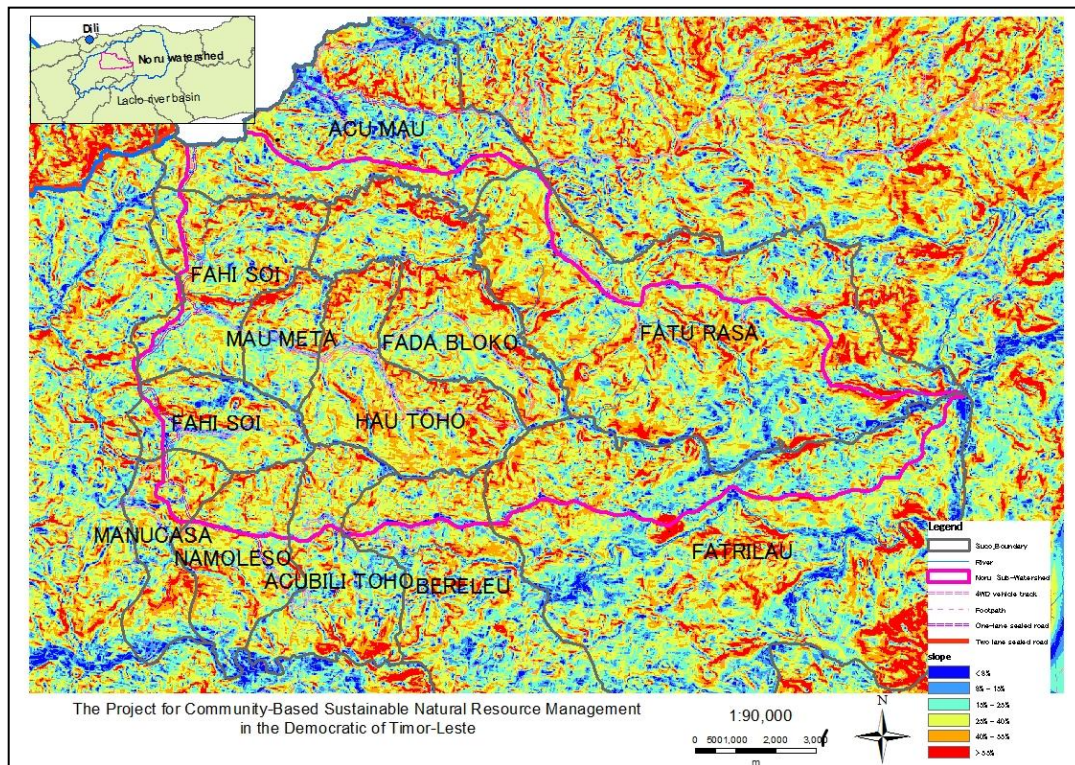


Figure 2-2 Slope Map of the Noru Watershed

2.2.3 Elevation

The elevation of the Noru watershed ranges from 330 m to 1,500 m above sea level. The ridge of the watershed runs along the borders between Sub-district Aileu and the two sub-districts, Remexio and Liquidoe, while the lowest part is located at the confluence of the Noru and Eraibanaubere rivers at the east end of Suco Faturasa (Remexio) and Faturirau (Liquidoe).

2.2.4 Land Use and Vegetation Covers

The results of the assessment made by the JICA and MAF joint study named “the Study on Community-Based Integrated Watershed Management in the Lacleo and Comoro River Basins,” which had been implemented from 2005 to 2010, were fully referred to determine the present land use and vegetation cover of the Noru watershed. The assessment of the said study was made by using the Landsat imageries taken in the different two seasons in 2003, which were further supplemented by the aerial photos taken in 2003. The results reveal that the vegetation cover and land use of the Noru watershed can be classified into the following eight (8) classes.

Table 2-4 category of Vegetation and Land Use

Category of Vegetation and Land use	Criteria of categorization
1. Forests	
1-1: Closed forest (natural)	Canopy closure : > 70%
1-2: Medium forest (natural)	Canopy closure : 30 - 70 %
1-3: Woodland (natural)	Canopy closure : 15 - 30 %
2. Shrub land	Dominated by shrubs
3. Grassland (including grazing lands and upland farms)	Dominated by grass (No woody vegetation)
4. Coffee plantation	Coffee with shade tree (Casuarina/Falcata)
5. Bare land (including grazing lands and upland farms)	No vegetation or burned grassland
6. Sandbar/River bed	

Source: Final Report of the Study on Community-Based Integrated Watershed Management in the Laclo and Comoro River Basins, JICA, March 2010

Figure 2-3 shows the present land use and vegetation map covering the watershed. Areas distributed to each land use/vegetation class in the respective villages as well as the watershed are presented in **Table 2-5**.

Table 2-5 Areas of Each Land Use Class in the Watersheds

Land use class	Noru watershed	
	(ha)	(%)
1. Forests	5,005.4	38.9
1-1: Closed forest (natural)	600.5	4.7
1-2: Medium forest (natural)	2,705.3	21.1
1-3: Woodland (natural)	1,699.6	13.2
2. Shrub land	4,898.3	38.1
3. Grassland	1,065.4	8.3
4. Coffee plantation	95.1	0.7
5. Bare land	1,685.0	13.1
6. Sandbar/River bed	101.5	0.8
Total	12,851.3	100.0

Source: Final Report of the Study on Community-Based Integrated Watershed Management in the Laclo and Comoro River Basins, JICA, March 2010

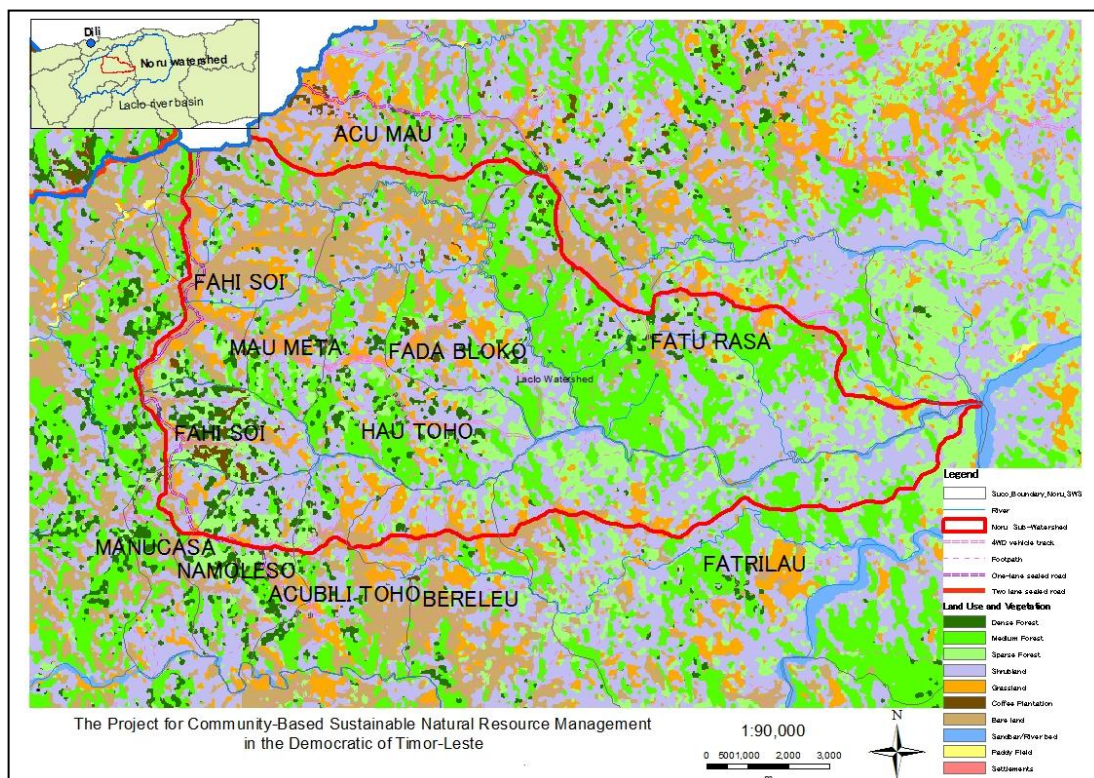


Figure 2-3 Present Land Use and Vegetation Map of the Noru Watershed

2.2.5 Potential of Soil Erosion

The same study made by JICA and MAF also assessed the potentials of soil erosion in the Laclo and Comoro river basins using the method of USEL. The study classified the villages in the river basins into five (5) grades based on the severity of potential risk, namely i) Severe, ii) High, iii) Moderate, iv) Low, and v) Very low. The following table shows the potential risks of soil erosion in the 12 sucos related to the Noru watershed.

Table 2-6 Potentials of Soil Erosion in the Watersheds

Part of Sucos	V. Low		Low		Moderate		High		Sever		Total	
	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%
Remexio	388	52%	19	3%	22	3%	23	3%	291	39%	742	100%
	1,029	58%	21	1%	26	1%	34	2%	657	37%	1,766	100%
	594	49%	26	2%	32	3%	38	3%	510	43%	1,200	100%
	1,587	48%	87	3%	108	3%	117	4%	1,434	43%	3,334	100%
	822	54%	22	1%	26	2%	35	2%	624	41%	1,528	100%
	296	56%	14	3%	23	4%	32	6%	168	31%	533	100%
Liquidoe	193	54%	10	3%	13	3%	16	4%	130	36%	361	100%
	221	54%	11	3%	15	4%	16	4%	148	36%	411	100%
	482	68%	24	3%	24	3%	28	4%	155	22%	713	100%
	921	54%	47	3%	60	4%	68	4%	604	36%	1,700	100%
	132	61%	7	3%	8	4%	8	4%	60	28%	215	100%
	199	59%	7	2%	10	3%	14	4%	108	32%	338	100%
	6,864	53%	295	2%	367	3%	429	3%	4,889	38%	12,841	100%
Total	388	52%	19	3%	22	3%	23	3%	291	39%	742	100%

Source: Final Report of the Study on Community-Based Integrated Watershed Management in the Laclo and Comoro River Basins, JICA, March 2010

As shown above, about 41 % of the watershed are considered highly susceptible to surface soil erosion. The watershed and the concerned sucos might be severely affected if forest degradation progresses as it is and the area has heavy rains during the rainy season.

2.3 Soico-Economic Conditions

2.3.1 Demography

It is difficult to identify the exact number of households and population living within the watershed, since no inventory survey focusing exclusively on the watershed has been made. However, the demographic data of the 12 sucos can be substituted for those of the watershed. The following table shows the demographic conditions of the 12 sucos related to the watershed in 2004 and 2010.

Table 2-7 Population in the Sub-District in and around the Noru Watershed

Sub-district	Suco	2004 Census <1		2010 Census <2		Population Increase (%)
		No. of family	Population	No. of family	Population	
Remexio	Acumau	315	1,775	357	2,491	6.72
	Fadabloco	186	927	323	2,214	23.14
	Fahisoi	249	1,265	184	1,190	-0.99
	Faturasa	295	1,538	148	1,083	-4.93
	Hautoho	302	1,555	137	931	-6.69
	Maumeta	87	362	87	500	6.35
	Sub-total	1,434	7,422	1,236	8,409	2.22
Liquidoe	Acubilitoho	228	975	206	839	-2.32
	Belereu	151	685	179	1,153	11.39
	Fahisoi	325	1,464	187	1,216	-2.82
	Faturilau	136	668	98	672	0.10
	Manucasa	103	443	92	440	-0.11
	Nameloso	279	1,209	187	1,072	-1.89

Sub-district	Suco	2004 Census <1		2010 Census <2		Population Increase (%)
		No. of family	Population	No. of family	Population	
	Sub-total	1,222	5,444	949	5,392	-0.16
Total	13 Sub-districts	2,656	12,866	2,185	13,801	1.21

Source: <1: The 2004 Census of Population and Housing (2004), DNS

<2: The Population and Housing Census (2010), NSD and UNEPA

As indicated in the table above, the population of the area has increased by 1.21 % per annum. If the population increase will be maintained as it is, the total population in the watershed would be twice for 58 years. Hence, the importance of proper land management would increase, as the population pressure on lands and forests will be also increasingly heightened

2.3.2 Agricultural Production

(1) Production of crop

There is no data specifically showing the agricultural production in the watershed as well as the 12 sucos concerned. As the homogeneity of agricultural conditions is high among the sucos in the watershed, the results of the household interview survey conducted by the JICA-MAF CB-NRM Project in three (3) sucos (i.e., Sucos Faturasa, Fadaboco, and Hautoho) in 2011 are used for clarification of the agricultural conditions in the watershed.

The major crops produced in the watershed are maize, cassava, sweet potato, and beans, which are generally planted in the same farm in a mixed planting manner. The average cropped area for the major crops is estimated at about 1 ha, while the average productivity of maize is less than 1 ton/ha. The average cropped areas and yields of the major crops in the three (3) sucos are shown below.

Table 2-8 Average Cropped Areas and Volumes of Production of the Major Crops per Household in Three (3) Sucos (i.e., Suco Faturasa, Fadaboco, and Hautoho)

Suco	Maize <1		Cassava <1		Sweet potato <1		Peanut / Beans <2		Coffee	
	Cropped area	Production	Cropped area	Production	Cropped area	Production	Cropped area	Production	Cropped area	Production
Faturasa	(ha/HH) 1.0	(ton/HH) 0.50	(ha/HH) 1.0	(ton/HH) 0.50	(ha/HH) 1.0	(ton/HH) 0.40	(ha/HH) 1.0	(ton/HH) 0.10	(ha/HH) 0.6	(ton/HH) 0.12
Fadaboco	1.0	0.50	1.0	0.40	0.9	0.27	0.3	0.03	0.9	0.18
Hautoho	1.0	0.50	1.1	0.66	1.1	0.55	0.4	0.04	0.9	0.18

Source: The Project for Community-Based Sustainable Natural Resource Management, November 2013, JICA

Note: <1 They are planted in the same plot in a mixed cropping way.

<2 Peanut is generally planted separately from other crops, while other beans such as red beans are generally mixed with other crops such as maize.

(2) Farming practices

In general, households in the watershed have one (1) or two (2) farm/s which is/are used for crop production every year and several farms which are used on a rotation basis. In some farms in the watershed, especially those in the said three (3) sucos, soil conservation measures, such as stone terraces, bench terraces, and contour compost terraces, have been already applied to parts of the permanent farms. However, the same techniques have not been introduced to the majority of the existing farms in the watershed.

Although the improved farming system has been introduced in the said three (3) sucos, the majority of farmers in the watershed have still followed the conventional way of farming. The following table explains the key features of both conventional and improved farming systems.

Table 2-9 Comparison between Conventional Practice and Improved Farming System

Farming practices	Conventional practice	Improved farming system
Clearing	◆ Slash and burning	◆ Slashing ◆ Collection of grasses for making compost or putting them into contour ditches
Compost application	◆ None	◆ Preparation of compost using grasses and animal dung
Land preparation	◆ No tillage (No plowing) ◆ Male holes for planting ◆ No application of compost	◆ Plowing (by manual) ◆ Application of compost as basal fertilizer
Seeding/planting	◆ Random sowing ◆ mix planting of several crops	◆ Line sowing ◆ Mix planting of two to three crops
Maintenance	◆ Weeding (Once) ◆ No additional fertilization	◆ Weeding (a few times) ◆ Application of liquid fertilizer
Post harvesting	◆ Hanging of maize cobs on trees	◆ Shelling grains after drying and storage of grains into a jerry can

Source: JICA Project Team

2.3.3 Animal Production

Livestock animals are literarily considered as assets which can be used as offerings for ceremonial evens (e.g., marriage, funeral, and ancestral worship) and for any emergent expenditures. Almost all the families in the watershed own some livestock animals, especially pigs and goats. Some families, especially those in Suco Faturasa, hold a number of heads of cattle and buffalo, but the majority of them hold a few heads of cattle/buffalo in addition to pigs/goats.

2.3.4 Food Security

The household interview survey made by the CB-NRM Project in Sucos Faturasa, Fadabloco, and Hautoho indicated that the majority of communities in the sucos have faced a seasonal shortage of food between November/December and February/March. The main reasons for food insecurity are considered low productivity, limited cropping area, high loss during storing, and lack of opportunities to earn cash income. This tendency seems to prevail almost all the hilly and mountainous areas in Timor-Leste, as the assessment report made by FAO/WFP in 2007 indicates that more than 40 % of population was considered as food insecure or highly vulnerable as shown below.

Table 2-10 Food Security Classification among People in Timor-Leste (FAO/WFP, 2007)

Food insecurity	Households with generally poor or borderline food consumption and very weak food access; or households with weak or very weak access and poor consumption.	20 %
Highly vulnerable	Food-access and/or food-consumption are so insufficient that these households are close to being food insecure.	23 %
Moderately vulnerable	Food-access and/ or consumption are not good enough to categorize them as food secure.	21 %
Moderately vulnerable	In general, fairly good to good food consumption and medium to good food access, includes also “good access + borderline consumption” and “good consumption	36 %
Food security	In general, fairly good to good food consumption and medium to good food access, includes also “good access + borderline consumption” and “good consumption	100 %

Source: Special Report by FAO/WFP Crop and Food Supply Assessment Mission to Timor-Leste (June 2007)

The following table shows the results of the assessment on the food balance in Timor-Leste in 2007.

Table 2-11 Assessment of the Food Balance in Timor-Leste in 2007 (FAO/WFP, 2007)

1. Total Availability	70,820	26,740	26,909	124,469
1-1 Opening stocks	1,000	0	0	1,000
1-2 Production	69,820	26,740	26,909	123,469
2. Total Utilization	70,821	113,104	26,909	210,833
2-1 Food Use	89,902	74,918	14,984	179,803
2-2 Seed, Feed & Losses	18,974	2,249	807	22,030
2-3 Closing Stocks	1,000	8,000	0	9,000
2-4 Cross-commodity substitution	39,055	27,937	11,118	0
3. Import Requirements	0	86,364	0	86,364
3-1 Anticipated Commercial Imports	0	71,000	0	71,000
4. Uncovered deficit <3	0	15,364	0	15,364

Note: <1 Milling rate of paddy to rice is estimated at 60 percent.

<2 By Ministry of Development for Strategic Reserve

<3 Uncovered (through food aid)

<4 In cereal equivalent.

Source: Special Report by FAO/WFP Crop and Food Supply Assessment Mission to Timor-Leste (June 2007)

Communities in the watershed have taken the following strategies to cope with the shortage of food:

- i) reduction of the number of meals;
- ii) reduction of the amount of food;
- iii) consumption of alternative crops (e.g., cassava and sweet potato); and
- iv) consumption of emergency crops (e.g., kontas and wild yam).

2.3.5 Estimated Income Level

The interview survey made by the CB-NRM Project also estimated the average annual income per family in Suco Faturasa, Fadabloco, and Hautoho at US\$ 829, 954, and 760, respectively. These data suggest that the economic conditions in the watershed area are likely in poor conditions as compared to the national average. The household income and expenditure survey conducted by the National Directorate of Statistics in 2011 on a nationwide scale reported that the average monthly income per family in the rural area was estimated at about US\$ 310 including the saving of food expenditures. Both data can not necessarily be compared with one another directly as the targets of the surveys were different, but the data could suggest the tendency of the watershed as described above.

2.4 Vulnerability to Climate Changes

2.4.1 Projected Climate Changes

Climate change is considered as a foreseeable threat even in Timor-Leste. Recently the rainfall patterns not only in the watershed but also on a national level have varied from year to year; therefore, the agricultural production has drastically fluctuated. The climate condition seems to have been predictable in the country.

National Adaptation Programme of Action (NAPA) on Climate Change submitted by the GoTL to UNFCCC in December 2010 projected the climate changes in Timor-Leste for the next 30 years as outlined below.

Table 2-12 Projected Climate Changes for the Next 30 Years

Table 2.12.1 Projected Climate Changes for the Next 30 Years

Parameter	Changes																																	
Temperature	<p>Overall, the temperature will increase without significant variability across the seasons. Extreme temperature events are expected to increase in intensity and length. The following table shows the projected changes in temperature for the next 30 years.</p> <table><tr><th rowspan="2">Period</th><th colspan="3">Projected changes (°C)</th></tr><tr><th>2020</th><th>2050</th><th>2080</th></tr><tr><td>Annual</td><td>+0.8</td><td>+1.5</td><td>+2.2</td></tr><tr><td>Dec.- Feb.</td><td>+0.7</td><td>+1.5</td><td>+2.2</td></tr><tr><td>Mar. - May</td><td>+0.8</td><td>+1.5</td><td>+2.2</td></tr><tr><td>Jun. – Aug.</td><td>+0.7</td><td>+1.5</td><td>+2.1</td></tr><tr><td>Sep. – Nov.</td><td>+0.9</td><td>+1.5</td><td>+2.1</td></tr></table> <p>Source: Timor-Leste National Adaptation Programme of Action to Climate Change</p>	Period	Projected changes (°C)			2020	2050	2080	Annual	+0.8	+1.5	+2.2	Dec.- Feb.	+0.7	+1.5	+2.2	Mar. - May	+0.8	+1.5	+2.2	Jun. – Aug.	+0.7	+1.5	+2.1	Sep. – Nov.	+0.9	+1.5	+2.1						
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Sep. – Nov.	+0.9	+1.5	+2.1																															
Rainfall	<p>The following changes are predicted in rainfalls in Timor-Leste.</p> <ul style="list-style-type: none">- The mean annual rainfalls are expected to increase;- Dry season is expected to become drier; and- The intensity of extreme rainfall events is expected to increase, but the frequency of the events will decline. <p>Projected changes in rainfalls in the country for the next 30 years are tabulated below.</p> <table><tr><th rowspan="2">Period</th><th colspan="3">Amount of rainfalls</th><th rowspan="2">Rainfall intensity projections</th></tr><tr><th>2020</th><th>2050</th><th>2080</th></tr><tr><td>Annual</td><td>+ 2%</td><td>+ 4%</td><td>+ 6%</td><td>+ 1-2%</td></tr><tr><td>Dec.- Feb.</td><td>+ 3%</td><td>+ 5%</td><td>+ 6%</td><td>+ 2-4%</td></tr><tr><td>Mar. - May</td><td>+ 4%</td><td>+ 5%</td><td>+ 5%</td><td>+ 2-4%</td></tr><tr><td>Jun. – Aug.</td><td>0%</td><td>0%</td><td>- 5%</td><td>+ 6-8%</td></tr><tr><td>Sep. – Nov.</td><td>0%</td><td>0%</td><td>- 1%</td><td>+ 4-6%</td></tr></table> <p>Source: Timor-Leste National Adaptation Programme of Action to Climate Change</p>	Period	Amount of rainfalls			Rainfall intensity projections	2020	2050	2080	Annual	+ 2%	+ 4%	+ 6%	+ 1-2%	Dec.- Feb.	+ 3%	+ 5%	+ 6%	+ 2-4%	Mar. - May	+ 4%	+ 5%	+ 5%	+ 2-4%	Jun. – Aug.	0%	0%	- 5%	+ 6-8%	Sep. – Nov.	0%	0%	- 1%	+ 4-6%
Period	Amount of rainfalls			Rainfall intensity projections																														
	2020	2050	2080																															
Annual	+ 2%	+ 4%	+ 6%	+ 1-2%																														
Dec.- Feb.	+ 3%	+ 5%	+ 6%	+ 2-4%																														
Mar. - May	+ 4%	+ 5%	+ 5%	+ 2-4%																														
Jun. – Aug.	0%	0%	- 5%	+ 6-8%																														
Sep. – Nov.	0%	0%	- 1%	+ 4-6%																														
Tropical cyclones	<p>The frequency and length of the event are expected to decrease, but its intensity is expected to become high.</p>																																	

Source: National Adaptation Programme of Action (NAPA) on Climate Change, GoTL, 2010

Hence, the climate conditions of the watershed are also expected to change in the following ways:

- ▶ In the dry season, the temperature might become high, while the precipitation in might become less;
- ▶ In the rainy season, the intensity of rainfalls, such as hourly rainfall intensity, might become high, and the length of rainfalls might be prolonged;
- ▶ The strength of wind might become high; and
- ▶ The rainfall patterns will fluctuate from year to year.

2.4.2 Potential Impacts on Communities in the Watershed

Considering the possible climate changes in the watershed, the Noru Watershed Management Council assessed the potential impacts on the living and economic conditions in the watershed as follows.

Table 2-13 Potential Impacts on the Living and Economic Condition of Communities in the Watershed

Sector	Potential Impacts caused by Climate Changes <1
Agriculture	<ul style="list-style-type: none"> ◆ The yield of maize may be drastically reduced by high temperature effects on pollination and kernel set. ◆ The yield of cassava may be increased as cassava requires high temperature and high solar radiation for optimal leaf development. ◆ Warmer temperature may increase the incidence of pest and disease damage. ◆ Crop damage caused by storm and strong wind might increase. ◆ Some farms may be eroded due to the expansion of gully erosion during the rainy season. ◆ The productivity of livestock animal may be reduced due to limited sources of food and lack of water during the dry season. ◆ Soil fertility may drastically decline due to the progress of decomposition of soil organic matters during the dry season and frequent surface erosion during the rainy season.
Forest and Agroforest	<ul style="list-style-type: none"> ◆ The incidence of forest fires may increase during the rainy season. ◆ The incidence of landslides may increase especially in steep lands. ◆ Some species may not grow well in the watershed due to the increase of temperature. ◆ The growth of coffee and orange may be affected due to high heat in the dry season. ◆ Forests along small streams may be washed out due to heavy rains during the rainy season.
Infrastructure	<ul style="list-style-type: none"> ◆ Rural road networks may be damaged by heavy rainfalls and/or storms. ◆ Natural springs being used as sources of water may be damaged by strong and heavy rains during the rainy season. ◆ Risk of damage to houses and other infrastructure may increase due to the occurrence of strong wind/typhoons and increase of incidence of wildfires and landslides.
Water, Sanitation, and Health	<ul style="list-style-type: none"> ◆ The access to water may be reduced as some existing sources may be dried up. ◆ The volume of water may be reduced during the dry season, while the quality of water may be affected by contamination during the rainy season. ◆ The incidence of respiratory and associated infections may increase in the dry season. ◆ The incidence of water-borne diseases and infections may increase during the rainy season. ◆ Risk of food contamination and poisoning may increase during the rainy season. ◆ Risk of injuries and deaths by accidents caused by natural events may increase.

Note: The potential impacts were first identified by the MAF and JICA Project Teams based on the “Timor-Leste National Adaptation Programme of Action to Climate Change (2010)” and “Climate Change and Population Growth in Timor-Leste: Implications for Food Security (2012)” and the identified potentials were reviewed and confirmed by the watershed management council.

2.4.3 Vulnerability of the Watershed to Climate Changes

As described above, the living and socio-economic conditions of communities in the watershed are considered highly vulnerable to climate changes. It is, therefore, necessary to strengthen the resilience of communities in the watershed, who heavily rely on conventional farming on sloping lands as their main livelihoods, use natural springs as main sources of drinking water, and have high risks of natural disasters and associated events, such as typhoons, strong winds, wildfires, and landslides.

Chapter 3 Current Issues on Watershed Management and Stakeholders relevant to Watershed Management

3.1 Issues on Watershed Management

3.1.1 History of Forest Degradation

Based on the discussions on the current situations of the Noru watershed among the members of the Noru watershed management council and the results of the village profile surveys conducted in some of the sucos concerned with the Noru watershed, it is judged that severe deforestation and forest degradation started in the Indonesian occupation and have continued until today as summarized below.

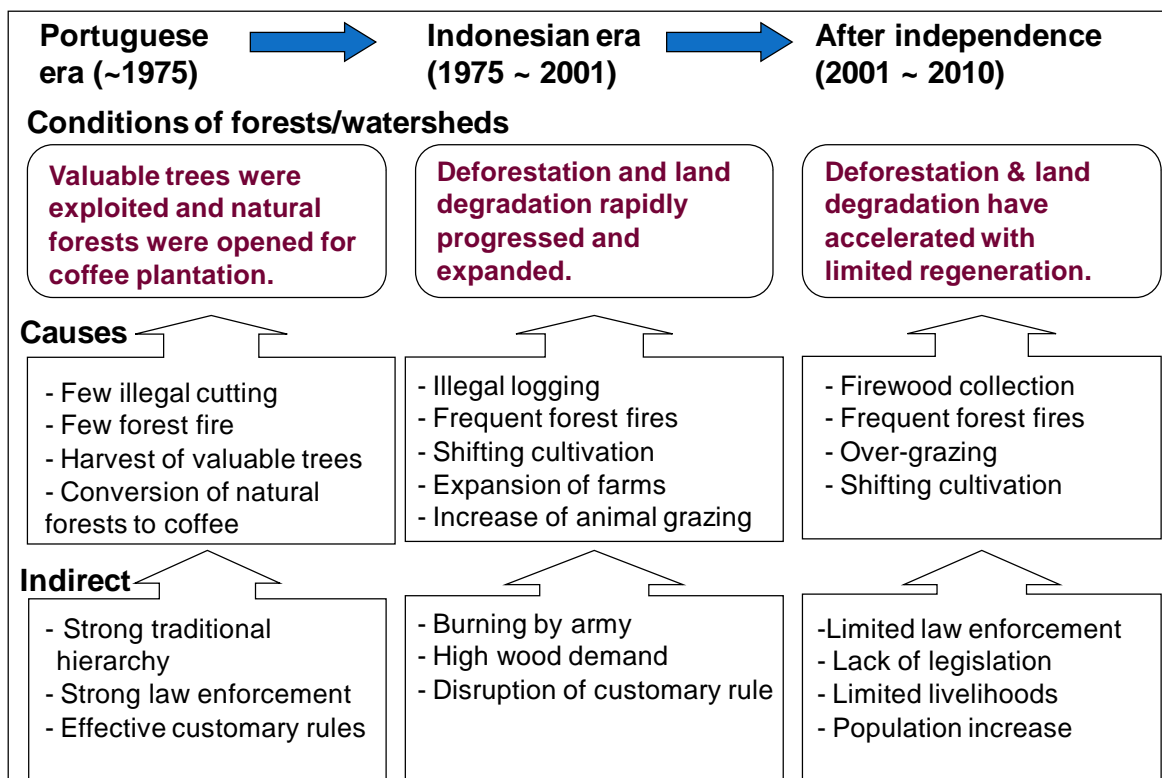


Figure 3-1: History of Forest Degradation in the Watershed

In the Portuguese era, the environmentally destructive activities, such as shifting cultivation and illegal exploitation, were not prevailing in the area because the tara bandu system was effective in regulating people's activities as the system was linked to the strong law enforcement. The effectiveness of the tara bandu system had gotten weak after the country was ruled by Indonesia from 1975. Deforestation has been further accelerated by the Indonesian army and logging companies during the same period. Since then, many people in the watershed have kept practicing the destructive activities.

3.1.2 Current Issues in the Watershed

At present, the occurrence of forest fires caused by shifting cultivation and animal grazing is the major cause of deforestation and forest degradation in the watershed. Shifting cultivation has also led to surface soil erosion which has further caused land degradation of

farmlands. The cause and effect relationship on forest degradation in the watershed is summarized below.

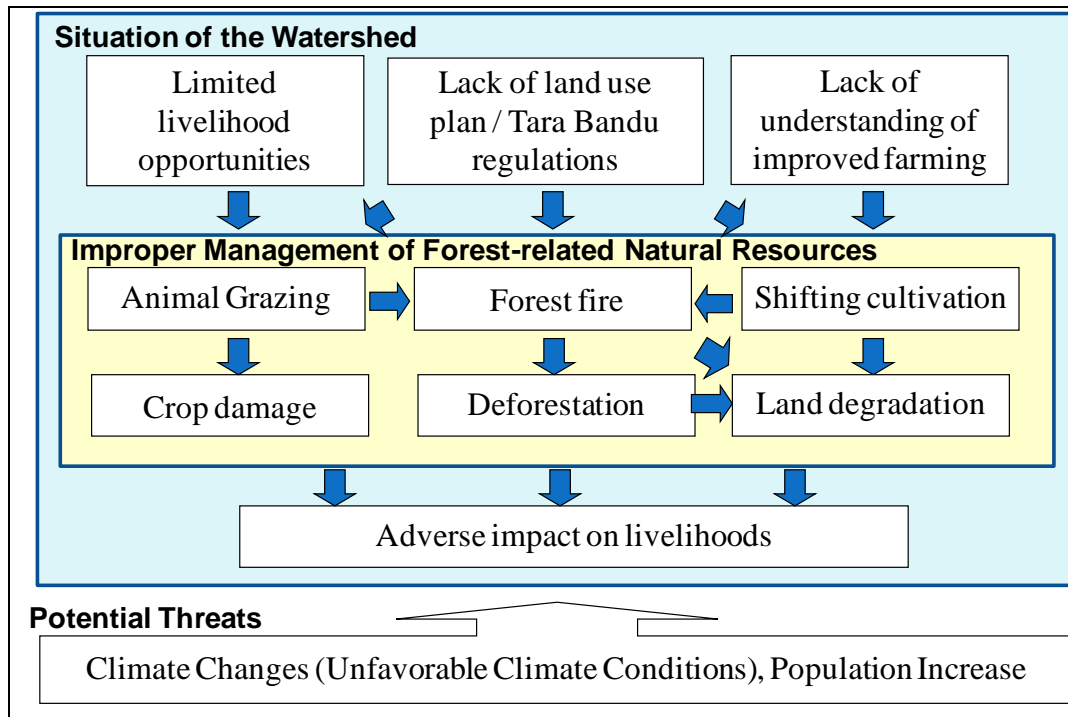


Figure 3-2: Cause and Effect Relationship on Forest Degradation

Deforestation and land degradation have adversely influenced livelihoods of local communities as shown above. The situation might get worse in case that the climate conditions will change unfavorably and the number of households who use lands in the sucos will increase as population increases.

3.2 Stakeholders related to the Noru Watershed

3.2.1 Major Stakeholders

The following organizations and groups of people are considered as key stakeholders relating to the management of the Noru watershed.

- ▶ District Administrative Office
- ▶ Sub-district offices of Remexio & Liquidoe
- ▶ Sucos located inside the watershed
- ▶ District MAF/NDF
- ▶ Extension officers
- ▶ Forest Guard
- ▶ ND for Environment
- ▶ PNTL
- ▶ SAS sub-district in Remexio & Liquidoe
- ▶ Church
- ▶ NGO (AMAR, WV, Plan, Haburas, RAEBIA)

The importance of the stakeholders and their relationship to watershed management are analyzed as follows.

Table 3-1: Results of the Stakeholder Analysis

No.	Name	Importance in the management of watershed	Relevance to (Involvement in) watershed management
1.	District Administrative Office	- Highly important as its tasks are to give approval for the sub-district administrative offices to work on watershed management and to provide guidance for the same on relevant activities for watershed management.	- Not directly involved in watershed management
2.	Sub-district offices of Remexio & Liquidoe	- Highly important as they have authority over activities in the watershed.	- High relevant - Directly involved in watershed management because of location
3.	Sucos located inside the watershed	- High important as chef de suco is responsible for activities at suco level and communities are the actual managers of lands and forests in the watershed.	- High relevant - Directly involved in watershed management because communities in sucos are the landowners of the area.
4.	District MAF/NDF	- Highly important as District Administrative Office is.	- Not directly involved in watershed management
5.	Extensionists	- Highly important as they work with communities.	- High relevant - Directly involved in watershed management as they work in the watershed.
6.	Forest Guard	- Highly important as they are the ones who orient communities towards sustainable forest and watershed management.	- High relevant - Directly involved in watershed management, but it is difficult for one of them to commute regularly as he does not live in the watershed.
7.	ND for Environment	- Highly important as the ND for environment is also working for forest conservation.	- Not directly involved as there is no branch office at the sub-district level.
8.	PNTL	- Less important as the watershed management is not the task of PNTL.	- Directly involved in watershed management as PNTL is working with communities to prevent illegal activities including forest fires.
9.	SAS sub-district in Remexio & Liquidoe	- Highly important as SAS would advise and help communities to protect forests and areas around water sources.	- High relevant as one of SAS tasks is to protect water sources. - Directly involved as the branch offices are located in the respective sub-districts.
10.	Church	- Less important as Church has nothing to do with watershed management.	- High relevant as its task is to orient local communities.
11.	NGOs (AMAR, WV, Plan, Haburas, RAEBIA)	- High important as the NGOs have implemented some activities relevant to watershed management.	- Not directly or continuously involved in watershed management as they are not based in the watershed.

3.2.2 Noru Watershed Management Council

(1) Vision and Missions of the Watershed Management Council

The Noru Watershed Management Council was established in August 2014 with the assistance of the JICA-MAF Joint Project named “the Project for Community-Based Sustainable Natural Resource Management.” The members of the Council unanimously agreed that the vision of the Council is to properly protect and manage forests, lands, and water resources in the Noru watershed to improve living conditions and livelihoods of residents in the watershed and stabilize water supply to the downstream areas.

Specifically, the Council further approved the following missions to achieve the vision.

- to provide guidance and orientation to village leaders in the sucos concerned toward sustainable management of forests and forest-related natural resources (e.g., NTFPs, lands, and water) in the watershed;

- to provide leadership in harmonizing the interests and activities of sucos in the watershed to achieve sustainable forests and forest-related natural resource management in the watershed;
- to take initiative in planning, implementing, and evaluating a watershed management plan to manage forests and forest-related natural resources in a proper and sustainable manner while improving local livelihoods in the watershed;
- to help village leaders in the sucos concerned enhance awareness of sustainable forest and forest-related natural resource management among communities in the respective sucos;
- to promote necessary actions for sustainable forest and forest-related natural resource management in the watershed in coordination with relevant government and non-government organizations as well as international organizations;
- to help village leaders in the sucos concerned hand over the valuable forests and forest-related natural resources to the future generations in the respective villages; and
- to share the experiences in the watershed with local government units (sucos, sub-districts, and districts) in other watersheds in Timor-Leste to promote sustainable forest and forest-related natural resource management at the watershed level.

(2) Members of the Watershed Management Council

The Council is composed of one (1) Chair-person, one (1) Vice Chair-person, one (1) Secretariat and other members as shown below.

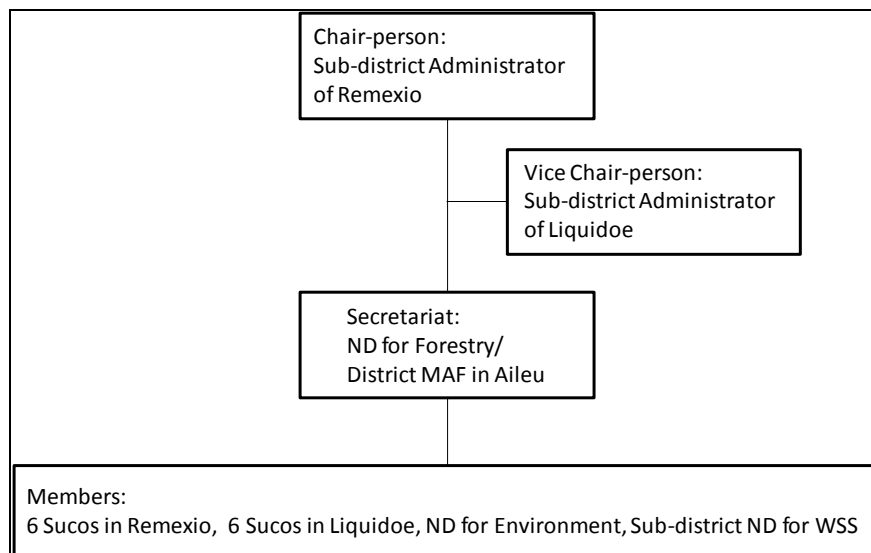


Figure 3-3: Organizational Structure of the Noru Watershed Management Council

Sub-district Administrator of Remexio is to function as a chair person of the Council, while Sub-district Administrator of Liquidoe functions as a vice chair person of the same. NDF and MAF, or its district office in Aileu, are to play a role as a secretariat of the Council. Chefs de Suco of the 12 sucos (e.g., six (6) sucos in Remexio and another six (6) sucos in Liquidoe), sub-district branch offices of NDWSS, and district branch office of NDE constitute the members of the Watershed Management Council.

(3) Functions of the Watershed Management Council

To achieve its vision and fulfill its missions, the Watershed Management Council is expected to perform the following functions:

- to formulate a watershed management plan with the assistance from relevant government and non-government organizations;
- to prepare an annual action plan to implement the watershed management plan at the beginning of the year;
- to monitor and evaluate the implementation of the annual action plan at the end of the year;
- to coordinate the implementation of the watershed management plan with relevant government and non-government organizations;
- to convene a regular meeting every quarter to monitor the situations of the watershed and discuss any issues relevant to sustainable management of forests and forest-related natural resources in the watershed;
- to adopt a resolution that would encourage all the sucos in the watershed to work on sustainable forest and forest-related natural resource management in the watershed;
- to call a meeting whenever circumstances require it; and
- to organize a working group (or a committee) to tackle any important issues that would affect the management of the watershed.

Chapter 4 Goal and Strategic Objectives of the Watershed Management Plan

4.1 Goal and Strategic Objectives

The main objective of the watershed management plan is to attain sustainable and integrated watershed management by balancing proper land and forest management with improvement of local livelihoods in a watershed. In order to achieve the main objective, four (4) strategic objectives are established as follows:

- a. Improvement and maintenance of the functions of watershed;
- b. Improvement of livelihoods of local communities;
- c. Introduction of the community-based natural resource management (CB-NRM) mechanism in the concerned sucos; and
- d. Establishment of a collaborative framework for watershed management.

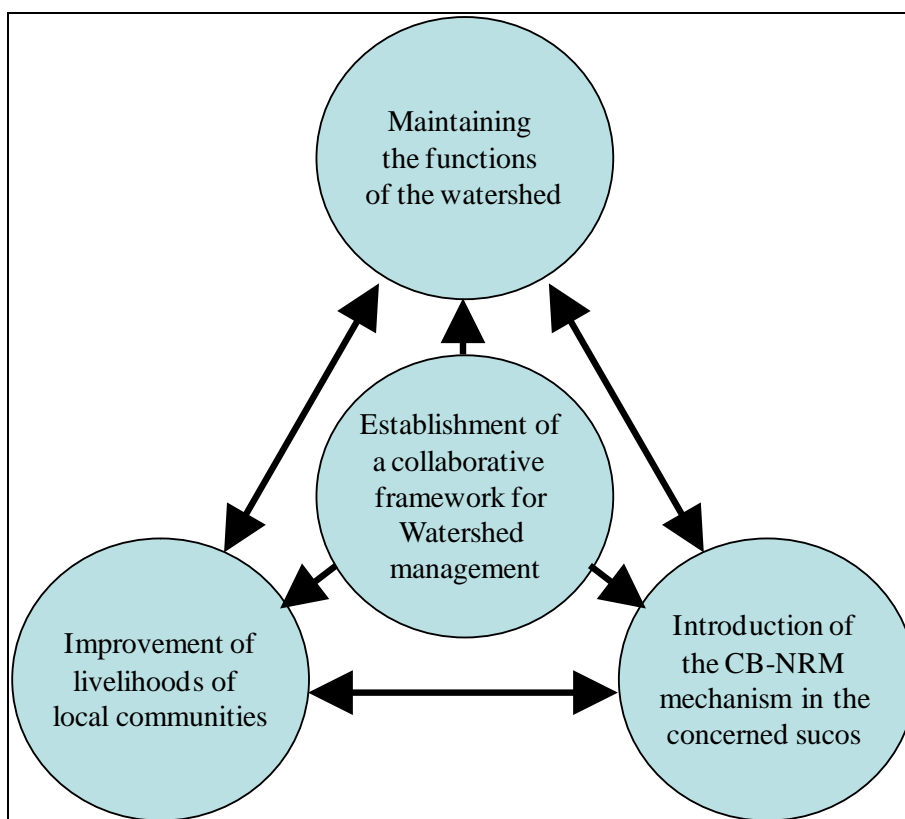


Figure 4-1: Strategic Objectives of the Watershed Management Plan

More details of the respective strategic objectives are described below.

(1) Improvement and Maintenance of the Functions of Watershed

The watershed has played various functions important for the life of local communities not only in the watershed but also in the downstream area of the Laclo river, such as stable supply of clean water, control of river run-off, and provision of places for agriculture production and collection of forest resources. These functions are essential to human life; therefore, they should be maintained, or enhance whenever necessary, by protecting and restoring forests in the watershed.

Specifically, the watershed management plan shall address the following issues which have caused the degradation of the watershed functions.

- Sediment load to the rivers;
- Slope failure/landslides;
- Deforestation and forest degradation especially in critical catchments; and
- Improper land use/unsustainable land use in sloping lands.

(2) Improvement of Livelihoods of Local People

As described in Chapter 2 of this watershed management plan, the average income of families in the watershed is obviously lower than the national average and many families have still faced a shortage of food for a part of the year. It would be difficult for local communities in the watershed to change the conventional farming practices, namely shifting cultivation, and environmentally destructive activities for livelihoods, such as animal grazing and harvesting of firewood, unless they can ensure the food security and cash income sufficient for their well-being.

Hence, one of the specific focuses of the watershed management plan shall be put on the improvement of livelihoods of local communities in the watershed, especially those who have limited opportunities other than shifting cultivation and exploitation of forest resources to secure daily food and cash income.

(3) Introduction of the Community-Based Natural Resource Management (CB-NRM) Mechanism in the Sucos concerned

The CB-NRM mechanism, which has been introduced and demonstrated by the JICA-MAF joint project in partnership with RAEBIA, encompasses i) the process of enhancing the capacity of suco leaders and other communities to use and manage forest-related resources in a productive and sustainable manner and ii) the system to help suco leaders to protect forest-related resources from the environmentally destructive activities. Through the process of establishing the CB-NRM mechanism, suco leaders and other communities engage in i) formulation of a future land use plan with village regulations, ii) selection of priority agriculture and forestry extension services, iii) institutionalization of the village regulations, and iv) application of techniques/skills introduced by the priority forestry and agricultural extension services.

Three (3) sucos in the watershed, namely Suco Faturasa, Fadabloc, and Hautoho, have been assisted by the JICA-MAF joint project in establishing the CB-NRM mechanism. The occurrence of wildfires, illegal forest exploitation, and crop damage caused by animal grazing have been drastically reduced since the CB-NRM mechanism was in place. At the same time, many communities in the same sucos have introduced and applied the sustainable upland farming techniques in their own farms.

As the mechanism has been introduced in only three (3) sucos out of the concerned 12 sucos, one of the strategic objectives of the watershed management plan is to help the remaining nine (9) sucos introduce the CB-NRM mechanism in the respective sucos, so as to achieve sustainable management of forest-related resources on a watershed level.

(4) Strengthening of the Collaborative Framework for Watershed Management

One of the issues to be addressed in the watershed management in the Noru watershed is the incidence of wild fires in the border areas between/among the concerned sucos. In many cases, the border areas are used by communities from the surrounding sucos for animal grazing and hunting; therefore, communities have often burned the areas for generation of new grasses or smoking out wild animals. Thus, collaborative efforts by the concerned sucos are needed for reducing the incidence of wildfires in the border areas in parallel with the introduction of the CB-NRM mechanism in the concerned sucos.

To facilitate the coordination and collaboration between/among the concerned 12 sucos as described in Chapter 3, the Noru Watershed Management Council was established in September 2014. It is, therefore, important to help the Council maximize and strengthen its functions, especially as a platform where the concerned sucos and NDF/MAF can work on any issues on watershed management. The watershed management plan should put emphasize on the improvement of the collaborative framework in the course of the implementation of the plan.

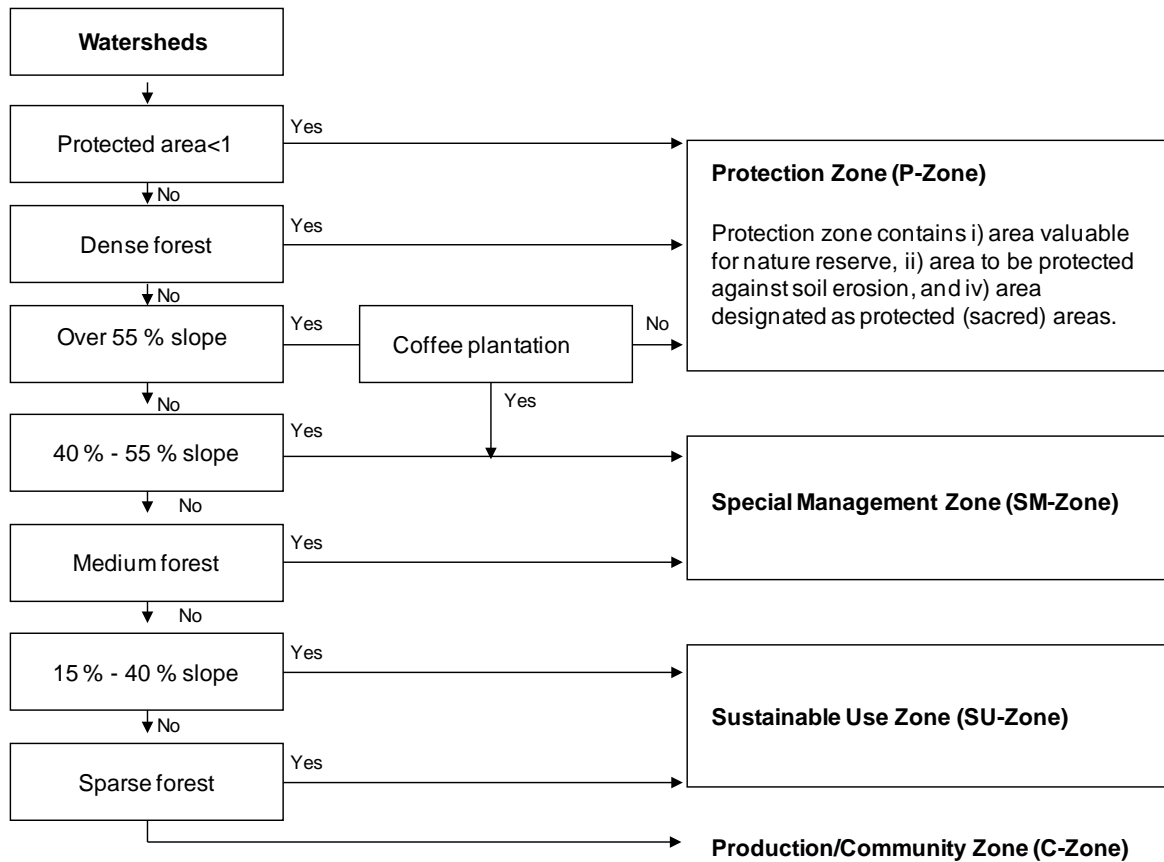
4.2 Overall Guidelines on Land Management in the Watershed

Proper land management is indispensable for maintenance and improvement of the functions of the watershed. Due consideration should be paid to the land coverage and slope in the determination of land uses for proper land management. To promote the proper land use and management, the Noru Watershed Management Council agreed with NDF/MAF on the adoption of the following guidelines on land use and management in the watershed.

Table 4-1: Guidelines on Land Use and Management in the Watershed

Zone	Description
P-Zone	Areas that have crucial functions the watershed and high environmental values shall be protected as Protection zone. (P-zone). Dense forests and steep sloping areas (over 55 %) but not used for coffee plantation are classified into P-zone. In the area under P-zone, any economic use and activities except those allowed by the government regulations (i.e., UNTEAT No. 19) shall not be allowed. Such areas shall be basically managed/protected as protected forests.
SM-Zone	Medium forests and areas with slopes between 40% and 55% are categorized as Special Management Zone (SM-Zone). Coffee plantations with more than 55% slopes are also classified under this zone. The areas under SM-zone can be used for production purposes but shall be simultaneously managed as forest lands to prevent adverse effect on lands and water sources. Hence, forest-based land uses, such as i) coffee plantation, ii) mixed forests of timber and fruit trees, iii) natural forests used for collection of NTFPs, are recommended for the areas under this zone.
SU-Zone	Areas with slopes ranging from 15% to 40% or those covered with sparse forests are categorized under Sustainable Use Zone (SU-Zone). The basic idea of this zone is to use the areas for production purposes while maintaining land productivity. Hence, the areas can be used for farming but shall be managed in a proper manner by applying soil conservation measures or introducing agroforestry techniques.
C-Zone	Areas that do not belong to the above-mentioned zones are categorized into Production/Community Zone (C-Zone). In general, areas in C-Zone have flat to gentle slopes and less vegetation cover (bushes, grasslands, and bare lands). Because of these features, the areas can be used for economic and social development purposes by local communities with a few restrictions. Upland farms, grazing lands, and paddy fields, to name a few, are possible land uses in this zone.

The following flowchart shows the process of classifying the Noru watershed into the respective zones described above.



<1 Protected areas: the area is designated as a protected area by communities.

Figure 4-2: Flowchart for Classification of the Watershed into the Land Management Zones

Figure 4-3 in the following page shows the distribution of the respective zones in the watershed.

The following chapter, Chapter 5, describes the key actions to be taken for sustainable watershed management following the land management guidelines described above

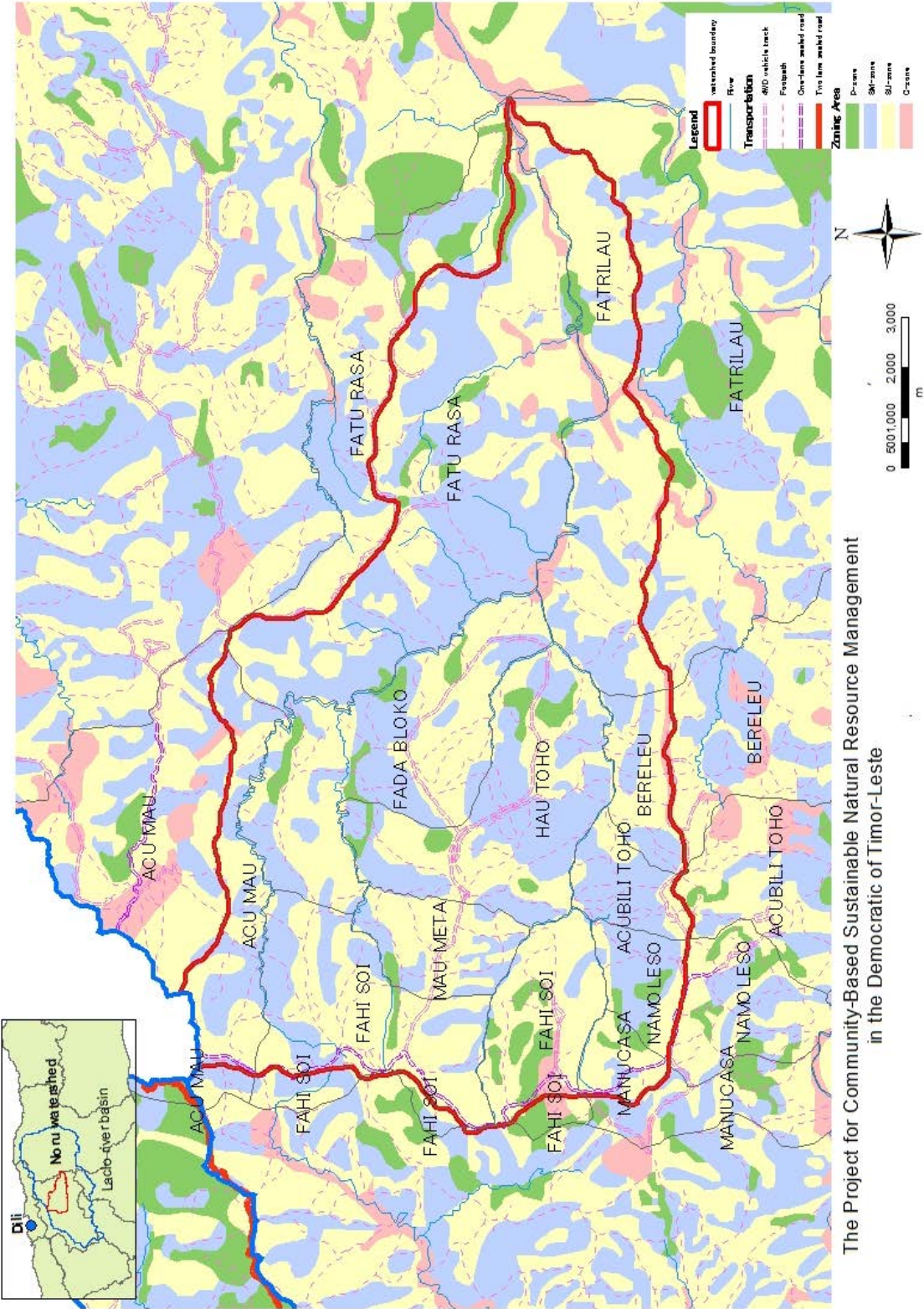


Figure 4-3: Zone Distribution in the Respective Sucos in the Watershed

Chapter 5 Action Plan for Watershed Management

5.1 Overall Framework of the Action Plan

As illustrated below, a total of five (5) programs are proposed as key actions to achievement of the goal and strategic objectives of the watershed management plan described in Chapter 4. The five programs further encompass a total of 11 sub-programs as shown below.

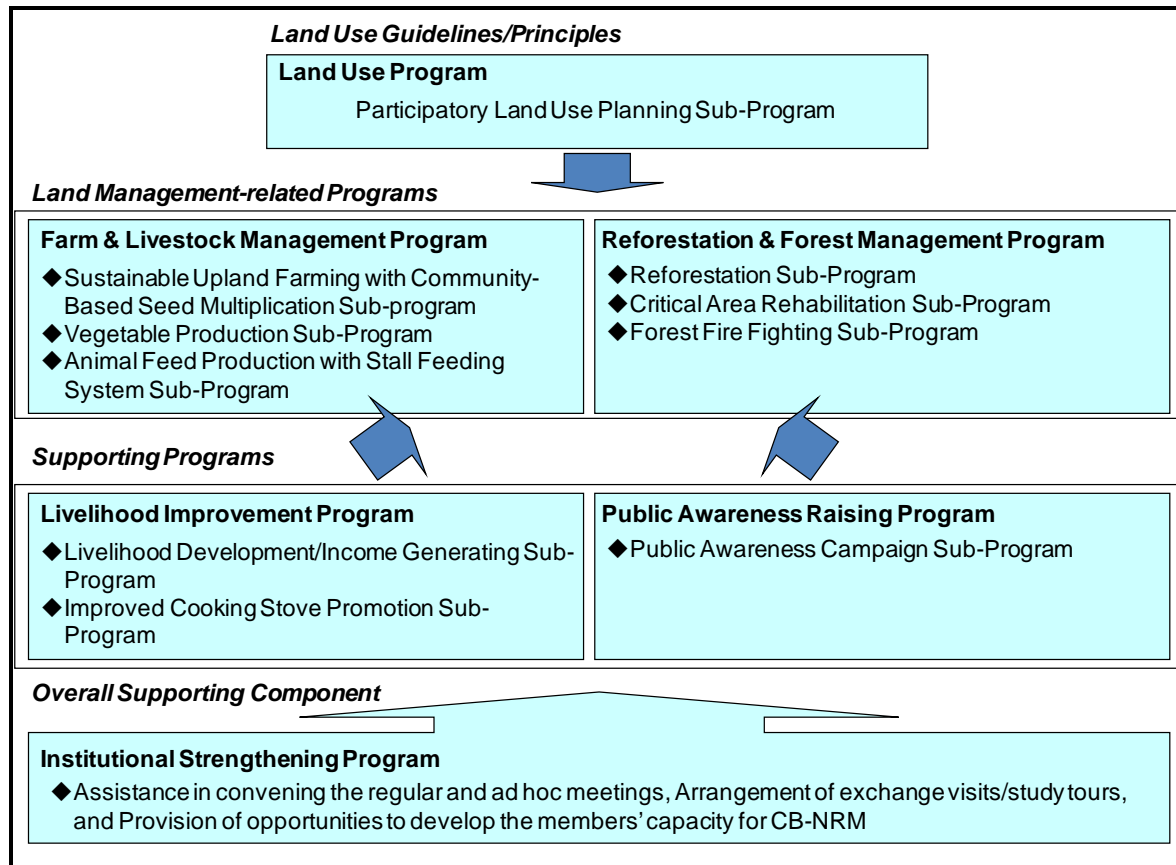


Figure 5-1: Overall Framework of the Watershed Management Plan

Land Use Program is the core and overarching program to establish the CB-NRM mechanism at suco level helping suco leaders and local communities in concerned sucos properly manage forest-related natural resources in line with the land management principles described in Chapter 4. The land management-related programs, namely i) Farm and Livestock Management Program and ii) Reforestation and Forest Management Program, aim to assist local communities in materializing the land use plan prepared in the Land Use Program. The land management-related programs are supported by i) Livelihood Development Program and ii) Information Dissemination/Awareness Raising Program. As all the programs are implemented under the management and supervision of the Noru Watershed Management Council, a specific program to strengthen the functions of the Noru Watershed Management Council is to be implemented along with the other programs.

5.2 Land Use Program

5.1.1 Objectives

Although the land use and management principles in Chapter 4 indicate the guidelines/principles on land use and management in the watershed, there is still a need to develop a land use plan at suco level so as to enable local communities to translate the guidelines into practice on the ground. The main objective of Land Use Program is therefore to enable local communities to manage forest-related natural resources in the concerned sucos in line with the land use and management principles.

5.1.2 Strategies

Since local communities should be responsible for management of lands and forest-related natural resources in the localities under the concept of CB-NRM, the land use and management principles need to be translated into a land use plan prepared by the respective villages. The participatory land use planning (PLUP), which has been introduced and demonstrated in Sucos Faturasa, Fadabloco, and Hautoho to develop a future land use plan with village regulations in a participatory manner, is proposed as the sole activity (sub-program) to be undertaken under the Land Use Program. The PLUP has been proven as an effective method to enhance the capacity of suco leaders and other communities to manage lands and forest-related natural resources in a sustainable manner.

5.1.3 Participatory Land Use Planning Sub-program (PLUP-SP)

(1) Objective

The main objective of the sub-program is to help suco leaders and communities manage lands and forest-related natural resources in line with the land use and management principles in the concerned sucos. Specifically, the sub-program aims to:

- i) assist suco leaders and local communities in developing a future land use plan with village rules/regulations on natural resource management considering the land use/management principles, current land use, and traditional land ownership;
- ii) develop the capacity of suco leaders to manage forest-related natural resources in a proper and sustainable manner using the village regulations; and
- iii) assist local communities in selecting priority forestry and agricultural extension services effective in realization of the future land use plan.

(2) Target Area

Since the sucos supported by the JICA-MAF CB-NRM Project, namely Suco Faturasa, Fadabloco, and Hautoho, have already formulated the future land use plan with village regulations of the respective sucos, PLUP-SP should be implemented in the other nine (9) sucos in the watershed.

(3) Implementation Procedures

The PLUP-SP is to be implemented in accordance with the following steps:

Table 5-1: Activities of the PLUP-SP

Step	Outlines	Timeline
Formulation of a future land use plan with village regulations	<p>A future land use plan with village regulations shall be developed through a series of discussions listed below:</p> <ol style="list-style-type: none"> 1) Consultation with suco leaders and communities about the PLUP and CB-NRM mechanism; 2) Formation of a working team composed of the members of suco council; 3) Preparation of a work plan with the working team; 4) Field visit to one of the sucos supported by the JICA-MAF CB-NRM Project; 5) Preparation of a present land use map using an aerial photo map covering the suco (at a scale of 1/7,500~1/10,000); 6) Discussion on the future land use options and preparation of a future land use map using the present land use map; 7) Review of the village rules on natural resource management in the past and at present; 8) Discussion on the village regulations; 9) Review of the draft village regulations; 10) Consultation with local communities about the draft village regulations; 11) Preparation for the tara bandu ceremony; and 12) Convening of the tara bandu ceremony. 	3 to 4 months (The tara bandu ceremony should be held by the beginning of September when communities start the land preparation.)
Selection of priority forestry and agriculture extension services	<p>Priority forestry and agriculture extension services effective in achievement of the future land use map shall be selected through the following steps:</p> <ol style="list-style-type: none"> 1) Discussions on the possible forestry and agriculture extension services and preliminary selection of the preferable services; 2) Evaluation of the selected preferable forestry and agriculture extension services and identification of the priority ones; and 3) Discussion on the priority forestry and agriculture extension services with village leaders and other communities and determination of the draft scopes of the extension services. 	1~2 months (The activities can start after the future land use planning in the PLUP process.)
Institutionalization of the village regulations	<p>In order to institutionalize the village regulations, the following meetings shall be arranged and held by suco council on a regular basis.</p> <ol style="list-style-type: none"> 1) Monthly meeting at suco level among the members of suco council to monitor if there are any issues and problems on natural resource management and discuss how such issues/problems could be solved/settled by using the village regulations; 2) Bi-monthly or quarterly meeting at aldeia level to share with local communities at aldeia level the situation of the village and how suco leaders use the village regulations to solve/settle problems; and 3) Annual plenary meeting at suco level with suco council and other communities to evaluate the effectiveness of the village regulations. 	3~4 years After 3~4 years, the monthly meeting can be changed to the bi-monthly, while the bi-monthly/quarterly can be held on a biannual basis.

(4) Necessary Inputs

The following inputs are needed to implement the sub-program.

PLUP

- a. Facilitators (Main facilitator, a few co-facilitators, and field assistance)
- b. Food for the meetings
- c. A0-sized aerial photo map which covers the suco (at a scale of 1: 7,500~1:10,000)

- d. Several transparent/plastic sheets at A0 size
- e. A large-sized wooden board (more than A0 size)
- e. Stationary (felt type pens, flipcharts, masking tapes, and tacks)
- f. Materials and expenses for the tara bandu ceremony
- g. Expenses for making booklets of the village regulations with a future land use map
- h. Transportation means for the facilitators and others

Selection of priority forestry and agriculture extension services

- a. Facilitators (Main facilitator, a few co-facilitators, and field assistance)
- b. Food for the meetings
- c. Stationary (felt type pens, flipcharts, and masking tapes)
- d. Transportation means for the facilitators and others

Institutionalization of the village regulations

- a. Facilitators (Main facilitator, a few co-facilitators, and field assistance)
- b. Food for the meetings
- c. Stationary (felt type pens, flipcharts, and masking tapes)
- d. Transportation means for the facilitators and others

(5) Expected Outputs

The following outputs are expected to be generated from the implementation of the sub-program.

Direct Results

- a. Village regulations with the future land use plan agreed upon by communities
- b. A list of priority forestry and agricultural extension services with their draft scopes

Direct Impacts

- a. Reduction of the incidence of forest fires, illegal logging, and animal grazing
- b. Improvement of land productivity in suco

5.2 Farm and Livestock Management Program

5.2.1 Objectives

The main aim of the Farm and Livestock Management Program is to change farming and livestock management practices into sustainable and productive forms, as the current practices have caused deforestation and forest degradation as described in Chapter 3. Particularly, the program shall put its focus on: i) sustainable use of sloping areas, ii) improvement of productivity of staple upland crops, iii) diversification of crops produced for cash income, and iv) semi-intensive management of livestock to effectively use animals.

5.2.2 Strategies and Approaches

In order to achieve the objectives of the Farm and Livestock Management Program, the following sub-programs are proposed as necessary actions to be taken.

- a. Sustainable Upland Farming with Community-Based Seed Multiplication Sub-program

- b. Vegetable Production Sub-program
- c. Animal Feed Production with Stall Feeding System Micro Sub-program

To convert the conventional practices into sustainable and productive forms, there is a need to change people's perception of the current practices and build their capacity to introduce and apply such improved practices. Thus, the following strategies shall be adopted for implementation of the sub-programs.

- a. Introduction of techniques through continuous hands-on training in the form of farmer field schools (FFSs)
- b. Effective utilization of local resources and technologies
- c. Due consideration of the natural condition of the watershed

5.2.3 Sub-programs

(1) Sustainable Upland Farming with Community-Based Seed Multiplication Sub-program (SUF with CBSM-SP)

The outlines of the sub-program are described below.

Table 5-2: Outlines of the SUF with CBSM-SP

Items	Descriptions
Objectives	<p>The main objective of the sub-program is to enhance the capacity of communities to apply sustainable upland farming techniques to their permanent farms along with the introduction of improved seeds of major staple crops (i.e., maize, cassava, and sweet potato), so that they can reduce and stop the slash and burn farming practices. Specifically, the sub-program aims to:</p> <ol style="list-style-type: none"> 1) introduce and disseminate soil conservation measures easy-to-apply but effective in prevention of soil erosion; 2) introduce and disseminate organic farming techniques suitable for the current situations of the sucos; 3) introduce the improved seeds of maize, cassava, and sweet potato, which have performed well in Suco Fadabloco and Hautoho; and 4) encourage communities to replicate the key techniques on sloping agriculture and organic farming in their own plots; and 5) increase the production of the major staple crops (i.e., maize, cassava, and sweet potato) in the sucos and ensure sufficient seeds and planting materials for next cropping season.
Target areas	All the concerned sucos except Suco Faturasa, Fadabloco, and Hautoho
Implementation procedures	<p>The sub-program is to be implemented for 3 years in the respective sucos in the following manner:</p> <p><u>1st year</u></p> <ol style="list-style-type: none"> 1) Identification of potential target beneficiaries and organization of farmers' groups (1 group per aldeia); 2) Selection of leaders and key members of the group and determination of roles and responsibilities of the members; 3) Development of a work plan in a participatory manner; 4) Identification of the demonstration plot each for the beneficiaries groups; 5) Conducts of hands-on training courses (farmer field schools: FFSs) at the demonstration plots, which cover the following topics: (compost making including maintenance, cleaning, A-frame making, contour line delineation, application of soil conservation measures (contour composting terrace), cultivation, compost application, sowing seeds, preparation of liquid fertilizer, maintenance of farms (weeding and application of liquid fertilizer), harvesting, and post-harvesting); 6) Distribution of seeds and farm tools 7) Evaluation of the training courses and preparation of the work plan for the 2nd year in a participatory manner.

Items	Descriptions
	<u>2nd year</u> 1) Division of the groups into sub-groups based on the existing traditional working system (halosan system) in suco; 2) Selection of leaders of the sub-groups and identification of sub-group demonstration plots; 3) Conducts of hands-on training courses (farmer field schools: FFSs) at the demonstration plots, which cover the following topics: compost making including maintenance, maintenance of soil conservation measures, cultivation, compost application, sowing seeds, preparation of liquid fertilizer, maintenance of farms (weeding and application of liquid fertilizer), harvesting, and post-harvesting; 4) Conducts of hands-on training courses/FFSs on selected key techniques at the sub-group demonstration plot, namely, compost making including maintenance, A-frame making and contour line delineation, application of soil conservation measures (contour composting terrace), and preparation of liquid fertilizer; 5) Encouragement of members of the sub-groups to help each other to apply the key techniques demonstrated in the sub-group demonstration plots; and 6) Evaluation of the training courses. <u>3rd year</u> 1) Assistance in the application of sustainable upland farming techniques to the demonstration plots and individual farms. 2) Evaluation of the activities.
Timeline	<u>Group organization and work planning</u> 2~3 months (in the rainy season) <u>Hands-on training/FFSs</u> 12 months (after the end of the rainy season) <u>Evaluation and planning</u> 1 month (at the end of the rainy season)
Necessary inputs	<u>Group organization, work planning, and participatory evaluation</u> 1) Facilitators (Main facilitator, a few co-facilitators, and field assistance) 2) Food for the meetings 3) Stationary (felt type pens, flipcharts, and masking tapes) 4) Transportation means for the facilitators and others <u>Hands-on training/FFSs</u> 1) Facilitators (Main facilitator, a few co-facilitators, and field assistance) 2) Farm tools 3) Food for the training courses 4) Improved seeds and planting materials 5) Drum can or bucket for liquid fertilizer and water can 6) Local materials (procured by local communities) for compost and liquid fertilizer
Expected outputs	<u>Direct Results</u> 1) Sufficient volume of improved maize seeds and planting materials of cassava and sweet potato can be produced in the sucros. 2) A number of communities will apply the sustainable upland farming techniques to their own farms. <u>Direct Impact</u> 1) Local livelihoods will be improved 2) Surface soil erosion will be reduced.

(2) Vegetable Production Sub-program (VP-SP)

The outlines of the sub-program are described below.

Table 5-3: Outlines of the VP-SP

Items	Descriptions
Objectives	The main objective of the sub-program is to enhance the capacity of communities to produce quality vegetables so that they can earn additional cash income from sales of vegetables. Specifically, the sub-program aims to: 1) introduce and disseminate organic vegetable farming techniques; and

Items	Descriptions
	2) introduce several types of vegetables including those that local communities have not grown yet.
Target areas	Sucos where there are sources of water which can be used for vegetable production throughout a year
Implementation procedures	<p>The sub-program is to be implemented for 3 years in the respective sucos in the following manner:</p> <p><u>1st year</u></p> <ol style="list-style-type: none"> 1) Identification of potential target beneficiaries and organization of farmers' groups (1 group per aldeia); 2) Selection of leaders and key members of the group and determination of roles and responsibilities of the members; 3) Development of a work plan in a participatory manner; 4) Identification of the demonstration plot each for the beneficiaries groups; 5) Conducts of hands-on training courses (farmer field schools: FFSs) at the demonstration plots, which cover the following topics: (compost making including maintenance, seed bed making, nursery production, ridge making, application of compost, preparation of liquid fertilizer and natural pesticide, maintenance of farms (weeding, application of liquid fertilizer and natural pesticide, and staking of poles), harvesting, and collection of seeds); 6) Distribution of seeds and farm tools; and 7) Evaluation of the training courses and preparation of the work plan for the 2nd year in a participatory manner. <p><u>2nd year</u></p> <ol style="list-style-type: none"> 1) Conducts of the same hands-on training courses as those arranged for the 1st year; 2) Distribution of seeds; and 3) Evaluation of the training courses. <p><u>3rd year</u></p> <ol style="list-style-type: none"> 1) Assistance in the continuation of vegetable production in the demonstration plots and individual farms. 2) Evaluation of the activities.
Timeline	<p><u>Group organization and work planning</u> 2~3 months (in the rainy season)</p> <p><u>Hands-on training/FFSs</u> 6~8 months (after the end of the rainy season)</p> <p><u>Evaluation and planning</u> 1 month (in the rainy season)</p>
Necessary inputs	<p><u>Group organization, work planning, and participatory evaluation</u></p> <ol style="list-style-type: none"> 1) Facilitators (Main facilitator, a few co-facilitators, and field assistance) 2) Food for the meetings 3) Stationary (felt type pens, flipcharts, and masking tapes) 4) Transportation means for the facilitators and others <p><u>Hands-on training/FFSs</u></p> <ol style="list-style-type: none"> 1) Facilitators (Main facilitator, a few co-facilitators, and field assistance) 2) Farm tools 3) Food for the training courses 4) Seeds of vegetables 5) Drum can or bucket for liquid fertilizer and water can 6) Local materials (procured by local communities) for compost and liquid fertilizer
Expected outputs	<p><u>Direct Results</u></p> <ol style="list-style-type: none"> 1) Vegetable production will increase in the sucos. <p><u>Direct Impact</u></p> <ol style="list-style-type: none"> 1) Local livelihoods will be improved.

(3) Animal Feed Production with Stall Feeding System Sub-program (AFP with SFS-SP)

The outlines of the sub-program are described below.

Table 5-4: Outlines of the AFP with SFS-SP

Items	Descriptions
Objectives	<p>The main objective of the sub-program is to enhance the capacity of communities to produce animal feeds and stall-feed animals so as to rear animals in pens instead of free grazing. Specifically, the sub-program aims to:</p> <ol style="list-style-type: none"> 1) Introduce fodder crops and encourage communities to plant fodder crops near farms; and 2) Introduce and disseminate the techniques on stall feeding system including building of an animal pen.
Target areas	All the concerned sucos except Suco Faturasa, Fadabloco, and Hautoho
Implementation procedures	<p>The sub-program is to be implemented for 3 years in the respective sucos in the following manner:</p> <p><u>1st year</u></p> <ol style="list-style-type: none"> 1) Identification of potential target beneficiaries and organization of farmers' groups (1 group per aldeia); 2) Selection of leaders and key members of the group and determination of roles and responsibilities of the members; 3) Development of a work plan in a participatory manner; 4) Identification of the demonstration plot each for the beneficiaries groups; 5) Conducts of hands-on training courses (farmer field schools: FFSs) at the demonstration plots, which cover the following topics: (land preparation, planting of fodder trees/crops in farms as live fence or hedgerow, collection of materials for an animal pen, building of an animal pen, and rearing of animals in a pen); 6) Distribution of seeds and planting materials of fodder trees/crops 7) Evaluation of the training courses and preparation of the work plan for the 2nd year in a participatory manner. <p><u>2nd year</u></p> <ol style="list-style-type: none"> 1) Division of the groups into sub-groups based on the existing traditional working system (halosan system) in suco; 2) Selection of leaders of the sub-groups and identification of sub-group demonstration plots; 3) Conducts of the same hands-on training courses (farmer field schools: FFSs) at the sub-group demonstration plots; 4) Encouragement of members of the sub-groups to help each other to apply the key techniques demonstrated in the sub-group demonstration plots; 5) Distribution of seeds and planting materials of fodder crops and farm tools; and 6) Evaluation of the training courses. <p><u>3rd year</u></p> <ol style="list-style-type: none"> 1) Assistance in the maintenance of fodder crops/trees and stall feeding system in the demonstration plots and individual farms. 2) Evaluation of the activities.
Timeline	<p><u>Group organization and work planning</u> 2~3 months (before the rainy season)</p> <p><u>Hands-on training/FFSs</u> 12 months (from the beginning of the rainy season)</p> <p><u>Evaluation and planning</u> 1 month (at the end of the dry season)</p>
Necessary inputs	<p><u>Group organization, work planning, and participatory evaluation</u></p> <ol style="list-style-type: none"> 1) Facilitators (Main facilitator, a few co-facilitators, and field assistance) 2) Food for the meetings 3) Stationary (felt type pens, flipcharts, and masking tapes) 4) Transportation means for the facilitators and others <p><u>Hands-on training/FFSs</u></p> <ol style="list-style-type: none"> 1) Facilitators (Main facilitator, a few co-facilitators, and field assistance) 2) Farm tools 3) Food for the training courses 4) Seeds and planting materials of fodder crops/trees 5) Local materials (procured by local communities) for compost and liquid fertilizer 6) Transportation means for the facilitators and others

Items	Descriptions
Expected outputs	<u>Direct Results</u>
	1) The number of animals reared in pens will increase.
	2) Health conditions of animals will be improved.
	<u>Direct Impact</u>
	1) Crop damage caused by animals will be reduced.
	2) Forest fire or illegal cutting for fencing will be reduced.

5.3 Reforestation and Forest Protection Program

5.3.1 Objectives

The main aim of the Reforestation and Forest Protection Program is to increase forest cover in the watershed by planting value-added trees (i.e., industrial trees, shade trees for coffee, and fruit trees) in private lands and leguminous trees/casuarinas to rehabilitate degraded water catchments as well as other critical areas. In addition, the program will also encompass a sub-program for protection of forests from wild fires in collaboration with communities in the concerned sucos.

5.3.2 Strategies and Approaches

In order to achieve the objectives of the Reforestation and Forest Management Program, the following sub-programs are proposed as necessary actions to be taken.

- a. Reforestation Sub-program
- b. Critical Areas Rehabilitation Sub-program
- c. Forest Fire Fighting Sub-program

Farmer field schools (FFSs) is to be adopted as a key strategy for the first sub-program as its target areas are private lands, while the rest of the sub-programs need an agreement between/among members involved in the sub-programs, the concerned villages, and MAF/NDF since the sub-programs are aimed at the improvement and maintenance of the watershed functions for the sake of not only communities in the respective sucos but also those in the downstream areas.

5.3.3 Sub-programs

(1) Reforestation Sub-program (Rf-SP)

The outlines of the sub-program are described below.

Table 5-5: Outlines of the Rf-SP

Items	Descriptions
Objectives	The main objective of the sub-program is to enhance the capacity of communities to plant industrial trees, shade trees for coffee, and fruit trees, in right places in a proper manner. Specifically, the sub-program aims to: <ol style="list-style-type: none"> 1) provide industrial trees, shade trees, and fruit trees to communities who are willing to plant those seedlings in their own farms and maintain them properly after planting; 2) introduce and disseminate the techniques on planting industrial trees, shade trees, and fruit trees in a proper manner; and 2) introduce the proper designs of planting industrial trees, shade trees, and fruit trees.
Target areas	All the concerned sucos

Items	Descriptions
Implementation procedures	<p>The sub-program is to be implemented for 2 years in the respective sucos in the following manner:</p> <p><u>1st year</u></p> <ol style="list-style-type: none"> 1) Identification of potential target beneficiaries and organization of farmers' groups (1 group per aldeia); 2) Selection of leaders and key members of the group and determination of roles and responsibilities of the members; 3) Development of a work plan in a participatory manner; 4) Identification of the demonstration plots for the respective types of trees; 5) Conducts of hands-on training courses (farmer field schools: FFSs) at the demonstration plots, which cover the following topics: (compost making including maintenance, land preparation, staking, pitting, refilling with compost application, planting, and maintenance of seedlings (shading, weeding, and application liquid fertilizer for fruit seedlings)); 6) Distribution of seedlings and farm tools 7) Evaluation of the training courses and preparation of the work plan for the 2nd year in a participatory manner. <p><u>2nd year</u></p> <ol style="list-style-type: none"> 1) Division of the groups into sub-groups based on the existing traditional working system (halosan system) in suco; 2) Selection of leaders of the sub-groups and identification of sub-group demonstration plots; 3) Conducts of the same hands-on training courses (farmer field schools: FFSs) at the sub-group demonstration plots; 4) Encouragement of members of the sub-groups to help each other to apply the key techniques demonstrated in the sub-group demonstration plots; 5) Distribution of seedlings; and 6) Evaluation of the training courses. <p><u>3rd year</u></p> <ol style="list-style-type: none"> 1) Assistance in planting of seedlings distributed to the members in their own plots in a proper manner; 2) Assistance in maintaining seedlings planted in the demonstration plots and individual plots in a proper manner. 3) Evaluation of the activities.
Timeline	<p><u>Group organization and work planning</u> 2~3 months (in the rainy season)</p> <p><u>Hands-on training/FFSs</u> 12 months (from the end of the rainy season)</p> <p><u>Evaluation and planning</u> 1 month (at the end of the rainy season)</p>
Necessary inputs	<p><u>Group organization, work planning, and participatory evaluation</u></p> <ol style="list-style-type: none"> 1) Facilitators (Main facilitator, a few co-facilitators, and field assistance) 2) Food for the meetings 3) Stationary (felt type pens, flipcharts, and masking tapes) 4) Transportation means for the facilitators and others <p><u>Hands-on training/FFSs</u></p> <ol style="list-style-type: none"> 1) Facilitators (Main facilitator, a few co-facilitators, and field assistance) 2) Farm tools 3) Food for the training courses 4) Seedlings 5) Local materials (procured by local communities) for compost and liquid fertilizer 6) Transportation means for the facilitators and others
Expected outputs	<p><u>Direct Results</u></p> <ol style="list-style-type: none"> 1) Areas planted with seedlings will increase. <p><u>Direct Impact</u></p> <ol style="list-style-type: none"> 1) Forest cover in the watershed will be expanded. 2) Local livelihoods will be improved.

(2) Critical Area Rehabilitation Sub-program (CAR-SP)

The outlines of the sub-program are described below.

Table 5-6: Outlines of the CAR-SP

Items	Descriptions
Objectives	The main objective of the sub-program is to rehabilitate degraded forests, deforested areas, and degraded lands in critical water catchments and other important areas in the sucos by planting trees in a collaborative manner.
Target areas	All the concerned sucos
Implementation procedures	<p>The sub-program is to be implemented for 5 years in the respective sucos in the following manner:</p> <p><u>1st year</u></p> <ol style="list-style-type: none"> 1) Identification of the target areas to be rehabilitated considering sloping conditions and importance of the respective areas; 2) Select one or two site/s among the target areas; 3) Determination of families who would get direct benefit from rehabilitation; 4) Organization of the working team/s composed of the families who would get benefit; 5) Development of a work plan with village leaders and the working team; 6) Procurement of seedlings; 7) Mobilization of communities to prepare the lands for planting, pitting, refilling with compost, and planting); 8) Development of an agreement between/among the working team, suco council, and MAF/NDF on the maintenance of seedlings planted for two and a half (2.5) years; 9) Maintenance (weeding and shading) of seedlings twice during the rainy season and once during the dry season; and 10) Evaluation of the activities and preparation of the work plan for the 2nd year in a participatory manner. <p><u>2nd ~ 3rd year</u></p> <ol style="list-style-type: none"> 1) Repeat the activities from 2) to 10). <p><u>4th ~ 5th year</u></p> <ol style="list-style-type: none"> 1) Repeat the activities from 9) and 10).
Timeline	<p><u>Selection of the target sites, identification of beneficiaries, development of a work plan</u> 2~3 months (in the dry season)</p> <p><u>Land preparation, staking, pitting, refilling, and planting by all communities</u> 1 month (at the beginning of the rainy season)</p> <p><u>Maintenance of seedlings</u> 2.5 years (after planting)</p> <p><u>Evaluation and planning</u> 1 month (at the end of rainy season)</p>
Necessary inputs	<p><u>Selection of the target sites, identification of beneficiaries, development of a work plan</u></p> <ol style="list-style-type: none"> 1) Facilitators (Main facilitator, a few co-facilitators, and field assistance) 2) Food for the meetings 3) Stationary (felt type pens, flipcharts, and masking tapes) 4) Transportation means for the facilitators and others <p><u>Land preparation, staking, pitting, refilling, and planting by all communities</u></p> <ol style="list-style-type: none"> 1) Facilitators (Main facilitator, a few co-facilitators, and field assistance) 2) Farm tools 3) Food for the participants in reforestation activities 4) Seedlings 5) Transportation means for transportation of seedlings and the facilitators <p><u>Maintenance of seedlings</u></p> <ol style="list-style-type: none"> 1) Incentives for the working team
Expected outputs	<p><u>Direct Results</u></p> <ol style="list-style-type: none"> 1) Degraded forests and/or degraded areas will be rehabilitated. <p><u>Direct Impact</u></p> <ol style="list-style-type: none"> 1) Surface soil erosion will be reduced. 2) Water flow of important water sources in the sucos will be stabilized.

(3) Forest Fire Fighting Sub-program (FFF-SP)

The outlines of the sub-program are described in the following table.

Table 5-7: Outlines of the FFF-SP

Items	Descriptions
Objectives	The main objective of the sub-program is to minimize the damage of forest fires when a wild fire happens in the concerned sucos in collaboration with communities living in the fire-prone areas.
Target areas	All the concerned sucos
Implementation procedures	<p>The sub-program is to be implemented under an five (5)-year agreement between the suco and NDF in the respective sucos.</p> <p><u>1st year</u></p> <ol style="list-style-type: none"> 1) Identification of the fire-prone areas in suco. 2) Organization of a fire fighting team selecting communities who live close to the fire-prone areas or use the same areas for farming and other purposes and are willing to work for other communities. 3) Selection of leaders and development of by-laws of the fire fighting team; 4) Procurement and provision of simple fire fighting tools and equipment for the fire fighting team; 5) Conducts of training in using the tools and equipment and fire fighting drills in July and August; 6) Maintenance of the tools and equipment stored in suco office from time to time; and 7) Evaluation of the activities and preparation of the work plan for the 2nd year in a participatory manner. <p><u>2nd ~ 5th year</u></p> <ol style="list-style-type: none"> 1) Conducts of a fire fighting drill in August; 2) Maintenance of the tools and equipment stored in suco office from time to time; and 3) Evaluation of the activities and preparation of the work plan for the 2nd year in a participatory manner.
Timeline	<p><u>Identification of fire-prone areas, organization of a working team, and development of a work plan</u></p> <p>2~3 months (in the rainy season)</p> <p><u>Procurement of tools and equipment, training, and fire-fighting drills</u></p> <p>2~3 months (before the end of dry season)</p> <p><u>Evaluation and planning</u></p> <p>1 month (in the rainy season)</p>
Necessary inputs	<p><u>Identification of fire-prone areas, organization of a working team, and development of a work plan</u></p> <ol style="list-style-type: none"> 1) Facilitators (Main facilitator, a few co-facilitators, and field assistance) 2) Food for the meetings 3) Stationary (felt type pens, flipcharts, and masking tapes) 4) Transportation means for the facilitators and others <p><u>Procurement of tools and equipment, training, and fire-fighting drills</u></p> <ol style="list-style-type: none"> 1) Trainers and assistants 2) Fire fighting tools and equipment 3) Food for training and fire-fighting drills 4) Transportation means for transportation of seedlings and the facilitators
Expected outputs	<p><u>Direct Results</u></p> <ol style="list-style-type: none"> 1) The capacity to extinguish a wild fire will be enhanced in the sucos. <p><u>Direct Impact</u></p> <ol style="list-style-type: none"> 1) Damage of wild fires will be minimized when a wild fire happens. 2) The incidence of wild fires will be reduced.

5.4 Livelihood Improvement Program

5.4.1 Objectives

The main aim of the Livelihood Improvement Program is to reduce the human pressure on forest-related natural resources by improving local livelihoods or developing additional source of income using locally available resources.

5.4.2 Strategies and Approaches

In order to achieve the objectives of the Livelihood Improvement Program, the following sub-programs are proposed as necessary actions to be taken.

- a. Livelihood Development/Income Generating Sub-program
- b. Improved Cooking Stove Promotion Sub-program

The former sub-program, the Livelihood Development/Income Generating Program, is to be implemented by using the method of FFSs so that local communities can acquire necessary techniques/skills on livelihood development. Furthermore, the use of locally available resources and techniques is to be another key strategy adopted for the same sub-program.

On the other hand, the latter sub-program, Improved Cooking Stove Promotion Sub-program, should be introduced after improvement of livelihood conditions by the former sub-program. The program is to procure and distribute improved cooking stove to communities who are willing to use and can afford to shoulder some costs of cooking stove.

5.4.3 Sub-programs

(1) Livelihood Development/Income Generating Sub-program (LD/IG-SP)

The outlines of the sub-program are described in the following table.

Table 5-8: Outlines of the LD/IG-SP

Items	Descriptions
Objectives	The main objective of the sub-program is to improve local livelihoods by increase of sources of cash income and quality foods using material locally available.
Target areas	All the concerned sucos except Suco Fadabloco and Hautoho
Implementation procedures	<p>The sub-program is to be implemented for 3 years in the respective sucos in the following manner:</p> <p><u>1st year</u></p> <ol style="list-style-type: none"> 1) Identification/selection of women members and organization of women's groups (1 group per aldeia); 2) Selection of leaders and key members of the group and determination of roles and responsibilities of the members; 3) Conduct of a participatory resource assessment and identification of potential livelihood development options 4) Development of a work plan in a participatory manner; 5) Conducts of hands-on training courses (farmer field schools: FFSs) on the potential livelihood development options, which should be based on natural resources locally available in principle; 6) Procurement of tools and equipment necessary for training on the potential livelihood development options; and 7) Evaluation of the training courses and preparation of the work plan for the 2nd year in a participatory manner. <p><u>2nd and 3rd year</u></p>

Items	Descriptions
	<ol style="list-style-type: none"> 1) Continuation of hands-on training courses (farmer field schools: FFSs) on potential livelihood development options; 2) Promotion of products/commodities produced by the women' groups in coordination with major markets; 3) Assistance in marketing the products and running a small scale business based on the products/commodities by the women' s groups; 5) Conducts of training on financial management and provision of daily coaching on book keeping; and 6) Evaluation of the training courses. <p><u>3rd year</u></p> <ol style="list-style-type: none"> 1) Assistance in the continuation of the production of the commodities and running of the small scale business; 2) Provision of daily coaching on book keeping and cash mnagement; and 3) Evaluation of the training courses.
Timeline	<p><u>Resource assessment, group organization and work planning</u> 2~3 months (in the rainy season)</p> <p><u>Hands-on training/FFSs</u> 12 months (from the end of the rainy season)</p> <p><u>Evaluation and planning</u> 1 month (at the end of the rainy season)</p>
Necessary inputs	<p><u>Resource assessment, group organization and work planning</u></p> <ol style="list-style-type: none"> 1) Facilitators (Main facilitator, a few co-facilitators, and field assistance) 2) Food for the meetings 3) Stationary (felt type pens, flipcharts, and masking tapes) 4) Transportation means for the facilitators and others <p><u>Hands-on training/FFSs</u></p> <ol style="list-style-type: none"> 1) Facilitators (Main facilitator, a few co-facilitators, and field assistance) 2) Tools and equipment 3) Food for the training courses 4) Local materials 5) Transportation means for the facilitators and others
Expected outputs	<p><u>Direct Results</u></p> <ol style="list-style-type: none"> 1) Communities, specifically women, in the sucos will prouce products/commodities that can be sold at the market by using local materials. <p><u>Direct Impact</u></p> <ol style="list-style-type: none"> 1) Local livelihoods will be improved. 2) Natural resources in the sucos will be managed in a sustainable manner.

(2) Improved Cooking Stove Promotion Sub-program (ICSP-SP)

The outlines of the sub-program are described in the following table.

Table 5-9: Outlines of the ICSP-SP

Items	Descriptions
Objectives	The main objective of the sub-program is to reduce the use of fire wood so as to decrease human pressure on natural forests.
Target areas	All the concerned sucos
Implementation procedures	<p>The sub-program is to be implemented for 3 years in the respective sucos in the following manner:</p> <p><u>1st year</u></p> <ol style="list-style-type: none"> 1) Identification of communities who are willing to use and can afford to buy improved cooking stoves; 2) Procurement of cooking stoves for those who can afford to buy; 3) Conduct of guidance and training on the use and maintenance of cooking stoves; and 4) Evaluation of the effectiveness of cooking stoves and identification of any communities who are willing to use and can afford to buy the same. <p><u>2nd and 3rd year</u></p>

Items	Descriptions
	1) Repeat of the activities conducted in the 1 st year (except 1))
Timeline	<u>Identification of communities and procurement of cooking stove</u> 2~3 months (any time) <u>Conduct of guidance and training</u> 1 month (after procurement of cooking stoves) <u>Evaluation and identification of communities</u> 1 month (1 year after introduction of cooking stoves)
Necessary inputs	<u>Identification of communities and procurement of cooking stove</u> 1) Facilitators (Main facilitator, and field assistance) 2) Food for the meetings 3) Stationary (felt type pens, flipcharts, and masking tapes) 4) Improved cooking stoves 4) Transportation means for the cooking stoves and facilitators <u>Guidance and training</u> 1) Facilitators (Main facilitator, and field assistance) 2) Food for the guidance and training 3) Local materials (fire wood) 4) Transportation means for the facilitators and others
Expected outputs	<u>Direct Results</u> 1) The number of families who use improved cooking stoves will increase. <u>Direct Impact</u> 1) The volume of fire wood consumed in the sucos will be reduced. 2) The rate of forest degradation / deforestation will decline in the sucos.

5.5 Public Awareness Raising Program

5.5.1 Objectives

The main aim of the Public Awareness Raising Program is to heighten communities' consciousness of risks of the environmental destructive activities, namely, wild fires, illegal logging, and animal grazing, and simultaneously enhance their understanding of sustainable and proper management of forest-related natural resources, so that the incidence of forest fires, illegal logging and animal grazing could be reduced.

5.5.2 Strategies and Approaches

The sole sub-program, namely the Public Awareness Campaign Sub-program, is proposed as the necessary action to be taken to achieve the aforementioned objectives of the program.

The following are considered as key strategies for effective information dissemination under the current socio-economic context of the Noru watershed.

- to target both generations, adult and children, considering the rapid population increase;
- to prepare and use public awareness campaign materials easy-to-understand and visually-apparent to minimize the effect of language barrier; and
- to use human resources who are environmentally conscious in suco, such as suco leaders who are involved in the PLUP-SP, as resource persons in the campaign to help the messages of the campaign get across among communities.

5.5.3 Public Awareness Campaign Sub-program (PAC-SP)

The outlines of the sub-program are described in the following table.

Table 5-10: Outlines of the PAC-SP

Items	Descriptions
Objectives	The main objective of the sub-program is to enhance public awareness of risks of wild fires, illegal logging, and animal grazing, and simultaneously deepen the understanding of the importance of sustainable management of forest-related natural resources among communities.
Target areas	All the concerned sucos
Implementation procedures	<p>The sub-program is to be implemented for 2 years for all the sucos in the following manner:</p> <p><u>1st year</u></p> <ol style="list-style-type: none"> 1) Identification of key topics/messages to get across among communities in the sucos in consultation with suco leaders; 2) Development of a work plan of the awareness campaigns with materials; 3) Conduct of the awareness campaigns (workshops, meetings, and other information dissemination activities) at the sucos; and 4) Evaluation of the process and effectiveness of the awareness campaigns. <p><u>2nd year</u></p> <ol style="list-style-type: none"> 1) Repeat of the activities conducted in the 1st year (except 1))
Timeline	<p><u>Identification of topics and development of a work plan with materials</u> 2~3 months (any time)</p> <p><u>Conduct of the public awareness campaigns</u> 8 months (after the preparation of the work plan)</p> <p><u>Evaluation and identification of communities</u> 1 month (after the end of the public awareness campaigns)</p>
Necessary inputs	<p><u>Identification of communities and procurement of cooking stove</u></p> <ol style="list-style-type: none"> 1) Facilitators (Main facilitator, and field assistance) 2) Food for the meetings 3) Stationary (felt type pens, flipcharts, and masking tapes) 4) Transportation means for the cooking stoves and facilitators <p><u>Public awareness campaigns</u></p> <ol style="list-style-type: none"> 1) Facilitators (Main facilitator, and field assistance) 2) Food for the participants in the campaigns 3) Materials for the campaigns 4) Transportation means for the facilitators and others
Expected outputs	<p><u>Direct Results</u></p> <ol style="list-style-type: none"> 1) The materials for public awareness campaigns will be developed. 2) The public awareness of the necessity of forest protection will be enhanced. <p><u>Direct Impact</u></p> <ol style="list-style-type: none"> 1) The incidence of wild fires, illegal logging, and animal grazing will be reduced. 2) The rate of forest degradation / deforestation will decline in the sucos.

5.6 Institutional Strengthening Program

5.6.1 Objectives

The main objective of the Institutional Strengthening Program is to help the Noru Watershed Management Council keep operational to fulfill its missions even after the end of direct support from the JICA-MAF CB-NRM Project in August 2015.

5.6.2 Strategies and Approaches

The Watershed Management Council is the existing organizational framework established for protection of watershed functions through sustainable management of forest-related natural resources in the watershed. Thus, a key strategy to be adopted is to help the Council continue its key functions, namely as i) a platform where the concerned sucos can

coordinate their efforts for sustainable forest management, and ii) an advisory committee for the concerned sucos to take necessary actions.

The emphasis should also be put on the enhancement of the council members' capacity to enable the members of the Council to fulfill their roles and responsibilities for the operations of the Council even after the end of the support from the said CB-NRM Project. In particular, it is necessary to strengthen the capacity of suco leaders of the concerned sucos, especially the ability to govern the villages including forest-related natural resources effectively using the CB-NRM mechanism.

5.6.3 Actions to be Taken for Strengthening of the Noru Watershed Management Council

To strengthen the functions of the Noru Watershed Management Council, the following supporting activities are proposed as actions to be undertaken in the watershed management plan.

Table 5-11: Outlines of the Strengthening of the Noru Watershed Management Council

Activity	Outlines	Necessary inputs	Target	Timeframe
Assistance in convening the regular and ad hoc meetings	Help the Council convene the regular meeting every three months.	Facilitator with assistance Cost of food for the meeting Stationary	All the members of the Council	One day x 4 times/year (every three (3) months for 5 years)
	Help the Council convene any ad hoc meeting to discuss issues on natural resource management	Same as above	All the members of the Council	As needs arise (for 5 years)
Arrangement of exchange visits/ study tours	Help the members of the Council visit any sucos that have carried out activities similar to those introduced in the Noru watershed and arrange meetings with communities living in such sucos.	Facilitator with assistance Cost of food for the meeting Stationary Transportation means	All the members of the Council	2 days x 1 time/year (once a year for 5 years)
Provision of opportunities to develop the members' capacity for CB-NRM	Help the members of the Council enhance their capacity to properly manage forest-related natural resources using the future land use plan and village regulations of the respective villages.	Facilitator with assistance Cost of food for training Stationary Transportation means Venue for training	Village leaders of the concerned sucos	2 days x 1 time/year (once a year for 5 years)

By doing the above-listed activities, the Noru Watershed Management Council is expected to be capacitated to carry out its missions for sustainable management of the Noru Watershed in close coordination with NDF/MAF.

Chapter 6 Implementation Plan

6.1 Basic Concept

The action plan described in Chapter 5 shall be implemented with the support from MAF/NDF as well as other organizations, such as donor and/or international organizations. It is, however, speculated that it would not be easy for any organization to implement all the 11 sub-programs in all the concerned sucos for a short period of time due to the lack of human resources in the country and remoteness of the areas.

Thus, it is advisable to treat the watershed management plan as a long-term plan to be implemented over a few decades. This chapter indicates the process of implementation of the plan, a proposed organizational structure, and an implementation schedule for the next five (5) years.

6.2 Implementation Method

6.2.1 Process of Implementation of the Sub-programs

(1) Overall Process

PLUP-SP shall be implemented ahead of the other sub-programs except PAC-SP and Strengthening of the Council as PLUP-SP will determine the future land use and priority agriculture and forestry extension services, which directly relate to the selection of the sub-programs to be implemented in the sucos. Following PLUP-SP, one or two sub-program/s selected by local communities among those under the land management-related and supporting programs will be implemented.

In parallel with PLUP-SP, PAC-SP and the Strengthening of the Council can be implemented to enhance the capacity of suco leaders as well as other communities in the concerned sucos. The following figure shows the flow of implementation of the sub-programs.

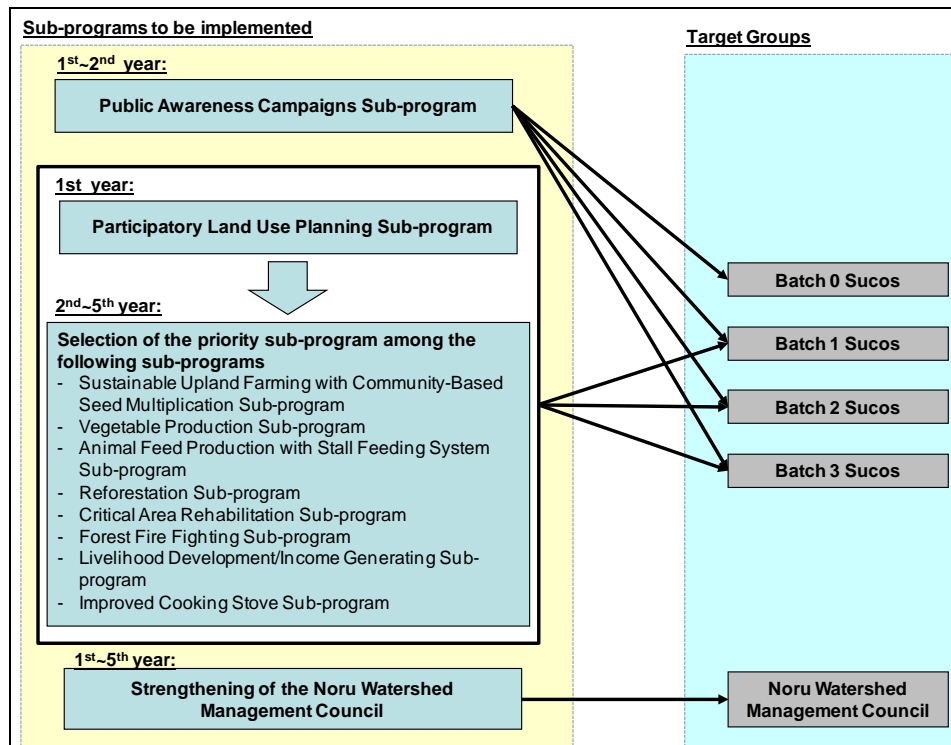


Figure 6-1: Overall Process of the Implementation of the Sub-programs

(2) Selection of the Sub-programs

The selection of the sub-programs in the respective sucos will be undertaken as a part of the process of PLUP-SP after the formulation of a future land use plan with village regulations, especially the preparation of a future land use plan. Considering the capacity of local communities as well as limitation of competent facilitators in the country, it is advisable to implement one (1) or two (2) sub-program/s in a suco at once, or it would be difficult to ensure the satisfactory results from the sub-programs.

As described in Chapter 5, all the sub-programs will not necessarily be suitable for all the concerned sucos. It is therefore important to consider and assess the current conditions of the sucos and check if the situations are suitable for the implementation of the respective sub-programs. The following table shows the potential target areas for the sub-programs as described in Chapter 5.

Table 6-1: Target Sucos and Project Periods of the Respective Sub-programs

Program	Sub-program	Possible target sucos	Period per suco
Land Use Program	PLUP-SP	12 sucos except Suco Faturasa, Fadabloco, and Hautoho	4 years
Farm and Livestock Management Program	SUF with CBSN-SP	12 sucos except Suco Faturasa, Fadabloco, and Hautoho	3 years
	VP-SP	Sucos where permanent water sources are available	3 years
	AFP with SFS-SP	Sucos where animal grazing is the prevailing practice among communities	3 years
Reforestation and Forest Protection Program	Rf-SP	12 sucos	3 years
	CAR-SP	Sucos where there are degraded water catchments and/or important areas	5 years
	FFF-SP	Sucos where the incidence of forest fire is high	5 years
Livelihood Improvement Program	LD/IG-SP	12 sucos except Suco Fadabloco and Hautoho	3 years
	ICSP-SP	12 sucos	3 years

Program	Sub-program	Possible target sucos	Period per suco
Public Awareness Raising Program	PAC-SP	12 sucos	3 years
Institutional Strengthening Program	Strengthening of the Council	Noru Watershed Management Council	5 years

6.2.2 Grouping of the Sucos

As pointed out in Section 6.1, it would be quite difficult to implement PLUP-SP and other sub-programs in all the concerned sucos simultaneously. Thus, the concerned sucos shall be grouped into four (4) batches so as to implement the action plan in a phased manner. The following table shows the number of sucos allocated to each batch and the concept of implementation.

Table 6-2: Grouping of the Sucos and Implementation Concept

Batch	Sucos	Implementation Concept
Batch 0	3 sucos (Suco Faturasa, Fadabloco, and Hautoho)	As the sucos have implemented PLUP-SP and other sub-programs from 2011 to 2015 with the assistance from the JICA-MAF CB-NRM Project, it is recommended that they mainly focus on the continuation of the activities introduced by the sub-programs for the next five years.
Batch 1	3 sucos (1 suco from Remexio and 2 sucos from Liquidoe)	Batch 1 sucos will start PLUP-SP after the situation analysis in the field in the first year. Following PLUP-SP, one or two (2) sub-program/s, selected by local communities as a/ priority sub-program/s, will be implemented in the following years.
Batch 2	ditto	Batch 2 suco will do the same activities in the same manner in the second year as what Batch 1 sucos do in the first year.
Batch 3	ditto	Batch 3 suco will start the activities in the 3 rd year.

An implementation scheduled for the next five (5) years will be prepared based on the implementation concepts described above.

6.3 Institutional Framework for Implementation

6.3.1 Organizations to be involved in the Implementation

The following organizations/groups of people might be involved in the implementation of the action plan.

- ◆ Sucos (suco council and communities);
- ◆ Sub-district Administrative Offices in Remexio and Liquidoe;
- ◆ MAF (District MAF Office in Aileu);
- ◆ NDF;
- ◆ NGOs that have worked in the field of forest management and agricultural development; and
- ◆ International organization or donor agencies

6.3.2 Proposed Organizational Structure for Implementation

Each organization/group listed in the previous sub-section should have different expected roles in the implementation of the sub-program, namely:

- ▶ Sucos will be the direct beneficiaries and field implementers of the sub-program activities at the same time;
- ▶ Sub-district Administrative Offices will support the implementation of the sub-programs by local communities in the sucos;
- ▶ MAF and NDF may provide funds to implement the action plan and/or function as implementing agencies particularly in the case of the government-funded project;
- ▶ NGOs will be the assisting organizations or external facilitators who will support the implementing agencies in the conducts of sub-program activities the field;
- ▶ International organizations or donor agencies may be another funding source for the implementation of the action plan and at the same time can be the joint implementers in collaboration with MAF/NDF as well as NGOs.

The proposed organizational structure for implementation of the action plan is shown below.

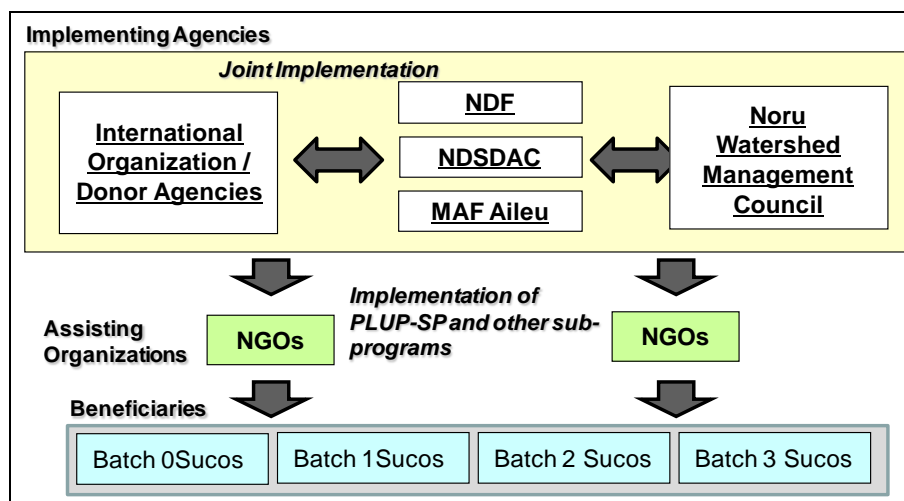


Figure 6-2: Proposed Organizational Structure for Implementation

6.4 Necessary Support and Arrangements for Implementation

It is believed that the following support and arrangements are requisite to the implementation of the action plan.

- a. Financial support to cover the costs/expenses for implementation of the sub-programs (Coordination with any possible sources of financial assistance);
- b. Allocation of facilitators for meetings and training planned in the sub-programs (Arrangement of contracts with competent-cum-experienced NGOs);
- c. Arrangement of necessary tools/materials which need to be externally procured for the respective sub-programs as outlined below;

Table 6-3: Materials to be externally procured

Sub-program	Materials to be externally procured
PLUP-SP	<ul style="list-style-type: none"> - Aerial photo maps at a scale of 1/7,500 ~10,000 - Transparent plastic sheet (over A0 size) - A wooden board (over A0 size)
SUF with CBSM-SP	<ul style="list-style-type: none"> - Farm tools - Improved seeds of upland crops

Sub-program	Materials to be externally procured
VP-SP	- Farm tools - Seeds of vegetables
AFP with SFS -SP	- Farm tools - Seeds and seedlings of fodder crops/trees
Rf -SP	- Farm tools - Seeds of trees (timber, fruits, and industrial plants) - Poly bags
CAR -SP	- Farm tools - Seedlings
FFF -SP	- Fire fighting tools and equipment
LD/IG -SP	- Tools and equipment for livelihood development
ICSP -SP	- Improved cooking stove
PAC -SP	- Materials for public awareness campaigns

- d. Arrangement of transportation means for facilitators and materials procured; and
- e. Maintenance of coordination between/among the organizations involved in the implementation of the action plan.

6.5 Implementation Schedule

An implementation schedule of the action plan for the next five (5) years is drafted as shown in the following figure. In the preparation of the draft implementation schedule, the following assumptions are taken into account.

- a. Batch 1~3 sucos will implement one or two sub-program/s after PLUP-SP;
- b. The sub-program will be implemented one year after PLUP-SP.
- c. PAC-SP and the strengthening of the Noru Watershed Management Council will be implemented in the first year separately from PLUP-SP.
- d. The sub-programs after PLUP-SP are not specified in the implementation schedule as the selection of the sub-program will be carried out in the process of PLUP-SP,
- e. The duration of the sub-program is tentatively set at three (3) years, although it ranges from three (3) to five (5) years.

Activity	Target Groups	1st year		2nd year		3rd year		4th year		5th year	
		1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half
1. Strengthening of the Noru WMC	Noru WMC										
2. Public Awareness Campaign SP	All the 12 sucos										
3. Assistance in continuation of the sub-program activities	Batch 0 Sucos										
4. Participatory Land Use Planning SP	Batch 1 Sucos										
	Batch 2 Sucos										
	Batch 3 Sucos										
5. Priority Sub-programs selected by communities in the sucos	Batch 1 Sucos										
	Batch 2 Sucos										
	Batch 3 Sucos										

Figure 6-3: Tentative Implementation Schedule for the Next Five (5) Years (2015-2019)

Appendix-4.4

Summaries of the Watershed Management Plan

Present Conditions of the Noru Watershed (Chapter 2 of the Management Plan of the Noru Watershed)

The Project for
Community-Based Sustainable Natural Resource
Management in Timor-Leste

October 10, 2014

JICA and MAF Project Teams

1

Draft Contents of the Management Plan

- Chapter 1 Introduction
- Chapter 2 Present Conditions of the Noru Watershed
- Chapter 3 Current Issues on Watershed Management and Stakeholders relevant to Watershed Management
- Chapter 4 Goals and Strategic Objectives of the Plan
- Chapter 5 Watershed Management Plan / Ecosystem-based Management Plan for Adaptation to Climate Changes
- Chapter 6 Implementation Plan
- Chapter 7 Recommendations

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Contents of Chapter 2 (Present Conditions)

1. Location and Administrative Situations of the Watershed
2. Natural Conditions
 - 2.1 Climate
 - 2.2 Slopes
 - 2.3 Elevation
 - 2.4 Land Use and Vegetation Covers
 - 2.5 Potential of Soil Erosion
3. Socio-economic Conditions
 - 3.1 Demography
 - 3.2 Agricultural Production
 - 3.3 Animal Production
 - 3.4 Food Security
 - 3.5 Estimated Income Level
4. Vulnerability to Climate Changes

3

1. Location and Administrative Situation

(1) Location Map



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1. Location and Administrative Situation

(2) Area Distribution in the Watershed

Sub-district	Sucos	Total Area	Area in the watershed
Remexio	Acumau	3,875 ha	742 ha
	Fadabloco	1,766 ha	1,766 ha
	Fahiso	1,404 ha	1,200 ha
	Faturasa	4,819 ha	3,334 ha
	Hautoho	1,528 ha	1,528 ha
	Maumeta	533 ha	533 ha
Liquidoe	Acubilitoh	1,272 ha	361 ha
	Belereu	2,685 ha	411 ha
	Fahiso	803 ha	713 ha
	Faturilau	7,791 ha	1,700 ha
	Manucasa	784 ha	215 ha
	Nameloso	1,045 ha	338 ha
Remexio/Liquidoe	Others		11 ha
Total		28,316 ha	12,852 ha

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2. Natural Conditions

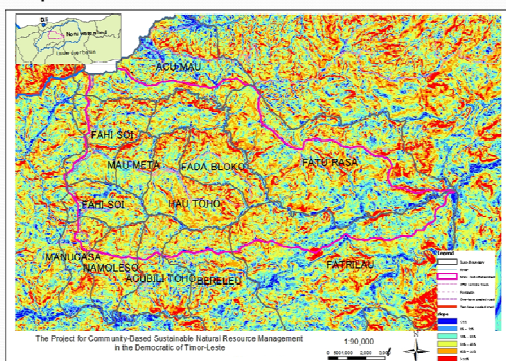
2.1 Climate

- (1) The average annual rainfall may be more or less 1,000 mm ranging from 600 mm to 1,500 mm.
- (2) The higher the elevation in the area is, the higher the rainfall has.
- (3) The lower part close to the conjunction with the Eraibanaubere river may be the driest part in the watershed.
- (4) The rainfalls mainly concentrate on five (5) months from December to April.
- (5) The average temperature in the watershed may range from 21 ~ 26 °C.

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2. Natural Conditions

2.2 Slope



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2. Natural Conditions

2.2 Slope

The steep sloping lands which have more than 40% slopes occupy about 30 % of the total area of the watershed.

Sloping ranges	Area (ha)	Ratio (%)
0-8 %	372	2.9
8-15%	990	7.7
15-25%	2,817	21.9
25-40%	5,122	39.9
40-55%	2,560	19.9
> 55%	991	7.7
Total	12,852	100.0

2.3 Elevation

The elevation of the watershed ranges from 330 m to 1,500 m above sea level. The highest ridge runs along the borders with Sub-district Aileu, while the lowest part is located at the confluence of the Noru and Eraibanaubere rivers at the borders with Sub-district Lacio.

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2. Natural Conditions

2.4 Land Use and Vegetation Covers

(1) Present Land Use and Cover Map



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2. Natural Conditions

2.4 Land Use and Vegetation Covers

(2) Area Distribution

Land use class	Noru watershed	
	(ha)	(%)
1. Forests	5,005.4	38.9
1-1: Closed forest (natural)	600.5	4.7
1-2: Medium forest (natural)	2,705.3	21.1
1-3: Woodland (natural)	1,699.6	13.2
2. Shrub land/Farm land	4,898.3	38.1
3. Grassland	1,065.4	8.3
4. Coffee plantation	95.1	0.7
5. Bare land / Farm land	1,685.0	13.1
6. Sandbar/River bed	101.5	0.8
Total	12,851.3	100.0

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2. Natural Conditions

2.5 Potential of Soil Erosion

Suco	V. Low		Low		Moderate		High		Severe		Total	
	ha	%	ha	%	ha	%	ha	%	ha	%	ha	%
Remexio												
Acumau	388	52%	19	3%	22	3%	23	3%	291	39%	742	100%
Fadabloco	1,029	58%	21	1%	26	1%	34	2%	657	37%	1,766	100%
Fahiso	594	49%	26	2%	32	3%	38	3%	510	43%	1,200	100%
Faturasa	1,587	48%	87	3%	108	3%	117	4%	1,434	43%	3,334	100%
Hautoho	822	54%	22	1%	26	2%	35	2%	624	41%	1,528	100%
Maumeta	296	56%	14	3%	23	4%	32	6%	168	31%	533	100%
Liquidoe												
Acubilitohu	193	54%	10	3%	13	3%	16	4%	130	36%	361	100%
Belereu	221	54%	11	3%	15	4%	16	4%	148	36%	411	100%
Fahiso	482	68%	24	3%	24	3%	28	4%	155	22%	713	100%
Faturilau	921	54%	47	3%	60	4%	68	4%	604	36%	1,700	100%
Manucasa	132	61%	7	3%	8	4%	8	4%	60	28%	215	100%
Nameloso	199	59%	7	2%	10	3%	14	4%	108	32%	338	100%
Total	6,864	53%	295	2%	367	3%	429	3%	4,889	38%	12,841	100%

About 40 % of the watershed area is considered highly susceptible to surface soil erosion.

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3. Socio-Economic Conditions

3.1 Demography

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3. Socio-Economic Conditions

3.2 Agricultural Production

- ◆ The major crops produced are maize, cassava, sweet potato, and beans, which are generally planted in the same farm in a mixed planting manner.
- ◆ The average cropped area for the major crops is estimated at about 1 ha, while the average productivity of maize is less than 1 ton/ha.
- ◆ On average, households have one or two famr/s which is/are used for crop production every year.
- ◆ Soil conservation measures and improved farming system have been introduced in three (3) sucos, Faturasa, Fadabloco, and Hautoho.

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3. Socio-Economic Conditions

3.3 Animal Production

- ◆ Almost all the families in the watershed own some animals, especially pigs and goats.
- ◆ Some, especially those in Faturasa, hold a number of heads of cattle and buffalo.
- ◆ But the majority of them hold a few heads of cattle/buffalo in addition to pigs and goats.
- ◆ A lack of animal feed during the dry season is the major constraint to the livestock management.

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3. Socio-Economic Conditions

3.4 Food Security

- ◆ The majority of communities have faced a seasonal shortage of food between November/December and February/March.
- ◆ The main reasons for food insecurity are: i) low productivity, ii) limited cropping area, iii) high production loss during storing, and iv) limited opportunities to earn cash income.
- ◆ The coping strategies that communities have taken when facing a shortage of food are: i) reduction of the number of meals, ii) reduction of the amount of food, iii) consumption of alternative crops, and iv) collection and consumption of emergency crops.

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3. Socio-Economic Conditions

3.5 Estimated Income Level

- ◆ The average household cash incomes in Suco Faturasa, Fadabloco, and Hautoho are estimated at US\$ 829, US\$ 954, and US\$ 760.
- ◆ Although there is no data on the average household income in the watershed, the data mentioned above likely represent the current economic conditions of households in the watershed.

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4. Vulnerability to Climate Changes

4.1 Projected Climate Changes

- Climate change is considered as a foreseeable threat in Timor-Leste.
- National Adaptation Program of Action (NAPA) projected the climate changes in Timor-Leste for the next 30 years as outlined below.
 - ✓ In the dry season, the temperature might become high, while the precipitation in might become less;
 - ✓ In the rainy season, the intensity of rainfalls, such as hourly rainfall intensity, might become high, and the length of rainfalls might be prolonged;
 - ✓ The strength of wind might become high; and
 - ✓ The rainfall patterns will fluctuate from year to year.

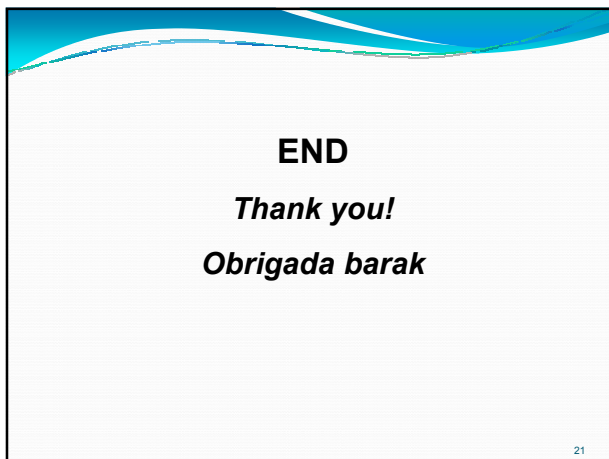
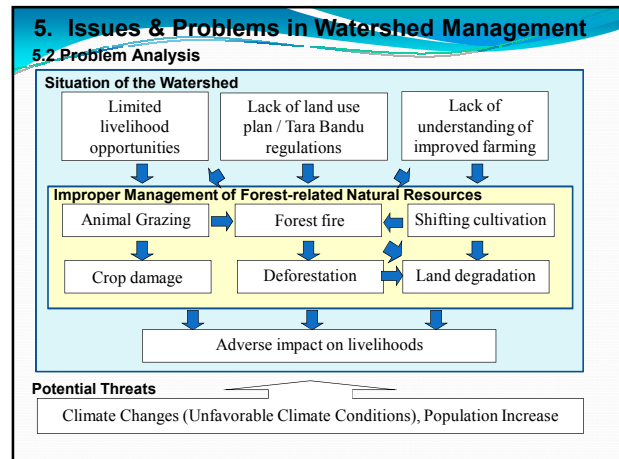
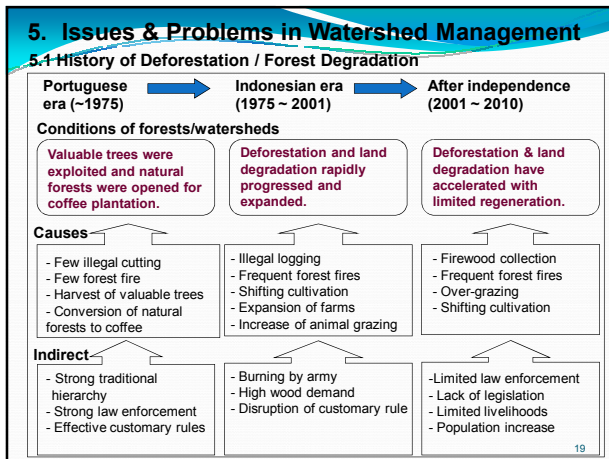
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4. Vulnerability to Climate Changes

4.2 Potential Impacts on Communities

Sector	Potential Impacts caused by Climate Changes <1
Agriculture	<ul style="list-style-type: none"> ◆ The yield of maize may drastically decline, but the yield of cassava may increase. ◆ The incidence of pest and disease damage may increase. ◆ Crop damage caused by storm and strong wind might increase. ◆ Some farms may be eroded due to the expansion of gully. ◆ The productivity of livestock animal may be reduced. ◆ Soil fertility may drastically decline.
Forest and Agroforest	<ul style="list-style-type: none"> ◆ The incidence of forest fires may increase. ◆ The incidence of landslides may increase in steep lands. ◆ Some species may not grow well due to the increase of temperature. ◆ The growth of coffee and orange may be affected due to high heat. ◆ Forests along small streams may be washed out due to heavy rains.
Infrastructure	<ul style="list-style-type: none"> ◆ Rural road networks may be damaged. ◆ Natural springs used as sources of water may be damaged. ◆ Risk of damage to houses and other infrastructure may increase.
Water, Sanitation, and Health	<ul style="list-style-type: none"> ◆ The access to water may be reduced as some sources may be dried up. ◆ The sources of water may be affected in terms of quality and quantity. ◆ The incidence of water-borne diseases and infections may increase.

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Goal and Strategic Objectives and Outlines of the Action Plan of the Watershed Management Plan (Chapter 3 & 4 and Outlines of Chapter 5 of the Management Plan)

The Project for
Community-Based Sustainable Natural Resource
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October 10, 2014

JICA and MAF Project Teams

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Contents of Chapter 3 and 4

Chapter 3 Current Issues on Watershed Management and Stakeholders relevant to Watershed Management

- 3.1 Issues on Watershed Management
 - 3.1.1 History of Forest Degradation
 - 3.1.2 Current Issues in the Watershed
- 3.2 Stakeholders related to the Noru Watershed
 - 3.2.1 Major Stakeholders
 - 3.2.2 Noru Watershed Management Council

Chapter 4 Goals and Strategic Objectives of the Plan

- 4.1 Goal and Strategic Objectives
- 4.2 Overall Guidelines on Land Management in the Watershed

3

Chapter 3

4

3.1 Current Issues on Watershed Management

3.1.1 History of Deforestation / Forest Degradation

Portuguese era (~1975) → Indonesian era (1975 ~ 2001) → After independence (2001 ~ 2010)

Conditions of forests/watersheds

Valuable trees were exploited and natural forests were opened for coffee plantation.

Deforestation and land degradation rapidly progressed and expanded.

Deforestation & land degradation have accelerated with limited regeneration.

Causes

- Few illegal cutting
- Few forest fire
- Harvest of valuable trees
- Conversion of natural forests to coffee

- Illegal logging
- Frequent forest fires
- Shifting cultivation
- Expansion of farms
- Increase of animal grazing

- Firewood collection
- Frequent forest fires
- Over-grazing
- Shifting cultivation

Indirect

- Strong traditional hierarchy
- Strong law enforcement
- Effective customary rules

- Burning by army
- High wood demand
- Disruption of customary rule

- Limited law enforcement
- Lack of legislation
- Limited livelihoods
- Population increase

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3.1 Current Issues on Watershed Management

3.1.2 Problem Analysis

Situation of the Watershed

Limited livelihood opportunities

Lack of land use plan / Tara Bandu regulations

Lack of understanding of improved farming

Improper Management of Forest-related Natural Resources

Animal Grazing

Forest fire

Shifting cultivation

Crop damage

Deforestation

Land degradation

Adverse impact on livelihoods

Potential Threats

Climate Changes (Unfavorable Climate Conditions), Population Increase

3.2 Stakeholders related to the Noru Watershed

3.2.1 Major Stakeholders

- District Administrative Office
- Sub-district offices of Remexio & Liquidoe
- Sucos located inside the watershed
- District MAF/NDF
- Extension officers
- Forest Guard
- ND for Environment
- PNTL
- SAS sub-district in Remexio & Liquidoe
- Church
- NGO (AMAR, WV, Plan, Haburas, RAEBIA)

Further analyses of the respective stakeholders are described in the report based on the results of the discussion of the Noru WMC.

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3.2 Stakeholders related to the Noru Watershed

3.2.2 Noru Watershed Management Council

(1) Vision and Missions of the Watershed Management Council

Vision:

"Properly protect and manage forests, lands, and water resources in the Noru watershed to improve living conditions and livelihoods of residents in the watershed and stabilize water supply to the downstream areas."

Missions (Summary):

- ◆ Provide guidance and orientation on sustainable forest-related natural resource management (SFNRM) to village leaders;
- ◆ Provide leadership in harmonizing the interests and activities of sucos;
- ◆ Plan, implement, and evaluate a watershed management plan;
- ◆ Help village leaders enhance people's awareness of SFNRM;
- ◆ Promote necessary actions for sustainable SFNRM;
- ◆ Hand over the valuable natural resources to the future; and
- ◆ Share the experiences with other sucos to promote sustainable forest-related natural resource management.

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3.2 Stakeholders related to the Noru Watershed

3.2.2 Noru Watershed Management Council

(3) Functions of the Watershed Management Council

Functions (Summary):

- ◆ to formulate a watershed management plan;
- ◆ to prepare an annual action plan to implement the watershed management plan;
- ◆ to monitor and evaluate the implementation of the annual action plan;
- ◆ to coordinate with relevant government offices and NGOs;
- ◆ to convene a regular meeting every quarter to monitor the situations of the watershed;
- ◆ to adopt a resolution that would encourage all the to work on sustainable forest and forest-related natural resource;
- ◆ to call a meeting whenever circumstances require it; and
- ◆ to organize a working group (or a committee) to tackle any important issues.

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Chapter 4

10

4.1 Goal and Strategic Objectives of the Plan

4.1 Goal and Strategic Objectives

Goal of the Watershed Management Plan

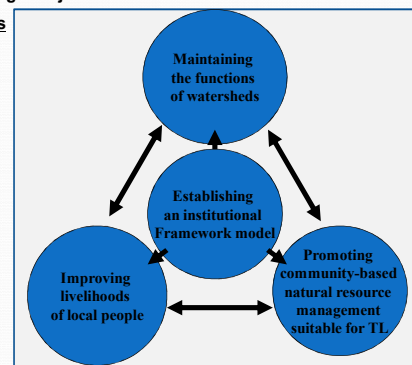
"to attain sustainable and integrated watershed management by balancing proper land and forest management with improvement of local livelihoods in a watershed."

11

4.1 Goal and Strategic Objectives of the Plan

4.1 Goal and Strategic Objectives

Strategic Objectives to achieve the Goal



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4.1 Goal and Strategic Objectives of the Plan

4.1 Goal and Strategic Objectives

(1) Improvement and Maintenance of the Functions of Watershed

- ◆ The watershed functions, e.g., stable supply of clean water, control of river run-off, and provision of places for agriculture and collection of forest resources are essential to human life; therefore, they should be maintained by protecting forests in the watershed.
- ◆ Specifically, the following issues should be addressed.
 - Sediment load to the rivers;
 - Slope failure/landslides;
 - Deforestation and forest degradation; and
 - Improper land use in sloping lands.

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4.1 Goal and Strategic Objectives of the Plan

4.1 Goal and Strategic Objectives

(2) Improvement of Livelihoods of Local People

- ◆ The average income of families in the watershed is obviously lower than the national average and many families have still faced a shortage of food for a part of the year.
- ◆ It would be difficult for local communities to change the conventional farming practices, unless they can ensure the food security and cash income sufficient for their well-being.
- ◆ One of the specific focuses of the watershed management plan shall be put on the improvement of livelihoods of local communities in the watershed, especially those who have limited livelihood opportunities.

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4.1 Goal and Strategic Objectives of the Plan

4.1 Goal and Strategic Objectives

(3) Introduction of the CB-NRM Mechanism in the Sucos concerned

- ◆ The CB-NRM mechanism encompasses i) the process of enhancing the capacity of communities and ii) the system to help communities to protect and wisely use forest-related resources in a sustainable manner.
- ◆ Three (3) sucos in the watershed, Suco Faturasa, Fadabloc, and Hautoho, have introduced the CB-NRM mechanism.
- ◆ The occurrence of wildfires, illegal cutting, and crop damage caused by animal grazing have been reduced since then.
- ◆ At the same time, many communities in the same sucos have applied the sustainable upland farming techniques to their own farms.
- ◆ One of the objectives is to help the remaining nine (9) sucos introduce the CB-NRM mechanism to achieve sustainable management of forest-related resources on a watershed level.

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4.1 Goal and Strategic Objectives of the Plan

4.1 Goal and Strategic Objectives

(4) Strengthening of the Collaborative Framework for Watershed Management

- ◆ One of the issues to be addressed in the Noru watershed management is the incidence of wild fires in the border areas between sucos.
- ◆ In many cases, the border areas are used by communities from the surrounding sucos for animal grazing and hunting.
- ◆ Collaborative efforts by the concerned sucos are needed for reducing the incidence of wildfires in parallel with the introduction of the CB-NRM mechanism in sucos.
- ◆ It is important to help the Council strengthen its functions, especially as a platform where the concerned sucos and NDF/MAF can work on issues on watershed management.

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4.2 Overall Guidelines on Land Management in the Watershed

- ◆ Proper land management is indispensable for maintenance and improvement of the functions of the watershed.
- ◆ Due consideration should be paid to the land coverage and slope in the determination of land uses for proper land management.
- ◆ To promote the proper land use and management, the Noru Watershed Management Council agreed with NDF/MAF on the adoption of the guidelines (which are given in the next slide) on land use and management in the watershed.

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4.2 Overall Guidelines on Land Management in the Watershed

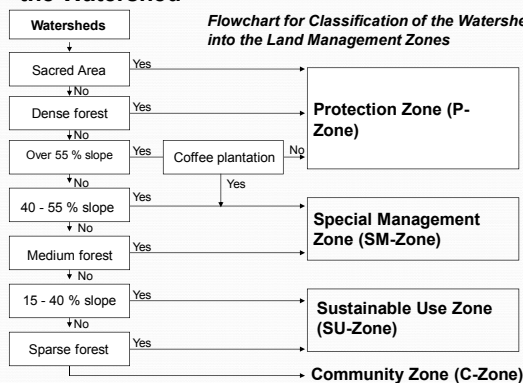
Guidelines on Land Use and Management in the Watershed

Zone	Description
P-Zone	Areas that have crucial functions the watershed and high environmental values shall be protected as Protection zone. (P-zone). Dense forests and steep sloping areas (over 55 %) but not used for coffee plantation are classified into P-zone. Such areas shall be protected as protected forests.
SM-Zone	Medium forests and areas with slopes between 40% and 55% are categorized as Special Management Zone (SM-Zone). Coffee plantations with more than 55% slopes are also classified under this zone. Forest-based land uses, such as i) coffee plantation, ii) mixed forests, iii) natural forests, are recommended for the areas under this zone.
SU-Zone	Areas with slopes ranging from 15% to 40% or those covered with sparse forests are categorized under Sustainable Use Zone (SU-Zone). The areas can be used for farming but shall be managed in a proper manner by applying soil conservation measures or agroforestry techniques.
C-Zone	Areas that do not belong to the above-mentioned zones are categorized into Community Zone (C-Zone). The areas can be used for economic purpose with a few restrictions.

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4.2 Overall Guidelines on Land Management in the Watershed

Flowchart for Classification of the Watershed into the Land Management Zones



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4.2 Overall Guidelines on Land Management in the Watershed

IN PREPARATION

Zoning Map of the Noru Watershed

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4.2 Overall Guidelines on Land Management in the Watershed

Area Distribution of the Zones in the respective Sucos

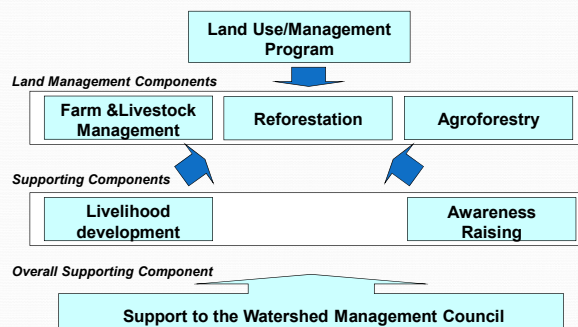
Suco	P-Zone		SM-Zone		SU-Zone		C-Zone		Total	
	ha	%	ha	%	ha	%	ha	%	ha	%
Remexio										
Acumau										
Fadabloco										
Fahisoi										
Faturasa										
Hautoho										
Maumeta										
Liquidoe										
Acubilitoho										
Belereu										
Fahisoi										
Faturilau										
Manucasa										
Nameloso										
Total										

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Outlines of Chapter 5

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5. Action Plan of the Watershed Management Plan (Outlines)



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5. Action Plan of the Watershed Management Plan

Program	Proposed Sub-programs (Draft Ideas)
Land Use/Management Program	<ul style="list-style-type: none"> ◆ Participatory land use planning sub-program (Future land use planning with village regulations, Selection of priority forestry and agriculture extension services, & Institutionalization of the village regulations.)
Farm & Livestock Management	<ul style="list-style-type: none"> ◆ Animal feed production and stall feeding sub-program ◆ Vegetable production sub-program
Reforestation	<ul style="list-style-type: none"> ◆ Community plantation (with seedling distribution) sub-program ◆ School plantation sub-program
Agroforestry	<ul style="list-style-type: none"> ◆ Sustainable upland farming promotion (including community-based seed multiplication) sub-program ◆ Backyard farm plantation (with fruit seedling distribution) sub-program

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5. Action Plan of the Watershed Management Plan

Program	Proposed Sub-programs (Draft Ideas)
Livelihood development	<ul style="list-style-type: none">◆ Food processing promotion sub-program◆ Cooking stove promotion sub-program◆ Other type of livelihood development sub-program
Awareness Raising	<ul style="list-style-type: none">◆ Public awareness raising sub-program
Support to the WMC	<ul style="list-style-type: none">◆ Support for regular meetings◆ Support for study tours / exchange visits◆ Information sharing with the members

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END

Thank you!

Obrigada barak

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Action Plan and Implementation Plan of the Watershed Management Plan (Chapters 5 and 6 of the Management Plan)

The Project for
Community-Based Sustainable Natural Resource
Management in Timor-Leste

November 7, 2014

JICA and MAF Project Teams

1

Draft Contents of the Management Plan

- Chapter 1 Introduction
- Chapter 2 Present Conditions of the Noru Watershed
- Chapter 3 Current Issues on Watershed Management and Stakeholders relevant to Watershed Management
- Chapter 4 Goals and Strategic Objectives of the Plan
- Chapter 5 Action Plan**
- Chapter 6 Implementation Plan
- Chapter 7 Recommendations

2

Contents of Chapter 5 and 6

Chapter 5 Action Plan for Watershed Management

- 5.1 Overall Framework of the Action Plan
- 5.2 Land Use Program
- 5.3 Farm and Livestock Management Program
- 5.4 Reforestation and Forest Protection Program
- 5.5 Livelihood Improvement Program
- 5.6 Public Awareness Raising Program
- 5.7 Institutional Strengthening Program

Chapter 6 Implementation Plan

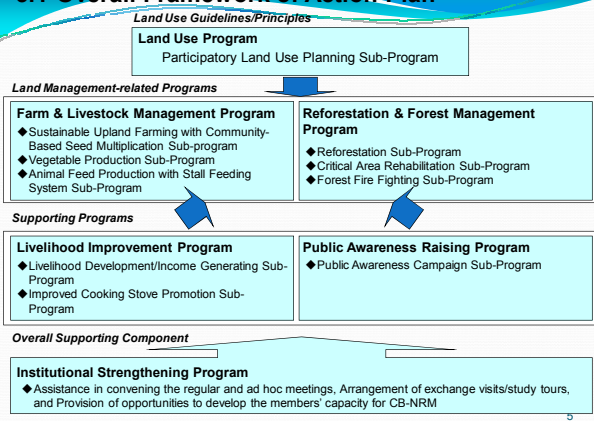
- 6.1 Basic Concept
- 6.2 Implementation Methods
- 6.3 Institutional Framework for Implementation
- 6.4 Necessary Support and Arrangements
- 6.5 Implementation Schedule

3

Chapter 5

4

5.1 Overall Framework of Action Plan



5

5.2 Land Use Program

5.2.1 Objectives

To enable local communities to manage forest-related natural resources in the concerned sucos in line with the land use and management principles.

5.2.2 Strategies

- ◆ To translate the land use and management principles shown in Chapter 4 into a land use plan.
- ◆ To introduce/implement the participatory land use planning (PLUP) as the key action of the Land Use Program.
- ◆ To enhance the capacity of suco leaders and other communities to manage lands and forest-related resources in a sustainable manner.

5.2.3 Sub-program (Action)

To implement the Participatory Land Use Planning Sub-program (PLUP-SP) in the concerned sucos except for Suco Faturasa, Fadabloco, and Hautoho.

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5.2 Land Use Program

PLUP-SP

Items	Description
Objective	to help suco leaders and communities manage lands and forest-related natural resources in line with the land use and management principles in the concerned sucos.
Target Area	All the sucos except Faturasa, Fadabloco & Hautoho
Procedures	(1) Formulation of a future land use plan with village regulations (12 steps for 3 ~5 months) (2) Selection of priority forestry and agriculture extension services (3 steps for 2 ~ 3 months) (3) Institutionalization of the village regulations (3 types of regular meetings for 3 ~ 5 years)
Necessary Input	Facilitators, Aerial photos, Cost for meetings, Transportation means, Stationary, Cost for Tara bandu
Expected Outputs	Future land use plan and village regulations (Output) Reduction of incidence of forest fires, illegal logging, and animal grazing

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5.3 Agriculture & Livestock Management Program

5.3.1 Objectives

To change farming and livestock management practices into sustainable and productive forms focusing on: i) sustainable use of sloping areas, ii) increase of staple crop production, iii) diversification of crops, and iv) semi-intensive management of livestock.

5.3.2 Strategies

- ◆ To introduce techniques through continuous hands-on training
- ◆ To effectively utilize local resources and technologies
- ◆ To pay due consideration to the natural conditions of the watershed

5.3.3 Sub-program (Action)

- a. Sustainable Upland Farming with Community-Based Seed Multiplication Sub-program
- b. Vegetable Production Sub-program
- c. Animal Feed Production with Stall Feeding System Sub-program

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5.3 Agriculture & Livestock Management Program

(1) SUF with CBSM-SP

Items	Description
Objective	to enhance the capacity of communities to apply sustainable upland farming techniques to their permanent farms along with the introduction of improved seeds of major staple crops
Target Area	All the sucos except Faturasa, Fadabloco & Hautoho
Procedures	(1) Group formation and participatory planning (3 months) (2) Hands on training (FFSs) on sustainable upland farming techniques (1 year x 3 times) (3) Evaluation (1 week x 1 time/year x 3 years)
Necessary Input	Facilitators, Farm tools, Improved seeds, Cost for meetings/training, Transportation means, Stationary
Expected Outputs	Individual application of sustainable upland farming techniques(Output) Increase of production of staple upland crops (Impact)

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5.3 Agriculture & Livestock Management Program

(2) VP-SP

Items	Description
Objective	to enhance the capacity of communities to produce quality vegetables.
Target Area	All the sucos which have water sources that can be used for vegetable farming during the dry season
Procedures	(1) Group formation and participatory planning (3 months) (2) Hands on training (FFSs) on vegetable production (1 year x 3 times) (3) Evaluation (1 week x 1 time/year x 3 years)
Necessary Input	Facilitators, Farm tools, vegetable seeds, Cost for meetings/training, Transportation means, Stationary
Expected Outputs	Production of several types of vegetables in suco (Output) Increase of cash income (Impact)

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5.3 Agriculture & Livestock Management Program

(3) AFP with SFS-SP

Items	Description
Objective	to enhance the capacity of communities to produce animal feeds and stall-feed animals so as to rear animals in pens instead of free grazing.
Target Area	All the sucos where animal grazing is the prevailing practices
Procedures	(1) Group formation and participatory planning (3 months) (2) Hands on training (FFSs) on animal fodder production and animal pen building (1 year x 3 times) (3) Evaluation (1 week x 1 time/year x 3 years)
Necessary Input	Facilitators, Farm tools, Fodder crops/trees seeds, Materials for animal pens, Cost for meetings/training, Transportation means, Stationary
Expected Outputs	Animal pen and fodder crops in the individual farms(Output) Reduction of animal grazing (Impact) Effective use of animal waste for farming (Impact)

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5.4 Reforestation and Forest Protection Program

5.4.1 Objectives

to increase forest cover in the watershed by planting value-added trees (i.e., industrial trees, shade trees for coffee, and fruit trees) in private lands and leguminous trees/casuarinas to rehabilitate degraded water catchments as well as other critical areas.

5.4.2 Strategies

- ◆ To adopt farmer field schools (FFSs)
- ◆ To make an agreement between/among suco council, beneficiaries of the sub-programs, and MAF/NDF since two of the proposed sub-programs are aimed at the improvement of the watershed functions.

5.4.3 Sub-program (Action)

- a. Reforestation Sub-program
- b. Critical Area Rehabilitation Sub-program
- c. Forest Fire Fighting Sub-program

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5.4 Reforestation and Forest Protection Program

(1) RF-SP

Items	Description
Objective	to enhance the capacity of communities to plant industrial trees, shade trees for coffee, and fruit trees, in right places in a proper manner.
Target Area	All the sucos
Procedures	(1) Group formation and participatory planning (3 months) (2) Hands on training (FFSs) on tree planting (1 year x 3 times) (3) Evaluation (1 week x 1 time/year x 3 years)
Necessary Input	Facilitators, Farm tools, Seedlings, Cost for meetings/training, Transportation means, Stationary
Expected Outputs	Increase of trees (timber species, fruits, and industrial plants) planted in suco (Output) Expansion of forest cover in the watershed (Impact)

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5.4 Reforestation and Forest Protection Program

(2) CAR-SP

Items	Description
Objective	to rehabilitate degraded forests and degraded lands in critical water catchments and other important areas in the sucos by planting trees in a collaborative manner.
Target Area	All the sucos which have degraded catchments and others
Procedures	(1) Identification, determination of beneficiaries, formation of working teams, and planning (3 months) (2) Procurement of seedlings and mobilization of people for planting in the degraded areas. (1 month x 1 time x 3 years) (3) Maintenance of seedlings planted by the working teams (3 times/year x 3 years) (4) Evaluation (1 week x 1 time/year x 5 years)
Necessary Input	Facilitators, Farm tools, vegetable seeds, Cost for meetings/training, Transportation means, Stationary
Expected Outputs	Seedlings planted in the degraded areas (Output) Water flow of important sources is increased. (Impact)

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5.4 Reforestation and Forest Protection Program

FFF-SP

Items	Description
Objective	is to minimize the damage of forest fires when a wild fire happens in the concerned sucos in collaboration with communities living in the fire-prone areas.
Target Area	All the sucos where the incidence of forest fire is high
Procedures	(1) Formation of fighters team and procurement of fighting tools and equipment (3 months) (2) Conducts of training in using tools and equipment (2 months) (3) Maintenance of tools and equipment (4.5 years) (4) Conducts of fire fighting drills (1 month/year x 4 years) (5) Evaluation (1 week x 1 time/year x 5 years)
Necessary Input	Facilitators, Fire fighting tools and equipment, Cost for meetings/training, Transportation means, Stationary
Expected Outputs	Fire fighting teams equipped with skills and tools (Output) Minimization of forest damage (Impact)

15

5.5 Livelihood Improvement Program

5.5.1 Objectives

to reduce the human pressure on forest-related natural resources by improving local livelihoods or developing additional source of income using locally available resources.

5.5.2 Strategies

- ◆ To adopt farmer field schools (FFSs).
- ◆ To use resources locally available.
- ◆ To implement the sub-program (Improved Cooking Stove Promotion Sub-program) considering communities' willingness and affordability.

5.5.3 Sub-program (Action)

- a. Livelihood Development/Income Generating Sub-program
- b. Improved Cooking Stove Promotion Sub-program

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5.4 Livelihood Improvement Program

(1) LD/IG-SP

Items	Description
Objective	to improve local livelihoods by increase of sources of cash income and quality foods using material locally available.
Target Area	All the sucos except Suco Fadabloco and Hautoho
Procedures	(1) Group formation and participatory planning (3 months) (2) Resource assessment and selection of potential livelihood options (1 month) (3) Hands on training (FFSs) on livelihood options (1 year x 3 times) (4) Evaluation (1 week x 1 time/year x 3 years)
Necessary Input	Facilitators, Utensils and other tools for livelihood options, Cost for meetings/training, Transportation means, Stationary
Expected Outputs	Increase of products/commodities that can be sold at market (Output) Improvement of local livelihoods (Impact)

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5.4 Livelihood Improvement Program

(2) ICSP-SP

Items	Description
Objective	The main objective of the sub-program is to reduce the use of fire wood so as to decrease human pressure on natural forests.
Target Area	All the sucos
Procedures	(1) Identification of families who are willing to use and affordable to buy an improved cooking stove (3 months x 3 years) (2) Procurement of cooking stoves (1 month x 3 years) (3) Conducts of guidance and training on use of cooking stove (1 month x 3 years) (4) Evaluation (1 week x 1 time/year x 3 years)
Necessary Input	Facilitators, Cooking stoves, Cost for meetings/training, Transportation means, Stationary
Expected Outputs	Increase of families who use the cooking stove (Output) Reduction of deforestation / forest degradation (Impact)

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5.6 Public Awareness Raising Program

5.6.1 Objectives

to heighten communities' consciousness of risks of the environmental destructive activities, i.e., wild fires, illegal logging, and animal grazing, and simultaneously enhance their understanding of sustainable management of forest-related natural resources.

5.6.2 Strategies

- ◆ to target both generations, adult and children, considering the rapid population increase;
- ◆ to prepare and use public awareness campaign materials easy-to-understand and visually-apparent; and
- ◆ to use human resources who are environmentally conscious in suco, such as suco leaders, as resource persons in the campaign.

5.6.3 Sub-program (Action)

- a. Public Awareness Campaigns Sub-program

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5.6 Public Awareness Raising Program

(1) PAC-SP

Items	Description
Objective	to enhance public awareness of risks of wild fires, illegal logging, and animal grazing, and deepen the understanding of the importance of sustainable management of forest-related natural resources among communities.
Target Area	All the sucos
Procedures	(1) Identification topics, work planning, and development of materials (3 months) (2) Conducts of the public awareness campaigns (8 months x 2 years) (3) Evaluation (1 week x 1 time/year x 2 years)
Necessary Input	Facilitators, Materials for campaigns, Cost for meetings/training, Transportation means, Stationary
Expected Outputs	Public awareness raising materials (Output) Increase of awareness of risks of wild, etc. (Output) Reduction of the incidence of wild fires, etc (Impact)

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5.7 Institutional Strengthening Program

5.7.1 Objectives

to help the Noru Watershed Management Council keep operational to fulfill its missions even after the end of direct support from the JICA-MAF CB-NRM Project in August 2015.

5.7.2 Strategies

- ◆ to help the Council continue its key functions as, i.e. i) a platform that can coordinate their efforts for sustainable forest management, and ii) an advisory committee to take necessary actions.
- ◆ To enhance the council members' capacity so that they could fulfill their roles and responsibilities for the operations of the Council.
- ◆ to strengthen the capacity of suco leaders to govern the villages including forest-related natural resources using the CB-NRM mechanism.

5.7.3 Sub-program (Action)

- a. Strengthening of the Noru Watershed Management Council

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5.7 Institutional Strengthening Program

Strengthening of the Noru Watershed Management Council

Activities	Outlines	Inputs	Timeframe
Assistance in convening the regular and ad hoc meeting	Help the council convene the regular meeting every three months and any ad hoc meeting when needs arise.	Facilitators, Cost for the meetings Stationary, Transportation means	1 day x 4 times/year x 5 years As needs arise.
Arrangement of exchange visits/ study tours	Help the members visit any sucos that have carried out activities similar to those introduced in the Noru watershed.	Ditto	2 days x 1 time/year x 5 years
Provision of opportunities to develop the members' capacity	Help the members enhance their capacity to manage forest-related natural resources using the future land use plan and village regulations.	Trainers, Cost for training Stationary, Transportation means	2 days x 1 time/year x 5 years

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Chapter 6

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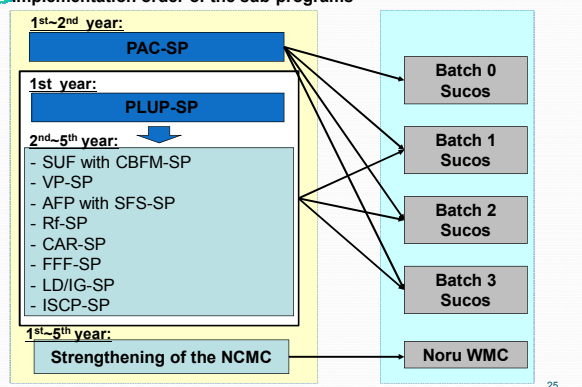
6.1 Basic Concept

- ◆ The action plan described in Chapter 5 shall be implemented with the support from MAF/NDF as well as other organizations, such as donor and/or international organizations.
- ◆ It is, however, speculated that it would not be difficult to implement all the 11 sub-programs in all the concerned sucos for a short period of time.
- ◆ It is advisable to treat the watershed management plan as a long-term plan to be implemented over a few decades.
- ◆ The implementation plan (Chapter 6) indicates the process of implementation of the plan, a proposed organizational structure, and an implementation schedule for the next five (5) years.

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6.2 Implementation Method

Implementation order of the sub-programs



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6.2 Implementation Method

Suitability of the Sub-programs and their duration

Sub-program	Possible target sucos	Period per suco
PLUP-SP	12 sucos except Suco Faturasa, Fadabloco, and Hautoho	4 years
SUF with CBSN-SP	12 sucos except Suco Faturasa, Fadabloco, and Hautoho	3 years
VP-SP	Sucos where permanent water sources are available	3 years
AFP with SFS-SP	Sucos where animal grazing is the prevailing practice among communities	3 years
Rf-SP	12 sucos	3 years
CAR-SP	Sucos where there are degraded water catchments and/or important areas	5 years
FFF-SP	Sucos where the incidence of forest fire is high	5 years
LD/IG-SP	12 sucos except Suco Fadabloco and Hautoho	3 years
ICSP-SP	12 sucos	3 years
PAC-SP	12 sucos	3 years
Strengthening of the Council	Noru Watershed Management Council	5 years

6.2 Implementation Method

6.2.2 Grouping of the Sucos

Batch	Sucos	Implementation Concepts
Batch 0	3 sucos (Suco Faturasa, Fadabloco, and Hautoho)	As the sucos have implemented PLUP-SP and other sub-programs from 2011 to 2015 with the assistance from the JICA-MAF CB-NRM Project, it is recommended that they mainly focus on the continuation of the activities introduced by the sub-programs for the next five years.
Batch 1	3 sucos (1 suco from Remexio and 2 sucors from Liquidoe)	Batch 1 sucors will start PLUP-SP after the situation analysis in the field in the first year. Following PLUP-SP, one or two (2) sub-program/s, selected by local communities as a/ priority sub-program/s, will be implemented in the following years.
Batch 2	ditto	Batch 2 suco will do the same activities in the same manner in the second year as what Batch 1 sucors do in the first year.
Batch 3	ditto	Batch 3 suco will start the activities in the 3rd year.

6.3 Institutional Framework for Implementation

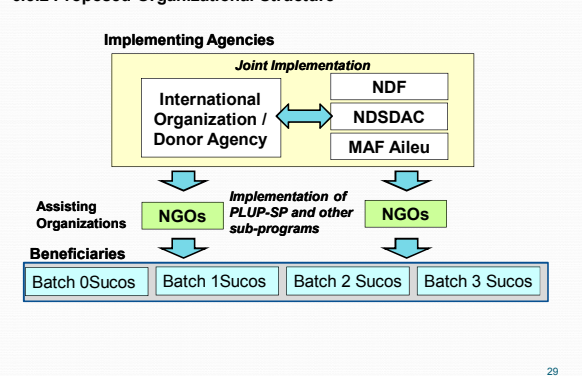
6.3.1 Organizations to be involved

- ◆ Sucos (suco council and communities)
- ◆ Sub-district Administrative Offices in Remexio and Liquidoe
- ◆ MAF (District MAF Office in Aileu)
- ◆ NDF
- ◆ NGOs that have worked in the field of forest management and agricultural development; and
- ◆ International organization or donor agencies

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6.3 Institutional Framework for Implementation

6.3.2 Proposed Organizational Structure



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6.4 Necessary Support and Arrangement for Implementation

- Financial support to cover the costs/expenses for implementation of the sub-programs (Coordination with any possible sources of financial assistance)
 - Allocation of facilitators for meetings and training planned in the sub-programs (Arrangement of contracts with competent-cum-experienced NGOs)
- Arrangement of necessary tools/materials which need to be externally procured for the respective sub-programs
- Arrangement of transportation means for facilitators and materials procured; and
 - Maintenance of coordination between/among the organizations involved in the implementation of the action plan.

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6.5 Implementation Schedule

Activity	Target Groups	1st year		2nd year		3rd year		4th year		5th year	
		1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
1. Strengthening of the Noru	Noru WMC										
2. Public Awareness Campaign SP	All the 12 sucros										
3. Assistance in continuation of the sub-program activities	Batch 0 Sucos										
4. Participatory Land Use Planning SP	Batch 1 Sucos										
	Batch 2 Sucos										
	Batch 3 Sucos										
5. Priority Sub-programs selected by communities in the sucros	Batch 1 Sucos										
	Batch 2 Sucos										
	Batch 3 Sucos										

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END

Thank you!

Obrigada barak

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Appendix-4.5

***Resolution of the Noru Watershed
Management Council on the
Watershed Management Plan***

Appendix-4.5: Resolution of the Noru Watershed Management Council

Ref: _____ 2015

Date: _____ 2015

Subject; Proposed Watershed Management Plan for the Noru Watershed

Whereas, the Noru Watershed Management Council was established on August 21, 2014 with the assistance from the Ministry of Agriculture and Fisheries (MAF) and the Japan International Cooperation Agency (JICA) to protect and manage forest and forest-related natural resources in the watershed in a proper and sustainable manners;

Whereas, the Council has had a series of discussions on relevant topics relating to management of the Noru watershed, namely, i) present conditions of the watershed, ii) history of deforestation and forest degradation in the watershed, iii) basic concepts and principles for watershed management, iv) action plans for watershed management, and v) implementation process of the watershed management plan in October and November 2014;

Whereas, a watershed management plan for the Noru watershed was drafted by the Project Teams composed of JICA Experts and MAF/NDF Officials in December 2014 based on the results of the discussions made by the Watershed Management Council; and

Whereas, the draft watershed management plan was presented to the members of the Noru Watershed Management Council in the 2nd regular meeting held at the Sub-district Administrative Office in Liquidoe on January 23, 2015.

NOW, THEREFORE, BE IT RESOLVED by the members of the Watershed Management Council of the Noru Watershed as follows:

Section 1: The Watershed Management Plan for the Noru watershed attached hereto is approved by the Council as guidelines for proper management of natural resources in the Noru watershed in general and in the respective sucos in particular.

Section 2: The Watershed Management Council hereby officially submits the Watershed Management Plan to the relevant agencies/organizations, such as MAF/NDF, MSS (Ministry of Society and Solidarity), MPW (Ministry of Public Works), NDE (National Directorate of Environment) and other national and international agencies/organizations, to seek their technical and financial assistance necessary for implementation of the Watershed Management Plan.

Section 3: The Watershed Management Council strongly requests MAF/NDF and District Administrative Office in Aileu to take necessary actions immediately to assist the Noru Watershed Management Council in implementing the Watershed Management Plan for sustainable management of forest and forest-related natural resources and improvement of local livelihoods in the watershed.

Section 4: These resolutions shall take effect upon signatures onto.

Dated: XX XX, 201X

Chairperson

Vice Chairperson

XXXXXXXXXX
Sub-district
Administrator of
Remexio

XXXXXXXXXX
Sub-district
Administrator of
Liquidoe

Secretariat

XXXXXXXXXX
District Director of
MAF District Office
in Aileu

XXXXXXXXXX
Chief of Department
of Reforestation,
NDF

XXXXXXXXXX
Chief of Department
of Soil and Water
Conservation, NDF

Members

XXXXXXXXXX
Chef de Suco
Asumau

XXXXXXXXXX
Chef de Suco
Fadabloco

XXXXXXXXXX
Chef de Suco
Fahisoi

XXXXXXXXXX
Chef de Suco
Faturasa

XXXXXXXXXX
Chef de Suco
Hautoho

XXXXXXXXXX
Chef de Suco
Maumeta

XXXXXXXXXX
Chef de Suco
Acubili

XXXXXXXXXX
Chef de Suco
Bereleu

XXXXXXXXXX
Chef de Suco
Fahisoi

XXXXXXX
Chef de Suco
Fatrilau

XXXXXXX
Chef de Suco
Manucasa

XXXXXXX
Chef de Suco
Namcleso

XXXXXXXXXX
Representative
District Office of
NDE in Aileu

XXXXXXXXXX
Representative
Sub-district Office of
NDWSS in Remexio

XXXXXXX
Representative
Sub-district Office of
NDWSS in Liquidoe

