Chapter 3 The Project

3.1 Project Objectives and Basic Approaches

3.1.1 Overall Goal and Project Objectives

The overall goals of the Project are: i) enhancement of the function of watershed and coastal protection forests; ii) restoration and conservation of biodiversity; and iii) poverty reduction in mountainous areas. To achieve these overall goals, the Project sets the following immediate objectives:

a. To restore and improve watershed and coastal protection forests in the 12 provinces
b. To strengthen the capacity of the local governments and the owners of protection forests; and
c. To improve the livelihoods of communities who will manage protection forests.

3.1.2 Basic Approaches and Project Features

(1) Facilitation of community participation in the project

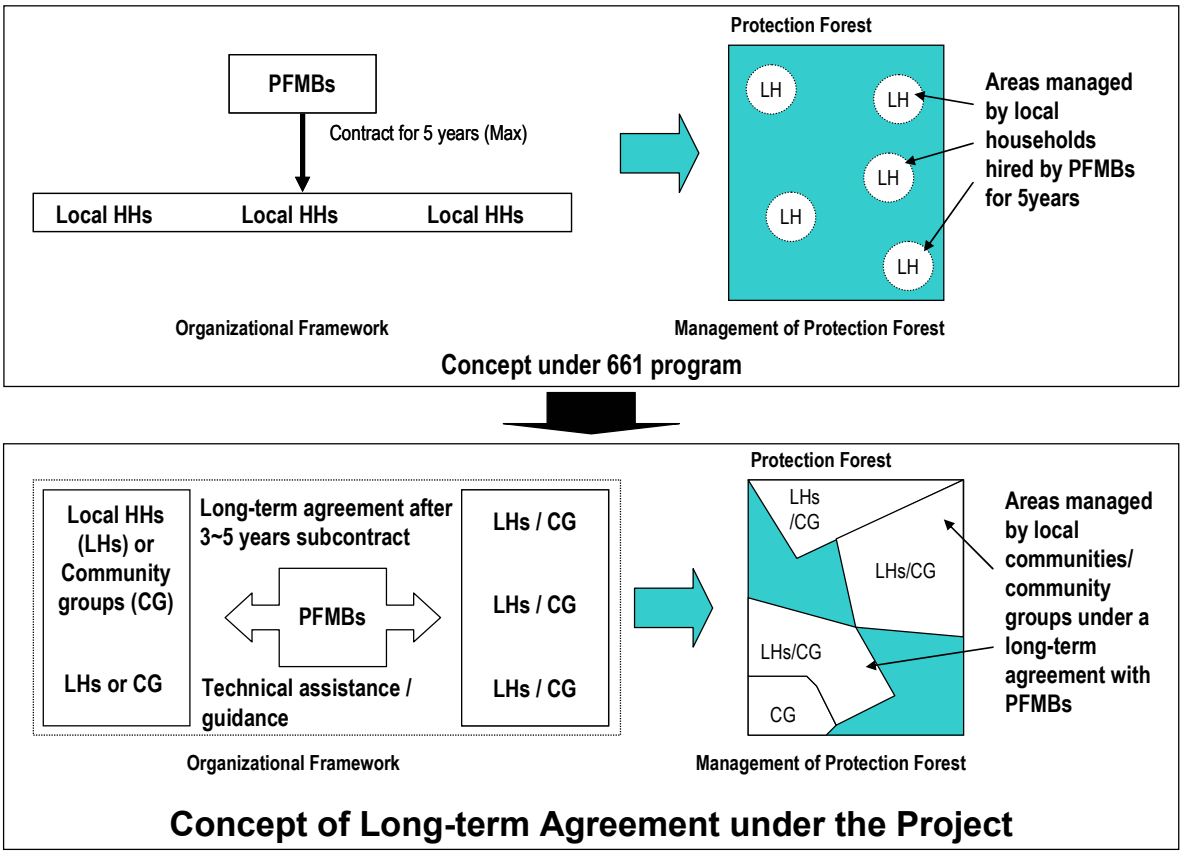
The Project will involve local communities residing in and around the target protection forests as actual implementers of the forest development and improvement activities in the fields and as co-managers of forest resources in the long run. Considering the current human resources of Protection Forest Management Boards (PFMBs), where one forest guard is allocated for every 1,000 ha protection forest, the survey team suggests that community involvement is indispensable for its effective management of protection forest. In fact, community involvement is now a common approach taken by similar forestry projects, such as SPL-3 Afforestation Project, World Bank 2 Project, and FLITCH (ADB 2 Project). It is expected that the involvement of local communities not only effectively utilize local available resources for forest management but also contribute to the improvement of socio-economic conditions of poor communities mainly residing in mountainous areas. Furthermore, the project aims to introduce a forest management scheme where PFMB and local communities conclude long-term agreements/contracts on protection and management of protection forests without cash payment after the completion of the forest development components of the Project. This can be considered as a scheme to achieve sustainable forest management of protection forest. More details of the long-term agreement/contract are given in the following sub-section.

(2) Promoting long-term agreements/contracts on protection, management and utilization of protection forests between communities and PFMB with appropriate benefit sharing mechanism.

The Project will promote materializing long-term agreements/contracts between communities (groups of local people) and PFMB, after completion of forest development component, on protection, management and utilization of protection forests without cash payment from the state budget. This is clearly stated in the Forestry Development Strategy as a prioritized policy solution for sustainable forest and forest land management of protection forests. The Project will assist in organizing local people for the long-term collective forest management simply because people often acts collectively under village leaders in Vietnam and managing groups is much easier and practical for PFMB than managing individuals.

Although local communities or organized community groups will be hired as sub-contractors for the forest development and protection works in the project as what the existing government forestry

programs (e.g., 661 program) have arranged, they will be encouraged to enter the long-term agreement/contact upon the termination of the subcontract for the forest development and protection works as much as possible. Under the long-term contracts, majority of PFMB's management tasks is to be handed over to local communities or organized groups. With a proper benefit sharing mechanism, local communities/people could receive benefits from forest resources of their respective protection forests (or the project areas). Hence, they would protect and manage the assigned protection forests on a sustainable manner. The following chart shows how PFMBs and local communities will manage the project areas under the long-term agreements/contracts.



Concept of Long-term Agreements/Contract on Protection and Management of Protection Forests

Benefit sharing mechanism will encourage local communities to enter into a long-term agreement/contract on protection, management, utilization of protection forest, since it legally supports them in securing their rights to harvest forest resources in the project area. Hence, due consideration should be put on the formulation of regulations on benefit sharing mechanisms customized for each respective locality of the target provinces.

(3) Integrated development including livelihood development and support

The project will emphasize not only the forest development and management component but also those related to livelihood development and improvement of local communities who will take part in the project. Over-exploitation of firewood and use of forest land for cropping are among the major causes of degradation in protection forest. Hence, it is quite important to minimize the forest dependency of local communities by either improving agricultural productivity or introducing alternative livelihood options. In addition, the integrated development approach can also expect to facilitate the participation of local communities in the project by creating a conducive environment for participation in forest management and enhancing a sense of project ownership among the communities.

(4) Capacity Building of the government staff and local communities

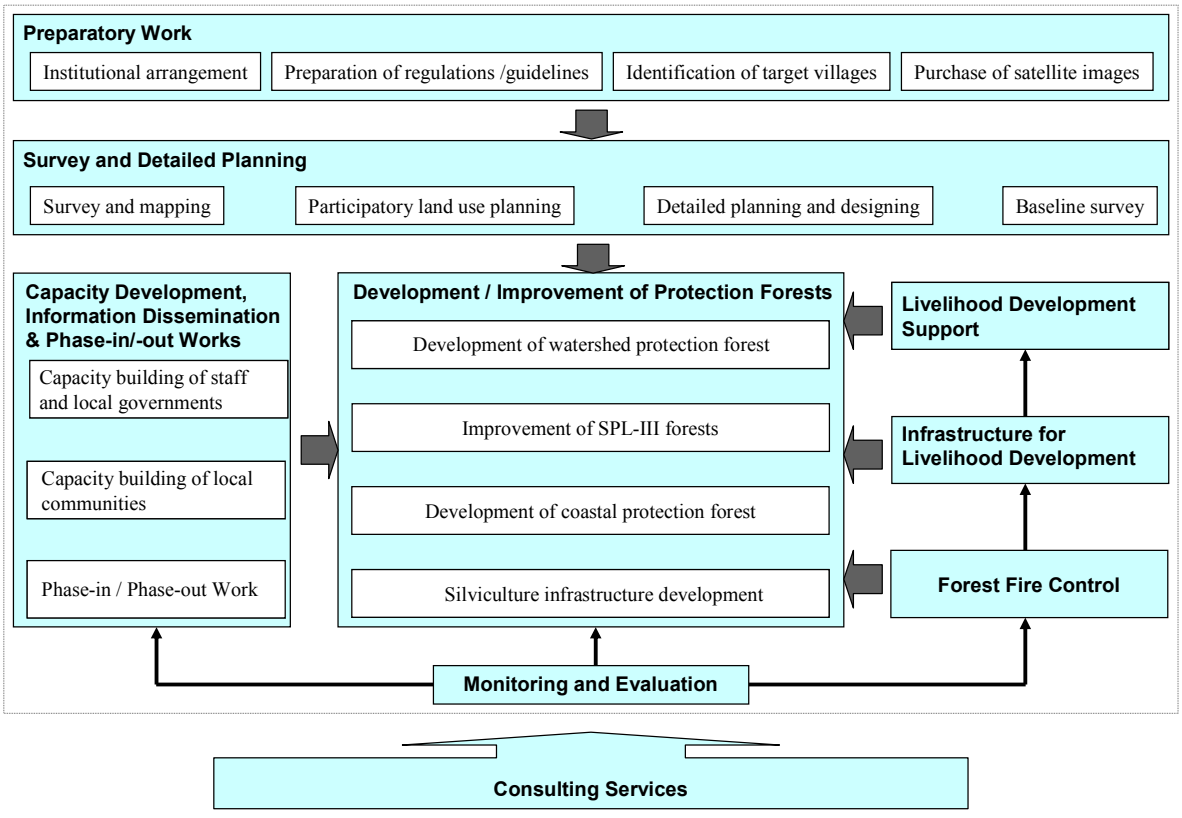
Capacity building will be adequately funded and a number of related activities for the project staff and local communities will be programmed in the project. This component is a crucial intervention that would directly affect the progress and outputs of the project as well as its sustainability. Through a series of technical and managerial training courses, the project staff is expected to be equipped with technical and managerial skills and knowledge necessary for implementation and management of the project at respective levels. Hence, capacity development should cover all the stakeholders involved at every level of the project organizational structure and provide several types of training, such as classroom-type training, overseas training, exposure visits and on-the-job training. This shall be executed in consideration of topics/techniques handled and the level of capacity of recipients targeted in the respective training courses.

3.2 Project Works

3.2.1 Overview of Project Components

(1) Project components

The proposed project is composed of nine components, namely, i) preparatory works; ii) survey and detailed planning; iii) capacity development, information dissemination and phase-in/phase-out works; iv) development/improvement of protection forests; v) livelihood development support; vi) small-scale rural infrastructure development, vii) forest fire prevention/control; viii) monitoring and evaluation; and ix) technical cooperation/consulting services. As shown in the following figure, the project components will interrelate and interact with each other to generate multiplier effects.



Overview of Project Components

(2) Main purposes of the project components

The following table shows the purposes of each component proposed in the project.

Major Purposes of the Project Components

Component	Main purposes
Preparatory work	- to establish organizational structures at both central and provincial levels and deploy / hire personnel necessary for project implementation and management - to prepare the project implementation guidelines / regulations for CPMU and PPMUs - to prepare base maps that would be used for the survey and mapping using the satellite images - to procure equipment and vehicles for CPMU and PPMUs - to prepare detailed benefit sharing regulations in the target provinces - to prepare technical handbooks for PFMBs and local communities
Survey and detailed planning	- to acquire high resolution satellite images covering the proposed project areas - to prepare the updated forest classification maps covering the proposed project areas based on the latest and accurate information - to prepare future land use / forest development plans with participation of local communities who would participate in the forest development and management activities - to prepare detailed plans of forest development/improvement components
Capacity development and information dissemination	- to make CPMU, MBFP, PPMUs, DARDs, and PFMBs understand the project concept, guidelines/regulations and procedures for project implementation - to capacitate CPMU, MBFP, PPMUs, DARDs to implement and manage the project in a proper and effective manner - to enable PFMBs to implement the project activities and protect the respective protection forests in their jurisdictions in a proper and sustainable manner - to enable PFMBs, DPCs, and extension workers to provide technical assistance to local communities - to make local communities in the target communes/villages aware of the project (outlines, concepts, activities, expected benefits and obligations of the communities) - to initially organize local communities who show willingness to participate in the project into groups for management of protection forest - to enable the local communities to manage their assigned protection forests in a proper and sustainable manner - to have discussions among PFMBs, local communities, and DARDs on structure and mechanisms of forest management in the post-project period - to enable PFMBs, local communities, and DARDs to identify and understand the necessary action to be taken for strengthening the local communities and making them prepare for non-project mode

Component	Main purposes
Development/improvement of protection forests	- to rehabilitate and improve the degraded protection forests to enhance/improve the functions of either watershed or coastal protection forest - to manage and protect existing natural forests in a sustainable manner to maintain the functions of either watershed or coastal protection forest - to improve the plantations developed by SPL-3 and other government programs in critical watershed areas to enhance the functions of watershed protection forests - to improve and develop silviculture infrastructure
Livelihood improvement	- to develop the capacity of local communities to introduce new farming and forestry technologies including NTFP processing - to create the conducive environment where local communities can take part in the project - to assist the local comunities/ group members in improving and stabilizing their livelihoods by introduction of income generating activities and micro-enterprises
Forest fire control	- to capacitate DARDs, PFMBs, and local communities to prevent and control forest fires by provision of fire extinction equipment and training on forest fire control
Monitoring and evaluation	- to grasp physical / financial progress and issues/problems that would affect the smooth and effective project implementation - to provide adequate and timely information for proper project management - to evaluate the impacts of the project
Technical cooperation / Consulting services	- to assist CPMU and PPMUs in the implementation and management of the project in an effective and proper manner.

(3) Work quantity of project components

Proposed work quantities for the respective project components are shown in **Table 3-1**, and summarized below.

Work Quantity of the Project Components

Component	Major Works
Preparatory work	- Establishment of one CPMU at the central level and 12 PPMUs at the provincial level - Deployment and employment of the project staff - Preparation and establishment of regulations and guidelines for implementation of the project - Development of forms/formats for regular monitoring - Development of draft TORs for the contractors to be hired for implementation of the project components - Procurement of equipment for CPMU and PPMUs including a total of 26 nos. of 4x4 vehicles and 62 nos. of motorcycles.
Survey and detailed planning	- About 120,260 ha of forest inventory and mapping (new sites only) - Preparation of land use plan of about 120,260 ha with 167 communes (new sites only) - Baseline surveys in 167 communes (new sites only) - Preparation of detailed designs for forest development and improvement component
Capacity development, information dissemination, and phase-in / phase-out works	- Capacity development of i) 12 CPMU staff members, ii) 149 PPMU staff members in the 12 provinces, iii) 570 PFMB staff members (@10 staff/PFMBs) in 57 PFMBs, and iv) district and commune extension workers in the 12 provinces

Component	Major Works
	- Capacity development of local communities/households in improving/preserving protection forests in 167 communes (new sites) and 35 communes (SPL-III sites) - Organization of participating households into community groups in 167 communes(new sites) and 35 communes (SPL-III sites) - Periodical coaching and guidance to local communities and organized community groups to protect and manage the assigned protection forests in a proper manner in 167 communes(new sites) and 35 communes (SPL-III sites) - Assistance in the conclusion of the long-term agreements/contracts on protection and management of protection forests in 167 communes(new sites) and 35 communes (SPL-III sites)
Development/improvement of protection forests	Watershed Protection Forest - Afforestation: 23,090 ha - Improvement of existing plantation: 3,300 ha - Assisted natural regeneration (ANR) with enrichment: 4,700 ha - Assisted natural regeneration (ANR): 21,250 ha - Forest protection: 63,970 ha Coastal Protection Forest - Afforestation:1,550 ha - Improvement of existing plantation: 800 ha - Enrichment planting: 1,600 ha Improvement of SPL-III forests - Forest protection: 4,450 ha - Enrichment planting: 1,000 ha - Vegetation clearing & thinning: 10,220 ha Silviculture Infrastructure Development - Forestry roads: 387 km (watershed) and 16 km (coastal) - Firebreak line: 412 km (watershed) and 28 km (coastal) - Fire watch tower: 62 units (watershed) and 2 units (coastal) - Forest protection station: 60 units (watershed) and 4 units (coastal) - Information board: 67 units (watershed) and 3 units (coastal) - Nursery: 22 units (watershed) and 1 unit (coastal)
Livelihood improvement	- Livelihood development needs assessment in 167communes - Introduction and development of demonstration plots/livelihood development models in 167 communes(new sites) and 35 communes (SPL-III sites) - Technical training of the participating households on livelihood development and fund management in 167 communes(new sites) and 35 communes (SPL-III sites) - Periodical coaching to local communities by the contractors in 167 communes(new sites) and 35 communes (SPL-III sites) - Inter-province cross field visit for the participating households in 167 communes(new sites) and 35 communes (SPL-III sites)
Small-scale infrastructure	- Survey and detailed design of proposed infrastructure - Construction of small-scale infrastructure; the following are tentative targets: - Rural road: 170 km (watershed) and 16 km (coastal) - Irrigation : 558 ha (check dam, irrigation canal & culvert in watershed) - Water supply system: 6 units (watershed) and 2 units (coastal)
Forest fire control	- Provision of equipment for forest fire control to 57 PFMBs (new sites) - Forest fire control training in 12 DARDs, 57 PFMB, 54 DPCs, and one township
Monitoring and evaluation	- Progress monitoring: Monthly, Bi-annual and Annual monitoring - Evaluation: Initial, Mid-term and Terminal evaluations
Technical cooperation / Consulting services	- International consultant: 147 man-months - National consultant: 253 man-months

The work quantities mentioned above are the results of a series of discussions between the survey team, MARD and DARDs of the 12 provinces. Detailed work quantities at the provincial level are given in Annexes attached to this report.

3.2.2 Preparatory Work

(1) Organizational set-ups

For the implementation of the project, the following institutional arrangements will be initiated during the first year of the project:

a. Formation of one Central Steering Committee (CSC) at the central government level
b. Organization of one CPMU at the central government level
c. Formation of 12 Provincial Steering Committees (PSCs) at the provincial government level
d. Organization of PPMUs at the provincial government level

The compositions of the steering committees and project management units are tentatively proposed below. However, the members of the steering committees at the central and provincial levels will be specified and determined at the start of the project.

Staff/Member Composition of the PMUs and Steering Committees

Organizations	Composition of the Organization
CSC	- Chairperson: VM of MARD or DG of DoF - Secretariat: MBFP - Members: DoF, DoFP, ICD, DoFi, etc.
CPMU	- 1 Director - 1 Deputy Director - 1 Planning Officer - 3 Accountants - 3 Technical staffs - 1 Administration staff - 2 Driver
PSC	- Chairperson: VC of PPC - Secretariat: DARD - Members: DONRE, DPI, DoF, DoPF, DPCs concerned
PPMU	- 1 Director - 1 Deputy Director - 1 Planning Officer - 5 Accountants - 2 Technical staffs - 1 Administration staff - 1 Driver

The CPMU and PPMUs will secure staff through either from MARD, DARDs, and other government departments or recruitment of new ones on a contractual basis. In both cases, the terms of reference (TOR), which specify requirements on personnel capabilities, scope of responsibilities, and authorities to be given shall be determined and publicized by CPMU and PPMUs. For recruiting members from outside sources, CPMU and PPMUs shall base the selection on the qualification and expertise of the persons considering the requirements for the vacant posts, and comply with the current laws and international agreements between the GoV and JICA.

(2) Procurement of equipment and vehicles

To implement and mange the Project effectively and efficiently, the following equipment and vehicles will be purchased for CPMU and PPMUs.

Equipment/vehicle	Unit	CPMU	PPMU
4x4 vehicles	No.	2	1
4x4 pick-up	No.		1
Motorbike	No.		5~6
Boat with engine	No.		2 #
Desktop PC with software *	No.	6	4
Laptop PC with software *	No.	2	1
Laser printer (A4/A3) *	No.	1	1
Inkjet printer (A4/A3) *	No.	1	1
GIS Software (MapInfo) *	No.		1
Photocopy machine	No.	1	1
UPS (1000VA)	No.	6	4
A0 plotter	No.		1
Digital handycum	No.	1	1
GPS	No.		5
Digital camera	No.	2	2
Binocular	No.		2
Projector	No.	1	1

*: The same quantity of equipment will be purchased at 6th year for replacement or update.
#: Only for Quang Tri, T.T. Hue and Phu Yen provinces.

(3) Development of guidelines and regulations

In order to provide a standardized framework for project implementation and management which would serve as a reference document for decision-making by MBFP, CPMU, DARDs, and PPMUs, the related guidelines/regulations will be finalized by the project consultants in collaboration with CPMU. The implementation guidelines are aimed at prescribing project implementation rules, regulations and procedures in terms of administrative, financial and accounting, project management, monitoring and evaluation, and technical aspects. The implementation of the project components shall take into account the existing regulations and procedures of the central as well as provincial governments. The guidelines will cover, but not limited to, the following topics. It will also includes standardized formats for progress monitoring and reporting and forest management plan.

i) Project management
ii) Monitoring and evaluation
iii) Billing and fund management
iv) Capacity development and information dissemination
v) Preparation for forest development
vi) Forest development
vii) Silvicultural infrastructure development
viii) Small scale infrastructure development
ix) Community organization and livelihood improvement assistance
x) Forest fire control
xi) Benefit sharing

CPMU will draft the project implementation guidelines with the assistance of the project consultant. The draft guidelines will be discussed in the CSC and also presented to the PSCs and PPMUs for finalization. After being ratified by CSC, the implementation guidelines will be issued and notified by MARD as a ministerial circular prior to the implementation of the field activities.

(4) Identification of the villages concerned with the project

Although this preparatory survey identified 167 communes in the 12 provinces as the target communes, PPMUs need to re-examine these communes and identify villages that can participate in the forest development and management activities. At first, PPMUs will screen all villages in the target communes and identify the target villages in consultation with DPCs and PFMBs concerned. Subsequently, the PPMUs will prepare a master list of the target villages with information on the number of households, population, ethnicity, and poverty level. The PPMUs will organize consultation meetings at the identified villages to disseminate the information of the project to local communities with the assistance of the contractors hired by the PPMUs. This shall be based on the capacity development and information dissemination component as described in Section 3.2.4.

(5) Preparation of detailed benefit sharing regulations at the provincial level

Decision No. 109/2008/QD-BNN issued by MARD on November 11, 2008 defines the regulations on benefit sharing mechanism to be applied to timber harvests from the SPL-3 Afforestation Project sites. The survey team judges that such regulations can also be applied to the project in principle considering its similarity in concept and target areas. It is, however, proposed that the regulation should be re-examined to determine applicability to the specific conditions of the project areas as well as the framework of the project. After finalization of the benefit sharing regulations for the Project, PPMUs, in consultation with DARDs and PPCs concerned, will develop the customized/detailed benefit sharing regulation suitable for the respective provinces, considering the plantation designs introduced, price of timber products, and site conditions of the project areas. The benefit sharing regulations at the provincial level should clearly define the rules on management of the state's share of benefits, especially on how to collect shares from forest owners and local communities who manage forests under a contract and how to manage and use funds deposited at the government. This is intended that PPCs can use the funds in an effective and transparent manner. Before finalizing the benefit sharing regulations at the provincial level, PPMUs and DARDs will consult the local communities in the target villages about the draft regulations. After incorporating the local communities' opinions into the regulations, their familiarization of the regulations will be initiated.

The Project will also encourage PPCs and DARDs concerned to establish the forest protection and development fund at provincial level, in accordance with Decree No. 05/2008/ND-CP dated January 14, 2008 which instructs establishment of the fund in order to promote and ensure the forest development and protection in the country. Since the shares of benefit collected from forest owners and forest resource users shall be pooled in the said funds in the respective provinces, the benefit sharing regulations at provincial level shall be in compliance with the regulation of the forest protection and development fund in terms of fund utilization.

Making the benefit sharing regulations useful and establishment of the forest protection and development fund are urgently needed in the five provinces where SPL-3 Afforestation component had been implemented as the fast-growing species introduced by SPL-3 will soon be ready for harvest.

Vietnam, like other countries, does not have enough experiences in sharing benefits from forest among the state and forest owners/managers. Hence it is likely that the benefit sharing regulations will need modification and improvement particularly on the sharing procedures. CPMU and the Project Consultant shall provide required assistance to the provinces accordingly.

3.2.3 Survey and Detailed Planning

(1) Forest inventory and mapping

Forest inventory and mapping aims to produce the present land use/forest classification maps and high resolution base maps covering the target areas in the 12 provinces. This will involve analysis of the purchased satellite images/photos and ground verification. More specifically, forest inventory and mapping will comprise of the following activities.

a. Acquisition of satellite images/photos

High resolution satellite images/photos covering the target areas in the 12 provinces will be purchased to develop accurate land use and forest classification maps. The said base maps can be used for participatory planning and detailed design of forest development and improvement sub-components. The trial production of a land use map conducted under the JICA Preparatory Survey revealed that the following satellite images could be used for the intended purpose.

Possible Sources of Satellite Images

Satellite product	Resolution	Area coverage per scene	Supplier
CARTOSAT-1 (Panchromatic) merged with IRS P6 MX<1	2.5 m	900 km^2	Indian Data Supplies (NRSA) and SPOT Image

Note: IRS P6 is one of the Indian Remote Sensing Satellite Imagery Products produced by National Remote Sensing Center in India

b. Satellite image analysis and ground truth verification

Satellite images will be analyzed to evaluate the present land use and vegetation/forest coverage in the target areas. A ground truth survey in the selected areas is also to be carried out to complement the satellite image analysis.

c. Preparation of land use map on a scale of 1/10,000

The land use maps covering the target areas will be prepared on a scale of 1/10,000. The land use and forest classification system currently used by MARD should be employed in the land use mapping. The maps will be used as the baseline data for future monitoring and evaluation.

d. Preparation of high resolution base maps on a scale of 1/10,000

The high resolution base maps with a scale of 1/10,000 will be prepared by overlaying the satellite images with the existing GIS data, which consist of information such as contour lines, roads, demographic and land use boundaries, rivers, etc. Such maps will be used for participatory planning and mapping with local communities who would take part in the forest development and improvement activities.

These activities will be contracted out to the Forest Inventory and Planning Institute (FIPI) or contractors capable of and with experiences of analyzing satellite images for land use mapping.

(2) Site selection and demarcation

Site selection for the forest development/improvement sub-components will be carried out in a participatory manner. PFMBs with local facilitators hired by PFMBs will organize meetings/workshops with the local communities who are willing to participate in the project. After explaining the forest development/improvement activities applicable to the respective land use/forest coverage conditions, the contractors together with local communities will delineate the boundaries of the target areas of the respective forest development/improvement activities, which include afforestation, ANR with enrichment, ANR without enrichment, protection of natural forest, and improvement of existing plantations, on the high resolution base maps.

Field surveys for boundary demarcation and setting stone pillars will be done by PFMBs and local communities. The location of each pillar set will be geo-coded by using GPS so that the data can be converted into GIS and reflected to the base maps.

In the meetings/workshops PFMBs with local facilitator will have a discussion with the local communities to determine tentatively the tree species introduced in afforestation, improvement of existing plantation and enrichment planting of ANR. PFMBs will show local communities a list of tree species recommended for the target site based on MARD Minister Decision No.16/2005/QD/BNN dated on 15/03/2005 and the communities will select the species that they want to plant in their localities from the list. The tree species will be finally determined during the detailed designing along with examination of the suitability of the species in the proposed sites.

(3) Detailed planning and design

Organizations that have experience in designing, such as the Design Centre of DARD, will be hired as contractors for the detailed design of the forest development /improvement sub-components. The contractors will prepare the designs of the sub-components based on the results of the preceding work as well as the existing secondary data related to the target areas. The detailed design shall be compiled as per PFMB, in principle. The following are the suggested scope of the detailed design.

i) Location map

ii) General information (location, area, slope, elevation, soil type, and other natural conditions) of the target areas

iii) Lists of parcels with accompanying information (e.g., parcel ID, areas, location, present land/forest classification type, criteria of watershed, proposed designs) per sub-contract package to local communities

(The lists should be developed per forest development / improvement sub-component, such as i) afforestation, ii) ANR, iii) ANR with enrichment, and iv) Protection, in the contract package.)

iv) Standard designs to be adopted for afforestation and ANR with enrichment

v) Unit costs for each forest development/improvement sub-component

vi) Costs of the respective contract packages of local communities and total cost for all the activities proposed in PFMB

(4) Baseline survey

With the aim of grasping the socio-economic conditions of local communities of the target villages and their dependency on forest resources, a household interview survey will be carried out by a contractor hired by the CPMU prior to the commencement of physical development works in the field. A set of questionnaire forms covering the following topics will be prepared and used for interviews with commune leaders as well as local households.

Topics Interviewed in the Baseline Survey

Interviewee	Topics interviewed
Village leader	• General information: Population, ethnicity, rural labor force • Production: Agriculture (land area, main crops, livestock population, farming systems and practices, etc), forestry, fisheries, and handicrafts if there is. • Infrastructure: Road system and transportation, irrigation, electricity, market, etc. • Social services: education, healthcare, dirking water and sanitation, etc. • Development and poverty alleviation projects or programs implemented or being implemented in the commune. • Mass organizations operated in the commune (farmers' union, women's union, etc.) • Difficulties faced by the commune and possible support activities recommended.
Households	• General background of the household: family size, number of main and supported laborers, ethnicity, etc. • Annual income level and main sources of income • Agricultural production • Forestry resources • Average annual/monthly expenditures • Healthcare status and education • Understanding of JBIC project by the household. • Support/assistance needed to be expressed by the household head • Development needs (Recommendations/proposals for possible intervention to support local people)

The CPMU and PPMUs will select five (5) villages each per province for the socio-economic baseline survey. Out of five per province, three shall be selected among the target villages identified in the preparatory works and the rest from other villages with similar socio-economic conditions but without project intervention. Selection of sample households in the sample villages shall be conducted as follow:

a. In sample villages with project intervention, a total of 50 households shall be sampled randamly. 25 sample households shall be those willing to participate in the project and another 25 households who will not participate in the project.

b. In sample villages without project intervention, a total of 25 households shall be sampled randomly.

In the beginning of the survey at the sample villages, the contractor will interview local leaders to collect general information and request them to select the interviewees in accordance with the abovementioned guidelines. After selection of sample households with the help of the village leaders, the contractor shall interview the sampled households in each village.

3.2.4 Capacity Development, Information Dissemination and Phase-in/-out Works

This component comprises three activities, namely i) capacity development of the government staff, ii) capacity development of local communities, and iii) phase-in and phase-out works to ensure the long-term agreement on forest protection and management. The first activity is designed to enhance the capacity of stakeholders from central to district levels for implementing project activities. The second activity aims to enhance local people's awareness of the project and develop their capacities in managing and protecting the assigned project areas in a collective manner. The third activity focuses on the provision of guidance and assistance to PPMUs, PFMBs, and groups organized by local people to enable them to enter into contracts/agreements on long-term forest management and protection. In parallel with the above-mentioned activities, livelihood improvement support will be provided to local communities in the target villages for improving their livelihoods as described in Section 3.2.6.

CPMU and PPMUs will contract out all the works belonging to this component and that of the livelihood improvement support component (Section 3.2.6) to contractors. The activities of the contractors will be supervised by CPMUs and PPMUs with the assistance of the project consultant.

(1) Capacity development of the government staff

The capacity development of the government staff is composed of the following four sub-components:

i) Capacity development at the central level;
ii) Capacity development at the provincial level;
iii) Study tour; and
iv) Review meetings.

(a) Capacity development at the central level

Orientation, training and guidance sessions organized by the contractor hired by CMPU are to orient the project staff and other government staff associated with the project and to enhance their capacities necessary for project implementation. The following table gives the outlines of the activities.

Outline of Capacity Development Activities at the Central Level

Orientation / Training	Participants	Topics to be discussed	Location (Venue)	Duration	No. of participants	Executor	Timing
Project orientation	CPMU, MBFP & MARD	- Project concepts - Components & activities - Implementation schedule	Hanoi	2 days/ session x 1 session	30 persons/ session	NAFEC	2011
	PPMUs and DARD		Nghe An, Quang Nam, Phu Yen	2 days/ session x 1 session x 3 batches	60 persons/ session for 4 provinces (or 1 batch)	NAFEC	2011-12
Training guidance to PAFECs	PAFECs	- Outlines of the works - Project concepts - Components & activities - Implementation schedule - Techniques/skills required in detailed design and implementation stage - Activities planned in phase-out/in stage	Nghe An, Quang Nam, Phu Yen	3 days/ session x 6 sessions x 3 batches	60 persons/ session for 4 provinces (or 1 batch)	NAFEC	2011-12
Training on project management	CPMU, MBFP, and MARD	- Project management - Financial management / billing	Hanoi	2 days/ session x 1 session	20 persons/ session	NAFEC	2011
	PPMUs and DARD	- Project regulations	Nghe An, Quang Nam, Phu Yen	2 days/ session x 1 session x 3 batches	60 persons/ session for 4 provinces (or 1 batch)	NAFEC	2011-12
Guidance on benefit sharing mechanism and forest development and protection fund	CPMU, MBFP, and MARD	- Benefit sharing mechanism (concepts, relevant guidelines, action to be taken, etc.)	Hanoi	2 days/ session x 1 session	20 persons/ session	NAFEC	2012
	PPMUs and DARD	- Forest development and protection fund (concepts, relevant guidelines, action to	Nghe An, Quang Nam, Phu Yen	2 days/ session x 1 session x 3 batches	60 persons/ session for 4 provinces (or 1 batch)	NAFEC	2012

Orientation / Training	Participants	Topics to be discussed	Location (Venue)	Duration	No. of participants	Executor	Timing
		be taken, etc.)					
Guidance on monitoring and evaluation (M&E)	CPMU, MBFP, and MARD	- M&E (concepts, objectives, relevant guidelines, indicators, methodologies, schedule) - Report making	Hanoi	2 days/ session x 1 session	20 persons/ session	NAFEC	2014
Monitoring meeting with PAFECs	PAFECs	- Progress of the work - Issues and difficulties - Good practices	Nghe An, Quang Nam, Phu Yen	1 day/ session x 12 sessions x 3 batches for 4 years	60 persons/ session for 4 provinces (or 1 batch)	NAFEC	2013-16

NAFEC is the most probable organization that can engage in the above-mentioned works as the contractor. CPMU together with the project consultant will give necessary guidance to the contractor (or NAFEC) prior to and during the works so as to maintain the quality of the works.

In addition to the capacity development of the project staff (the staff of CPMU and PPMUs), technical guidance to PAFECs in the 12 provinces will be conducted to capacitate PAFECs, which will be the executing bodies of the capacity development activities at the provincial level, to provide the necessary guidance to the relevant stakeholders, such as DPCs, PFMBs, CPCs, and local communities in a proper manner. NAFEC will also organize a monitoring meeting with PAFECs every six months so as to monitor the performance of PAFECs and discuss any issues and difficulties in the implementation of the capacity development activities at the provincial level.

(b) Capacity Development at the Provincial Level

The capacity development activities at the provincial level will target the relevant government offices from the provincial to commune levels as listed below.

- Relevant departments in DARD
- Protection Forest Management Boards (PFMBs)
- District People's Committees (DPCs) and District Extension Centers (DECs)
- Commune People's Committee (DPCs) and Commune extension workers

PAFEC is the sole organization to carry out the capacity development activities at the provincial level, since there seem to be no private institution capable of implementing the same activities. The main task of PAFEC is to provide orientation and training for the stakeholders. The following table shows the outlines of training sessions given to DARD, PPMUs, DPCs, DECs, and commune extension workers.

Outlines of Capacity Development Activities for PPC, DARD, PPMU, DPCs, and Extension Workers

Orientation / Training	Participants	Topics to be discussed	Location (Venue)	Duration	No. of participants	Executor	Timing
Project orientation	PPC, DARD, DPCs	- Project concepts - Components & activities - Implementation schedule	Provincial capital	2 days/ session x 1 session	30 persons/ session	PAFEC	2012
	PFMBs, DECs, CPCs		District capitals	2 days/ session x 1 session	60 persons/ session	PAFEC	2012
Training of PPMU	PPMU	<u>Detailed Design Stage</u> - Area identification - Participatory land use planning - GIS - Work planning	Provincial capital	3 days/ session x 1 session	60 persons/ session	PAFEC	2012

Orientation / Training	Participants	Topics to be discussed	Location (Venue)	Duration	No. of participants	Executor	Timing
		Implementation Stage - Contract management - Livelihood development - Fire control - M&E	Provincial capital	3 days/ session x 7 sessions for 7 years	60 persons/ session	PAFEC	2012-18
Training of DECs and extension workers	DECs, Commune extension workers	- Group organization - Work planning - Assessment of livelihood options - Marketing assessment	District capitals	3 days/ session x 1 session	20 persons/ session	PAFEC	2012
		- M&E - Agrofreostry - Farming techniques - Livelihood development - NTFP production	District capitals	3 days/ session x 6 sessions for 3 years	20 persons/ session	PAFEC	2012-14

In addition to the capacity development of the provincial and district staff, the staff of PFMBs associated with the project areas will be given a series of training courses under this component so that they could manage the assigned protection forests in a proper and sustainable manner. Since the JICA Survey was not able to make an in-depth survey to identify the capacity gaps of PFMBs due to time constraints, a training needs assessment will be carried out by the contractors prior to the implementation of training courses. Based on the results of the training needs assessment, a training program will be prepared at each province. The following table gives the outlines of the activities related to the capacity development of PFMBs.

Outlines of Capacity Development Activities for PFMBs

Orientation / Training	Participants	Topics discussed <1	Location (Venue)	Duration	No. of participants	Executor	Timing
Training needs assessment	PFMBs	- Questionnaire survey	-	3 months	-	PAFEC	2012
Training of PFMBs	PFMBs	Detailed Design Stage - Area identification - Forestry inventory - Participatory land use planning - Site demarcation (including use of GPS) - GIS operation - Long-term agreement	Provincial capital	3 days/ session x 1 session	30 participants	PAFEC	2012
		Implementation Stage - Silvicultural techniques - Technology transfer - Livelihood development - Forest protection rules - Forest fire control - NTFP production - Data management - Monitoring - Planning - Reporting	Provincial capital	3 days/ session x 12 sessions for 6 years	30 participants	PAFEC	2112-17

Note: Topics of training courses are tentative ideas based on the quick interviews to DARDs and PFMBs.

(c) Study Tours

The study tours will be organized to expand the horizon of the staff of MARD and DARDs. The main aim of the study tour is to deepen their understanding of community participation in forest management in Japan. As described in Chapter 1 in Part III report, the forest management initiated by the government is still the prevailing practice in managing protection forests in the field and the concept of the long-term agreement/contract with local communities or co-management of protection forest is still new to many of the staff of MARD and DARDs. Cases of forest management by forest users' groups in Japan will be good examples for them to have an idea on forest management in collaboration with local communities. The study tours will also be effective in learning how to keep the forest users' groups active and make the organizations self-reliant. Specifically, the participants in the study tours are expected to learn:

- Forest management by local communities;
- Forest management practices;
- Management of forest users' groups; and
- Income generating activities by the groups.

(d) Review Meetings

The project review meetings will be organized every six months at both central and provincial levels. CPMU and the relevant departments of MARD will be the participants in the meeting at the central level, while PPMU, DARD and PFMBs will participate in the meeting at the provincial level. In the meeting, the participants will discuss the activities conducted in the last six months with accomplishments made, any issues and concerns in the project implementation, lessons learned, and activities planned in the next six months. Such periodical reviews would help MARD and DARDs monitor the progress of the project in a timely manner. At the same time, the review meeting can also be good opportunity for CPMU and PPMUs to solve any cross sectoral issues in managing the project. The outlines of the review meetings are summarized below.

Outline of Review Meetings

Meeting	Participants	Topics to be discussed	Location (Venue)	Duration	No. of participants	Executor	Timing
Review meetings at the central level	CPMU, relevant departments of MARD, etc.	- Activities done - Accomplishments - Issues & concerns	Hanoi	2 days/ session x 2 sessions/ year x 9 years	10 persons/ session	CPMU	2011-19
Review meetings at the provincial level	CPMU, relevant departments of DARD, PFMBs	- Lessons learned - Activities planned in the next phase	Provincial capital	2 days/ session x 2 sessions/ year x 9 years	60 persons/ session	PPMU	2011-19

(2) Capacity Development of Local Communities/Households

The capacity development of local communities is another crucial sub-component that would influence the sustainability of the project. The sub-component aims to enhance the awareness of the project among local communities who may take part in the project and develop their capacities and skills necessary for undertaking the project activities. Most of the activities related to the capacity development of local communities/households will be contracted out to the contractors in the provinces. As mentioned in the former section, PAFECs in the provinces are expected to be the most capable organizations to carry out the activities.

(a) Information Dissemination to local communities/households

The information dissemination intends to i) familiarize the local communities/households with the project (purpose, concepts, project activities, expected benefits, and responsibilities of local communities) and relevant policies and guidelines concerning management of protection forests and ii) improve the local communities' understanding on the value of the protection forest and their role in forest management. The orientation meetings will be organized for both new sites and SPL-3 sites in the beginning of the project at the commune/village level.

Topics to be handled in the Information Dissemination Activities

Topics	Sub-topics	Timing	No. of participants	Venue	Duration	Executor
Outlines of the project and benefit sharing	• Overview of the project, project concepts and outlines • Concept of the long-term agreement • Outline of the benefit sharing mechanism • Group organization for long-term agreement on forest management	Phase-in Stage (2012)	30 persons / commune	Commune	1 day/ commune x 1 session	PAFEC
Value of protection forest	• Awareness creation on value of protection forest • Roles of stakeholders and local communities in management of protection forests	Phase-in Stage (2012)	30 persons / commune	Commune	1 day/ commune x 1 session	PAFEC

As mentioned above, the contractors will encourage local households/communities to organize a small community group for management of protection forests. In particular, those who reside in the same village or hamlet may have potential to be organized into a group since they have shared a sense of solidarity and many of them are related to each other. In principle, the group will be organized at either village or hamlet level[1]. The contractors will request local communities/households in the session to discuss among themselves whether or not they could organize themselves into a small group by the time when they have guidance on forest management. The concerned PFMBs will assist local communities in discussing such an issue after the meeting.

(b) Publication

For information dissemination, different types of publications are to be developed to reach out to the different levels of people. Especially, in developing the materials for the local communities, the contents and presentations of the materials are to be carefully designed through a field trial. When being developed for illiterates, the materials should contain sufficient images or drawings for them to easily grasp the imparted messages. CPMU and PPMUs will be responsible for development of the following materials with the assistance of the project consultant and/or the contractors. The project consultant will review and finalize the materials drafted by CPMU and PPMUs.

Proposed Materials to be Produced for Information Dissemination

Nature of the material	Type of material	Responsible organization	Assisting organization	Target groups
Project brief (overall)	Print (leaflet)	CPMU	Project consultant	General
Project brief (sub-project)	Print (leaflet)	PPMUs	Contractors (PAFECs) and Project consultant	General
Annual newsletter (overall)	Print (leaflet)	CPMU	Project consultant	General
Annual newsletter	Print (leaflet)	PPMUs	Contractors (PAFECs)	General

[1] Although there are several existing organizations in rural areas, such as youth unions, women's union, and agricultural cooperatives, these organizations will not be used for grouping community members since they have their own missions and the size of these organizations is far larger than that of hamlet/village.

Nature of the material	Type of material	Responsible organization	Assisting organization	Target groups
(sub-project)			and Project consultant	
Environmental education booklet	Booklet (10pages)	PPMUs	Contractors (PAFECs) and Project consultant	Youth/ future generations
Awareness creation	Poster DVD/ VCD	PPMUs	Contractors (PAFECs) and Project consultant	Local communities / households

The materials finalized will be distributed to the target groups through PPCs, DPCs/CPCs and PFMBs in the target provinces.

(c) Guidance and Training on Forest Management

The guidance and training activities aims to strengthen the capacity of local communities/households in pursing self-sustaining forest protection and management. Currently, the management of protection forest is under the direct responsibility of the government while the role of the local communities is considered to be passive. In many cases, they are less likely to act unless they are paid or instructed by the government. Hence, the following activities will be carried out at the commune/village level.

i) Guidance on forest management and long-term agreement
ii) Technical training on afforestation and silvicultural practices
iii) Periodical coaching to local households/community groups

Guidance by the Contractors

In the guidance on forest management and long-term agreement, the following topics will be discussed and handled by the contractors hired for the capacity development of local communities in the provinces.

Outline of Guidance on Forest Management and Long-term Agreement

Topics	Participants	Location (Venue)	Duration	No. of participants	Executor	Timing
Long-term agreement and benefit sharing	Local communities, Commune or village leaders, PFMBs	Commune	1 day/ session x 1 session	30 persons/ session	PAFEC	2012~13
Group organization for forest management and long-term agreement	Local communities, Commune or village leaders, PFMBs	Commune	1 day/ session x 1 session	30 persons/ session	PAFEC	2012~13
Preparation of a work plan for sub-contract	Local communities, Commune or village leaders, PFMBs	Commune	1 day/ session x 1 session	30 persons/ session	PAFEC	2012~13
Development of rules on forest protection and management	Local communities, Commune or village leaders, PFMBs	Commune	1 day/ session x 2 sessions	30 persons/ session	PAFEC	2013~15
Outline of a forest management plan	Local communities, Commune or village leaders, PFMBs	Commune	1 day/ session x 2 sessions	30 persons/ session	PAFEC	2015~17
Trial preparation of a forest management plan	Local communities, Commune or village leaders, PFMBs	Commune	1 day/ session x 1 session	30 persons/ session	PAFEC	2016~18

Note: The contractors shall also prepare technical guides for the respective topics and use them in the sessions.

Local communities/households who are willing to organize a community group will be assisted in the group formation. In the session, the communities/households with the assistance of the contractors will make a member list, select group leaders (leader and sub-leaders), determine the roles and responsibilities of the leaders and other members, and define the vision and mission of the group.

The community group will be the responsible body for forest development and management activities in the assigned protection forests, which used to be used by community members of the same village or hamlet. The community group will also be a venue for training on livelihood development and a counterpart of the long-term agreement/contract on forest protection and management in the end.

Technical Training by the PFMBs

On the other hand, PFMBs will organize a series of technical training sessions at the project areas. The technical training sessions given by PFMBs should include, but not limited to, the following topics:

- Land preparation;
- Identification of planting points with staking,
- Hole digging and filling soils;
- Planting;
- Tending seedlings (spot weeding and clearing); and
- Replanting.

In the sessions, PFMBs shall give both types of training, lecture-type with a text book and hands-on training in the field.

Periodical Coaching by the Contractors

In order to support local households and/or community groups who intend to enter into the long-term agreement/contract in managing the assigned protection forests, the contractors will organize meetings with local communities biannually at the PFMB level. The contractors will confirm the progress of the work and discuss with local communities together with PFMBs any issues and concerns on forest management as well as management of community group. The scope of the periodical meeting by the contractors is outlined below.

Topics	Participants	Location (Venue)	Duration	No. of participants	Executor	Timing
Progress of works Accomplishments Issues and concerns on forest management Issues and concerns on management of group Activities planned in the next six months	Local communities, Commue/Village leaders, PFMBs	PFMB	1 day/ session x 1 session/ year (for 5.5 year for SPL-3 sites and 7 years for new sites)	30 persons/ session	PAFEC	2013~19

In addition to the monitoring by the contractors, PFMBs in coordination with DECs as well as commune extension workers will have meetings with local communities at times. Any issues and concerns that the communities face in the course of the sub-contracted activities will be discussed in the meetings and PFMBs and DECs/commune extension workers will give necessary guidance and advice to local communities.

(3) Phase-in / phase-out works

The project areas, whenever and wherever feasible, should be ideally managed by local communities upon the termination of the forest development/improvement sub-contract. Since the long-term agreement/contract on forest management or co-management of protection forest will be the first attempt in the target provinces, sufficient guidance and assistance should be given to PPMUs, PFMBs, and local communities in addition to the guidance on forest management described in the former sub-section to enable them to conclude the long-term agreement/contract on protection and

management of the assigned protection forests. The following assistance works will be carried out by the project consultant and the contractors for the capacity development at the provincial level.

Activities Planned for Phase-In / Phase-Out Works

Activities	Purposes	Executors
Facilitation of hand-over of forest ownerships from PPMUs to PFMBs	To assist PPMUs in handing over the ownerships of the project area to PFMBs concerned	CPMU and Project Consultant
Guidance to PPMUs, PFMBs, and PAFECs	To deepen the understanding of PPMUs, PFMBs, and PAFECs on the procedures for the long-term agreement, outlines of benefit sharing mechanism, and preparation of a forest management plan	CPMU and Project Consultant
Guidance to local communities/ community groups	To remind local communities of the procedures for the long-term agreement and enable them to prepare a forest management plan using the given format.	PPMUs and Contractors

(a) Facilitation of hand-over of forest ownerships by PPMUs to PFMBs

Prior to the conclusion of the long-term agreement/contract with local communities/community groups, the ownership of the assigned protection forest shall be handed over by PPMUs to the concerned PFMBs. Once the sub-contracts with local communities under the project is completed, PPMUs will be encouraged by CPMU to immediately hand over the ownership of the assigned protection forest to the concerned PFMBs so that the latter can make the long-term agreement on management of the assigned area with local communities. Toward this end, the project consultant will assist the concerned PPCs in issuing a letter of transfer of the corresponding areas upon the completion of the sub-contracts. The letter issued by PPCs shall specify the locations (district, commune, compartment and series numbers) and the name of new owner of the area.

(b) Guidance to PPMUs, PFMBs, and PAFECs

The orientation workshops organized in the beginning of the project will handle the topics related to the long-term agreement/contract, such as the contents of the agreement, benefit sharing mechanism, and forest management plan, but PPMUs, PFMBs, and PAFECs, which will be responsible for supporting local communities in concluding the long-term agreement/contract, may need to refresh and enhance their understandings on those topics, especially the procedures for the long-term agreement on co-management of protection forest, prior to the provision of guidance to local communities in the field. The following guidance sessions will be undertaken by CPMU and the project consultant.

Guidance to PPMUs, PFMBs, and PAFECs

Target	Topics to be discussed	Venue	No. of participants	Duration	Executor	Timing
New sites (12 provinces)	- Long-term contract and its procedures - Benefit sharing mechanism - Forest protection and development fund - Forest management plan (its purpose and use of a planning format given by the consultant)	Nghe An, Quang Nam, Phu Yen	60 persons / session for 4 provinces	2 days/ session x 3 sessions x 3 batches for 12 provinces	CPMU and Project consultant	2017-18
SPL-3 sites (5 provinces)	ditto	Hue	60 persons / session for 5 provinces	2 days/ session x 2 sessions for 5 provinces	CPMU and Project consultant	2016-17

A forest management plan will be one of the contract documents to be prepared for the long-term agreement/contract between PFMBs and local communities. It might not be easy for PPMUs, PFMBs and local communities to prepare the said plan, since there has been no such a plan prepared so far. In

order for PPMUs, and the contractors to effectively guide local communities in preparing the plan, the project consultant will develop a format of the forest management plan when it finalizes the implementation guidelines and explain how to use it in the guidance session.

(c) Guidance to local communities

After having had the guidance sessions organized by CPMU, PPMUs with the assistance of the contractors will organize guidance sessions at the commune/village level to assist local communities/community groups in preparing themselves to enter the long-term agreement. Since local communities will be given a series of guidance from 2013-2016, which will include the same topics, the aim of the sessions are to refresh what they learn in the former sessions and remind them of the critical points/issues on the long-term agreement. The outlines of the guidance to local communities are summarized below.

Guidance to Local Communities

Target	Topics to be discussed	Venue	No. of participants	Duration	Executor	Timing
New sites and SPL-3 sites	- Long-term contract and its procedures - Benefit sharing mechanism - Forest management plan (its purpose and how to prepare the plan using the given format)	Commune / Village center	30 persons / session	1 day/ session x No. of communes	PPMUs and the contractors	2015-18

3.2.5 Development and Improvement of Protection Forests

As described in Chapter 6 in Part II of this report, the project area is broadly grouped into three types of protection forests, namely, i) watershed protection forest, ii) SPL-3 Afforestation Project sites, and iii) coastal protection forest. Since each protection forest has different crucial functions to be protected and restored for environmental protection as well as socio-economic development point of views, this component aims to rehabilitate, improve, and protect three protection forests as described below.

(1) Present forest classification and recommended interventions to protection forest

The forest lands (i.e., special use forest, protection forest and production forest) governed by the government are categorized into the following four groups in accordance with the technical regulations officially defined by MARD.

Types of Vegetation in Viet Nam

Category	Characteristics
Group 1	**Vegetation which does not form forest. Grass or bush is dominant. Forest coverage is less than 30 %.**
Ia (Grass land)	Bush vegetation. Local shrubs, grass and wild banana are dominant.
Ib (bush, small trees)	Bush vegetation with some growing timber trees and bamboos
Ic (woodlot)	Woodlot dominated by small timber tress around one meter height with density more than 1,000 trees/ha.
Group II	**Recovering forest with small diameter pioneer trees**
II a	Recovering forest after hill cultivation
II b	Recovering forest after over harvesting
Group III	**Impacted forest by the human activity**
III a	Forest impacted and completely changed by over harvesting
III b	Forest impacted by the selective cutting

Category	Characteristics
Group IV	**Original forest or mature secondary forest**
IVa	Original forest
IVb	Secondary recovering forest

Source: Technical regulation on design of forest management on August 1st 1984. MARD

Group I is given to the areas where there is no or less forest, while Group IV indicates the areas that have untouched natural forest or matured secondary forest. Groups II and III are the forests that have been damaged or affected by human activities and are being in the process of regeneration.

On the other hand, MARD Decision No.134/04/04/1991 titled "Temporary Regulations on Establishment of Watershed Protection Forest," states that the protection forests should be classified into three (3) types, i.e., i) very critical protection forest, ii) critical protection forest, and iii) less critical protection forest, based on its importance in watershed management. In general, those classified as "very critical protection forest" are located in the head of critical watersheds or in the river and lake banks which are at high risk of erosion. They must be strictly protected or urgently rehabilitated in case forest degradation has progressed.

With an aim to manage "very critical protection forest" properly, the decision also provide the technical options/guidance to rehabilitate the vegetation, such as i) afforestation (new planting), ii) assisted natural regeneration (ANR) with/without enrichment planting, and iii) forest protection. Afforestation is to be applied to the vegetation type of "Ia" and part of "Ib" to establish the forest vegetation on bare lands currently covered with grass or scattered scrubs. ANR without enrichment planting is aimed at recovering the vegetation cover from Ic to IIIb, while ANR with enrichment planting is applied to Ib and Ic which require additional planting of indigenous trees. MARD Decision No. 134 instructed DARDs to adopt such technical options in rehabilitation and management of forest areas. The following table shows the technical options to be applied to the present vegetation types to rehabilitate and maintain the "very critical protection forests."

Types of vegetation and technical options corresponding to the vegetation

Vegetation types	Afforestation	Forest Protection	ANR with enrichment planting	ANR w/out enrichment planting
Type Group 1: Vegetation which does not form the forest				
Ia (Grass land)	○			
Ib (Bush, Small trees)	△		○	
Ic (Wood lot)			△	○
Type Group II: Recovering forest				
II a				○
II b				○
Type Group III: Impacted forest				
III a				○
III b				○
Type Group IV: Original forest or mature secondary forest				
IVa		○		
IVb		○		

Source: Decision No. 134 (04/04/91)
Note: ○ : apply. △ : partly apply

(2) Development and improvement of watershed protection forest

As stipulated in MARD Decision No. 1171 dated on 30/12/1986, the watershed protection forest holds the multiple functions namely: i) control soil erosion on hill and mountain slopes, ii) reduce sedimentation in riverbeds, and iii) stabilize the water flow of the rivers throughout a year. Although

it is difficult to evaluate those effects exactly, it is well known that the forest vegetation could contribute to minimizing the environmental degradation and the risk of natural disasters in its downstream basin. The main aims of the sub-component of "Development and Improvement of Watershed Protection Forest" are to rehabilitate the degraded protection forests and to protect natural forests to maintain/enhance the functions of watershed protection forests.

The physical targets of the sub-component were identified as shown below by applying the guidelines described in the former sub-section.

Physical Targets of Development and Improvement of Watershed Protection Forest

Unit: ha

Province	Afforestation	Improvement of existing plantation	Forest Protection	ANR with enrichment planting	ANR w/out enrichment planting
1. Thanh Hoa	1,270	1,400	6,600	-	900
2. Nghe An	2,300	900	4,100	-	-
3. Ha Tinh	1,960	1,000	8,510	-	-
4. Quang Binh	1,600	-	3,000	-	800
5. Quang Tri	2,900	-	4,000	300	2,450
6. Thua Thien Hue	3,000	-	8,000	500	2,000
7. Quang Nam	970	-	7,000	2,100	1,100
8. Quang Ngai	3,500	-	3,200	600	2,700
9. Binh Dinh	2,480	-	3,710	-	4,700
10. Phu Yen	1,500	-	4,350	-	900
11. Ninh Thuan	1,610	-	7,900	1,200	1,500
12. Binh Thuan	-	-	3,600	-	4,200
Total	23,090	3,300	63,970	4,700	21,250

Source: JICA Survey Team, September 2009

(a) Afforestation

Afforestation aims to establish the forest cover on bare lands dominated with grass (Ia) and scattering scrubs (Ib). The standard design of afforestation, which is in line with MARD Decision No. 516/2002 and No. 4361/2002, is outlined below.

Standard Design of Afforestation in Watershed Protection Forest

Item	Design
1. Present vegetation type	Ia (grassland) and partly Ib (bush or scatted small trees)
2. Density of planting	1,550~1,600 trees/ha
3. Tree species planted	- Mix planting of main (Indigenous) species and subordinate (fast growing) species - Main (Indigenous) species: *Dipterocarpus alatus, Hopea odorata,*etc. - Subordinate (fast grwoing) species: *Acacia mangium, A. auriculiformis, A.hybrid.*etc. - Ratio of main species and subordinate species is 1:1 or 1:2
4. Tending & protection	Spot weeding and clearing are continued for three (3) years after planting
5. Replanting	10 % of the total seedlings planted in the first year will be replanted in the second year.
6. Target tree density at maturity	Multi-layered main species (400 ~ 600 trees/ha) formulates the closed canopy layer in 20- 25 year. (Ia or Ib → II)
7. Remarks	Subordinate species are planted with the main species to form the canopy cover in the early stage to give favorable conditions for the growth of main species. Subordinate species should be gradually harvested by thinning from 7th

Item	Design
	year.

Source: MARD Decision No. 516/2002, No. 4361/2002, JICA Survey Team.

According to the standard design, the main tree species will formulate high closed canopy in 20-25 years after planting. The subordinate tree species are gradually removed by thinning and cutting from seventh to 20th year, which brings continuous income to the forest owners. The target density of the main tree species is from 400 to 600 trees/ha in the matured stage. The contract for afforestation sub-component includes replanting/replacement of dead seedlings with new ones at the onset of rainy season in the second year considering the natural mortality after planting. The same silvicultural practice should be adopted for other sub-components with planting of seedlings, such as improvement of existing plantation and ANR with enrichment planting.

(b) Improvement of Existing Plantations

In addition to afforestation in bare lands, there is also a need to improve existing plantations in Thanh Hoa, Nghe An, Ha Tinh and T.T. Hue. These provinces have vast areas of mono-plantation of Pine (*Pinus merkusii*) trees established by the government in the late 1970's. After three decades have passed, the Pinus trees have grown well but have been severely damaged by wildfires and insects attacks. They have been vulnerable to such external factors due to its flammability and poor species diversity. Hence, the existing mono-pinus tree plantations need to be converted to multi-layered mix plantation by planting additional indigenous trees, so that the plantations could be resistant to insect attacks and wildfires. The table next shows the standard design of this operation.

Standard Design of Improvement of Plantation in Protection Forest

Item	Design
1. Present vegetation type	Plantation of *Acacia spp.* or *Pinus merkusii* (Assumption: 1,000 trees/ha)
2. Density of planting	400 ~ 600 trees/ha
3. Tree species planted	Indigenous tree species are planted between the Pine trees. Tree species: *Aquilarina crassna* (Do tram), *Erythrophloeum fordii* (Lim xanh), *Lithocarpus fissus* (Cong trang), *Kadelea candel* (Trang),
4. Tending & protection	Tending is continued for three (3) years after planting
5. Replanting	10 % of the total seedlings planted in the first year will be replanted in the second year.
6. Target tree density at maturity	Mixed forest of *Acacia spp./Pinus merkusii* and indigenous trees. 400~600 trees/ha of multi-layered forest (Ic → II)
7.Remarks	Acacia (subordinate species) should be harvested by thinning.

Source: JICA Survey Team

(c) Protection of natural forest

In the watersheds, natural forests are always exposed to the risks of natural disasters and the illegal activities such as cutting, firing, etc. In the circumstances, the main aim of this sub-component is to protect natural forests in the critical watershed protection forests from such risks and dangers. This option will also be applied to Pinus plantations, which are prone to the same kind of risks, in the northern central provinces, namely Thanh Hoa, Nghe An and Ha Tinh. The standard works for protection of natural forest are summarized below.

Standard Works for Protection of Natural Forest

Item	Design
1. Present vegetation type	IVa or IVb (original or matured secondary natural forest) Pinus plantation
2. Activities	Patrolling and reporting. Maintenance of the sign board for forest protection for five (5) years
3. Target tree density at maturity	Natural forest maintained in good conditions (IV→ IV)
4. Remarks	The contracted group members are allowed to harvest the forest products following the MARD regulations.

Source: JICA Survey Team

(d) Assisted Natural Regeneration (ANR)

The target provinces have large areas of degraded forests mixed with bushes and bare lands, which are classified as Ib, Ic, II and III. ANR with/without enrichment planting is to be applied to these types of vegetation with the aim of facilitating natural regeneration of indigenous trees. Hence, the goal of this option is to upgrade the severely damaged forest to partly degraded or secondary forest at the end of the project by tending the areas with or without planting.

ANR with enrichment planting will target the areas classified as Ib and Ic where there are not sufficient number of standing trees to establish a close forest canopy, while ANR without enrichment will be mainly adopted for recovering the areas classified as Ic, IIa, IIb, IIIa, and IIIb, which have a certain level of existing standing trees in the area.

The standard designs of the sub-component are outlined below.

Standard Design of ANR with Enrichment Planting

Item	Design
1. Present vegetation type	Ib (bush, scattered small trees), partly Ic (woodlot)
2. Density of planting	400 trees/ha
3. Tree species planted	Indigenous tree species: *Dipterocapus alatas, Hopea odorata*. etc.
4. Tending & protection	Spot weeding and climber cutting are continued for two (2) years after the additional planting followed by two years protection.
5. Replanting	10 % of the total seedlings planted in the first year will be replanted in the second year.
6. Target tree density at maturity	Mixed multi-layered forest of indigenous trees. (Ib, Ic → II) 600 trees/ha of multi-layered forest composed with indigenous trees (400 trees/ha planted additionally, 200 trees/ha naturally regenerating).
7. Remarks	Clearing and thinning should be done properly to control the density of stands.

Source: JICA Survey Team

Standard Design of ANR without Enrichment Planting

Item	Design
1. Present vegetation type	Ic (woodlot), IIa, IIb, IIIa, and IIIb
2. Tending & protection	Assistance for natural regeneration of indigenous trees for three years followed by two years protection
3. Target tree density at maturity	Mixed multi-layered forest of indigenous tree (Ic, II, III → II, IV)
4.Remarks	Clearing and thinning should be done properly to control the density of stands.

Source: JICA Survey Team

(3) Development and improvement of coastal protection forest

Some of the target provinces have the critical coastal protection forests along the coastal lines. Like in the case of those in watershed, they have crucial functions to prevent sand in coastal area from moving inland and to protect houses, roads, and farms in coastal areas from sand and strong wind as sand- and wind-shield forests. Among the 12 provinces three (3) provinces, namely, Quang Binh, Ninh Thuan and Binh Thuan provinces, propose to afforest sandy open lands and rehabilitate the degraded plantations in coastal protection forest as shown below

Physical Targets of the Improvement of Coastal Protection Forest

Unit: ha

Province	Afforestation	Improvement of existing plantation	Forest Protection	Enrichment planting
1. Thanh Hoa	-	-	-	-
2. Nghe An	-	-	-	-
3. Ha Tinh	-	-	-	-
4. Quang Binh	400	800	-	-
5. Quang Tri	-	-	-	-
6. Thua Thien Hue	-	-	-	-
7. Quang Nam	-	-	-	-
8. Quang Ngai	-	-	-	-
9. Binh Dinh	-	-	-	-
10. Phu Yen	-	-	-	-
11. Ninh Thuan	50	-	-	-
12. Binh Thuan	1,100	-	-	1,600
Total of 12 provinces	1,550	800	-	1,600

Source: JICA Survey Team

(a) Afforestation in sandy area

In this option, the project will plant localized drought tolerant tree species, such as Casuarina and Neem (*Azadirachta indica*), in open sandy area to establish the sand- / wind-shielding forest. The density of trees in the initial stage will be as high as 2,500~5,000 seedlings/ha, and it will be reduced to 1,500~2,000 seedlings in the end of the project. The standard design of afforestation in sandy area is outlined below.

Standard Design of Afforestation in the Coastal Protection Forest

Item	Design
1. Present vegetation type	Ia (grassland or bare land)
2. Density of planting	2,500 ~ 5,000 trees/ha (Mostly 2,500 ~ 3,000 tree/ha)
3. Tree species planted	Tree species: *Casuarina equisetifolia, Neem (Azadirachta indica)*
4. Tending & protection	Tending is continued for three (3) years after planting
5. Replanting	10 % of the total seedlings planted in the first year will be replanted in the second year.
6. Target tree density at maturity	1,500 ~ 2,000 trees/ha of *Casuarina* stands with close canopy layer, (Ia,Ib → II)
7.Remarks	No thinning should be done. Number of trees decreases naturally.

Source: JICA Survey Team

(b) Improvement of existing plantation

This option is applied to the existing Casuarina plantations where sand has been stabilized. The option aims at the enrichment of the plantation by introducing other tree species. Due to the harsh and dry conditions, species tolerant of drought and poor soil conditions should be introduced in this

option rather than indigenous species. According to the past experiences made by the provinces, *Acacia auriculiformis* and Neem have showed good performance even under such poor conditions. The following table gives the standard design of the sub-component.

Standard Design of Improvement of Existing Plantation

Item	Design
1. Present Vegetation type	Casuarina plantation
2. Density of planting	485 trees/ha, Assumption: 1,000 trees/ha of Casuarina.
3. Tree species planted	Tree species: *Acicia spp.* (mainly *Acaacia auriculiformis*) Neem (*Azadirachta indica*)
4. Tending & protection	Continue spot weeding, clearing for three (3) years after planting of Acacia
5. Replanting	10 % of the total seedlings planted in the first year will be replanted in the second year.
6. Target tree density at maturity	1,500 trees/ha of *Casuarina* and *Acacia* plantation Some of Acacia is assumed to re-generate naturally. (Ic → II)
7.Remarks	No thinning should be done. Density is controlled naturally.

Source: JICA Survey Team

(c) Enrichment planting

This option will be applied to degraded natural forests in the coastal area. Although indigenous tree species are ideal, acacia spp. and Neem are more suitable in sandy areas considering their applicability and suitability to such areas. Major activities to be carried out in this option are almost similar with what would be done in ANR with enrichment planting in watershed protection forest.

Standard Design of Enrichment Planting

Item	Design
1. Present Vegetation type	Ib (bush, small trees)
2 Density of planting	500 trees/ha
3. Tree species planted	Acacia spp. and Neem
4. Tending & protection	Assistance for natural regeneration is continued for two (2) years after enrichment planting, followed by the two (2) years protection
5. Replanting	10 % of the total seedlings planted in the first year will be replanted in the second year.
6. Target tree density at maturity	600 trees/ha of multi-layered mixed forest composed with various indigenous trees, (Ib, Ic → II)
7. Remarks	No thinning should be done.

Source: JICA Survey Team

(4) Improvement of SPL-3 afforestation project sites

DARDs that implemented SPL-3 Afforestation Project proposed that the project assist them in improving the existing plantations established by SPL-3 Afforestation Project. A number of plantations were established under the project, but many of them are presently in poor conditions due to less maintenance after the end of sub-contracts with local communities. Though they are located in the very critical watershed, DARDs had no choice other than to leave them non-maintained due to financial constraints. The following table shows the physical targets of the sub-component.

Physical Target of Improvement of SPL3 Afforestation Project Sites

Unit: ha

Province	Forest Protection	Enrichment planting	Vegetation clearing & thinning
1. Thanh Hoa	-	-	-
2. Nghe An	-	-	-
3. Ha Tinh	-	-	-
4. Quang Binh	-	-	-
5. Quang Tri	1,610	400	1,600
6. Thua Thien Hue	700	-	3,400
7. Quang Nam	120	-	1,430
8. Quang Ngai	-	-	3,790
9. Binh Dinh	-	-	-
10. Phu Yen	2,020	600	-
11. Ninh Thuan	-	-	-
12. Binh Thuan	-	-	-
Total of 12 provinces	4,450	1,000	10,220

Source: JICA Survey Team

(a) Forest protection

Forest protection will target the existing established forests developed by SPL-3 but facing threats of forest degradation, such as wild fires, free grazing, and illegal cutting/farming. The activities to be done in this option are the same with what would be carried out in the same option in Development and Improvement of Watershed Protection Forest. The duration of the work is designed to be three years.

Standard Design of Forest Protection of SPL3 Plantations

Item	Design
1. Present Vegetation type	Plantation composed of; Main (protection) species and subordinate (economic) species such as *Acacia spp*. (Ic, II)
2. Activities	Patrolling and reporting. Maintenance of the sign board for forest protection
3. Target tree density at maturity	Multi-layered mixed plantation composed of main and subordinate species. 400 ~ 600 trees/ha in 20-25 years, (Ic, II → II)
4. Remarks	The contracted local communities will be allowed to harvest the forest products in accordance with the MARD regulations.

Source: JICA Survey Team

(b) Enrichment planting in natural forests in the SPL-3 sites

Enrichment planting of indigenous tree species will be applied to degraded natural forests in the target area of SPL3. Although the major tree species such as Dipterocarpus and Hopea are recommended, the species planted should be carefully examined and identified based on the natural conditions in the localities.

Standard Design of Enrichment Planting in the SPL3 Natural Forest

Items	Design
1. Present Vegetation type	Ib (bush, small trees), Ic (woodlot) Assumption: 1,000 trees/ha of small local trees
2. Density of planting	380 trees/ha
3. Tree species planted	Indigenous tree species: *Dipterocapus alatas, Hopea odorata*, etc.
4. Tending & protection	Protection is continued for three year after enrichment planting in the first year.
5. Replanting	10 % of the total seedlings planted in the first year will be replanted in the second year.
6. Target tree density at maturity	600 trees/ha of multi-layered forest composed with several indigenous tree species. (Ib,Ic → II)
7. Remarks	Thinning to control the density should be done properly.

Source: JICA Survey Team

(c) Vegetation clearing and thinning

In some of the plantations developed by SPL3 Afforestation Project, Acacia trees planted become too dense and intricate since they have grown well and so fast with less maintenance condition. Overgrowth of subordinate species has suppressed the main species and adversely affected the growth of the main trees. Subordinate species in the plantations should be cleared and thinned to help the main trees recover their growth and develop tree canopies. The design of this option and major activities to be undertaken is summarized as follows.

Standard Design of Vegetation Clearing and Thinning of SPL3 Plantations

Items	Design
1. Present Vegetation type	Plantation which has a closed canopy Main (protection) species and subordinate (economic) species such as *Acacia spp*. (Ic)
2. Species of thinning	*Acacia spp.* (sub-ordinate species in the plantation)
3.Tending & Protection	Protection is continued until fourth (4^{th}) year. Assistance for natural generation should not be done.
4. Target tree density at maturity	400~600 trees/ha of multi-layered forest composed with several indigenous tree species in 20~25 years. (Ic → II)
5.Remarks	Thinning should be done properly from seventh (7^{th}) year

Source: JICA Survey Team

(5) Improvement of forest vegetation through implementing the operations

The next table shows the target vegetation of each forestry-related sub-component described in the prior sections. In general the quality of vegetation will be upgraded by two ranks, for example from Ia to Ic or from I b to II. The protection of natural forest aims to maintain the quality of natural forest (type group IV) or slightly improve it for five years.

Target Vegetations for the Operations

Types of operation	Target Area	Target vegetation before the operation	Target vegetation after the operation
Watershed			
Afforestation	23,090 ha	Bareland (Ia, Ib):	Recovering forest (II)
Improvement of existing plantation	3,300 ha	Woodlot (Ic)	Recovering forest (II)
ANR with enrichment planting	4,700 ha	Bush, Small trees (Ib), Woodlot (Ic)	Recovering forest (II)
ANR without enrichment	21,250 ha	Woodlot (Ic)	Recovering forest (II) /

Types of operation	Target Area	Target vegetation before the operation	Target vegetation after the operation
planting		Recovering forest (II) Impacted forest (III)	Mature secondary forest (IV)
Forest protection	63,970 ha	Mature secondary forest (IV)	Mature secondary forest (IV)
Coastal area			
Afforestation	1,550 ha	Bare land (Ia, Ib)	Recovering forest (II)
Improvement of existing plantation	800 ha	Wood lot (Ic)	Recovering forest (II)
Enrichment planting	1,600 ha	Bush, Small trees (Ib), Woodlot (Ic)	Recovering forest (II)
Improvement of SPL-3 plantation			
Forest protection	4,450 ha	Woodlot (Ic) Recovering forest (II)	Recovering forest (II)
Enrichment planting	1,000 ha	Bush, Small trees (Ib), Woodlot (Ic)	Recovering forest (II)
Vegetation clearing & thinning	10,220 ha	Wood lot (Ic)	Recovering forest (II)

(6) Construction of silviculture infrastructure

To facilitate the implementation of the forestry-related sub-components and make the management of the project areas easy, there is a need to construct and develop the silviculture infrastructure facilities associated with the project areas. The following targets were determined after a careful review of the proposals submitted by DARDs of the 12 provinces.

Physical Target of Silviculture Infrastructure Development in Watershed Protection Forest

Province	Forestry road (km)	Fire break line (km)	Fire watch tower (no.)	Forest protection station (no.)	Information board (no.)	Nursery (no.)
1. Thanh Hoa	19.0	6.0	6	5	7	-
2. Nghe An	50.0	-	3	5	6	3
3. Ha Tinh	34.0	30.0	6	5	6	2
4. Quang Binh	20.0	24.0	5	5	5	2
5. Quang Tri	40.0	140.0	4	3	9	-
6. Thua Thien Hue	23.0	38.0	8	6	19	-
7. Quang Nam	44.0	20.0	8	9	-	6
8. Quang Ngai	40.0	40.0	9	4	4	4
9. Binh Dinh	40.0	50.0	9	5	11	4
10. Phu Yen	30.0	30.0	-	3	-	-
11. Ninh Thuan	20.0	34.0	4	4	-	1
12. Binh Thuan	27.0	-	-	6	-	-
Total of 12 provinces	387.0	412.0	62	60	67	22

Source: JICA Survey Team

Physical Target of Silviculture Infrastructure Development in Coastal Protection Forest

Province	Forestry road (km)	Fire break line (km)	Fire watch tower (no.)	Forest protection station (no.)	Information board (no.)	Nursery (no.)
1. Thanh Hoa	-	-	-	-	-	-
2. Nghe An	-	-	-	-	-	-
3. Ha Tinh	-	-	-	-	-	-
4. Quang Binh	5.0	6.0	2	2	3	1

Province	Forestry road (km)	Fire break line (km)	Fire watch tower (no.)	Forest protection station (no.)	Information board (no.)	Nursery (no.)
5. Quang Tri	-	-	-	-	-	-
6. Thua Thien Hue	-	-	-	-	-	-
7. Quang Nam	-	-	-	-	-	-
8. Quang Ngai	-	-	-	-	-	-
9. Binh Dinh	-	-	-	-	-	-
10. Phu Yen	-	-	-	-	-	-
11. Ninh Thuan	-	-	-	-	-	-
12. Binh Thuan	11.0	22.0	-	2	-	-
Total of 12 provinces	16.0	28.0	2	4	3	1

Source: JICA Survey Team

(a) Forestry road

Generally the project areas are located in the remote upstream of watersheds where there are only footpaths available. Forestry road needs to be constructed to connect the project areas with the main roads so that PFMBs could transport local communities and materials needed for the forest development components, such as seedlings and fertilizer, to the project areas. The standard design of forestry road is five meter in width without pavement. Where it is needed, a 3-meters wide causeway with gabion will be constructed. Maintenance work should be done by PFMBs two to three yeas after construction to maintain its function.

(b) Fire breakline

Plantations and natural forests in the project areas are always exposed to the high risk of wild fire. In particular, the young plantations (less than five years) are vulnerable to the damage of fire and fire damage has often caused the extensive mortality of young trees. To prevent and minimize such damage, fire breakline should be constructed around and within the plantations. Fire breakline proposed in the project is a band of bare land of 10 to 15 meter in width. It should be maintained or cleared every year for maintenance.

(c) Fire watch tower

The main purpose of the construction of fire watch tower is to detect fire breakout in the early stage so that fire extinction activities can be conducted to suppress wild fire before its spreading out to the adjacent areas. Fire watch towers should be constructed at strategic locations where the surrounding areas can be viewed from. It will be 10 meters high and made of iron frame.

(d) Forest protection station

Forest protection station will be used for a site office-cum-rest house for the staff of PFMB and the place for meetings with local communities. It should be build at the strategic locations adjacent to or within the project areas. One storey building with two (2) bed rooms and one (1) meeting room is the standard design for the station.

(e) Information board

Information board will be set up around the project site to notify the pubic that the area is protected by PFMB and local communities as protection forest. The board to be installed will be three to four (3~4) meters wide and three (3) meters high with one (1) meter for foundation. The regulations or rule defined by PFMB and the communities for protection of the project area will be displayed in the board.

(f) Nursery

Afforestation of more than 20,000 ha will require a large quantity of seedlings at a time. There should be a sufficient number of nurseries for provision of a number of seedlings enough to achieve the target. Nurseries should also be constructed at strategic points where seedlings produced can be transported to the project areas without any damage during transportation. The project is in need of two types of nursery, i) small scale remote nursery near the project area and ii) large scale station nursery at PFMB office. The standard capacities of the nurseries are about 300,000 seedlings per annum for the former and about 1,000,000 seedlings per annum for the latter.

The sub-components including aforestation, improvement of existing plantation and enrichment planting will require the seedlings to plant in the target sites. However some provinces have no plan to construct any nurseries, since they already have their own nurseries or plan to purchase necessary seedlings from the existing nurseries owned by other PFMBs, Forest Company, Agricultural Cooperative or private enterprises in the provinces. The provinces that have limited supply in its jurisdiction propose to construct the nurseries in the plan.

(7) Implementers of the component

The sub-components/activities under the Component of Development and Improvement of Protection Forest will be contracted out to PFMBs concerned with the project areas. PFMB is the sole organization responsible for protection and management of the critical and very critical protection forests in the country.[2] Hence, it is reasonable that PFMBs would be the implementers of the Development and Improvement of Protection Forests. In fact, the effectiveness of PFMBs as implementers/contractors of the sub-projects was already proved by the SPL-3 Afforstation Project. As described in Chapter 5 of Part II of this report, there seems to be no organization more competent than PFMBs at provincial level. As the main implementer of the component, PFMB will sublet the forest development / improvement sub-components/activities, such as afforestation, ANR with and without enrichment, and protection of natural forests, to local communities/community groups organized by local communities. On the other hand, the sub-component of silviculture development may be subcontracted to a/ competent private construction firm/s or may be implemented by PFMB itself.

During the implementation, PFMBs are obliged to:

- develop capacities of the local communities for development and management of protection forests;
- provide technical assistance and guidance to the local communities;
- enhance the awareness about collaborative forest management among members of the local communities;
- supervise and monitor the activities and works of the local communities in the field;
- validate the accomplishments made by the local communities periodically;
- arrange and make the progress payments to the local communities based on the accomplishments made;
- report the progress to PPMUs in writing in a timely manner; and
- coordinate and cooperate with PPMUs and DARDs whenever necessary.

[2] Prime Minister Decision No. 08/2001/QD-TTg (Dated on 11/01/2001) authorizes the Protection Forest Management Boards (PFMBs) to manage, protect and develop the protection forest. Decree No. 23/2006/ND-CP on March 03, 2006 also states that PFMBs should have the responsibility for management and protection of important protection forests.

The Survey Team judges that a certain amount of cost should be secured for the management activities listed above. In the 661 program, six (6) percent of the direct cost was allocated to the management cost for the contractor. But the experience of SPL-3 revealed that it was not enough to cover all the required expenses for the afforestation works in the watershed area where the working conditions are generally severer than the flat/plain area, where the production forests are generally located. Hence, the Government issued the revised regulation on the management cost which indicated that it should be 8 % of the direct cost (the Prime Minister decision No.100/2007/QD-TTg). Even though, it is not likely enough to cover all the expenditures required for afforestation in and management of watershed and coastal protection forest lands.

In the proposed plan, PFMBs will be not only a main implementer of the contracted works in the field but also a key stakeholder in the planning workshop, training and seminars for the local community. The management cost should be used for the organization of meetings, information dissemination, technical training and any ad hoc discussions with local communities, which likely cost more than 8% of the direct cost. Nevertheless, there is no official evidence or document that shows the actual expenses associated with such activities, this plan the said percentage (8%) as the management cost for the contractor of the forestry-related sub-component.

(7) Implementation of the contracted works and the payment

The procedures for the implementation of the contracted works and the schedule of payments to be made in accordance with the progress are summarised below.

1st Year

- PFMB concludes a contract with PPMU to conduct the sub-component (afforestation/protection/improvement/ANR) in the project sites. PFMB further sublets the work to local communities or community groups.
- PPMU requests CPMU/MOF to pay the advanced payment to PFMB to commence the contracted works such as land preparation and procurement of seedlings in the first year.
- PFMB receives the advanced payment and carries out the preparatory works. Local communities start the works in the fields and PFMB verify their accomplishments in the field on a weekly basis. After the verification made by PFMB, the communities will receive the payment in accordance with their approved works.

2nd Year

- After the completion of the first tending for the planted seedlings, PPMU and PFMB together with local communities carry out the field inspection. Based on its results, PFMB through PPMU requests the progress payment for the works approved in the inspection.
- In the second year, PFMB receives the progress payments for the planting and the first tending, and then, PFMB with local communities continues the second tending in the field.

3rd Year

- The same processes and procedures are taken n the third year.

4th Year

- The same processes and procedures are taken until the end of the forth year.
- At the end of fourth year, the stakeholders carry out the final inspection to verify the implementation of the second tending of the year. Based on the results, PFMB requests the final payment.

(8) Phased implementation

The sum of the physical targets for this component is more or less 140,000 ha of protection forest. Naturally, it would be difficult for PFMBs to develop all the project areas at once, though the project areas spread over the 12 provinces. In particular, due consideration should be given to the capacity of the local communities since many of them have no experience in forest development and improvement activities. In order to ensure the quality of plantations and sustainability of the project, the works of the component should be split into reasonable sizes which the local communities can handle in a year. Along the line given above, the Survey Team recommends dividing the proposed works into three (3) batches. Considering the volume of work, time frame of the whole project, and past experiences in the SPL-3 Afforestation Project and 661 reforestation program, the Survey Team proposes to allocate the workload according to the following guidelines:

Proposed Workload Allocation for the Component

Sub-components/Activities	SPL-3 Provinces <1			New Provinces <2		
	1st yr	2nd yr	3rd yr	1st yr	2nd yr	3rd yr
Afforestation, Improvement existing plantation, ANR with enrichment	30%	40%	30%	20%	40%	40%
ANR without enrichment and protection of natural forest	50%	50%	0%	50%	50%	0%

Note: <1 Quang Tri, T.T.Hue, Quang Nam, Quang Ngai and Phu Yen are the provinces targeted by SPL-3, while the rest are newly selected for this project.

In relation to the construction of the nursery, it is proposed that the plantation sites where the seedlings can be procured from the existing nursery or can be purchased from the external sources shall be implemented in the first batch of planting. The rest of plantation where the nursery needs to be constructed should be put in the second or third batches.

Adding to the phased implementation, it is recommended to introduce the long term contract/agreement in the sub-component of protection of natural forests and improvement of SPL-3 forest. Since they have already or will soon have established forests/plantations where forest resources (timber or fast growing species) can be harvested, local communities who engage in the sub-components will be able to receive the benefit from the project areas probably in 2016. It will be good opportunity for the project introduce the long-term contract and put the benefit sharing mechanism to trial in the field so that the experiences and lessons learnt from such trials can be further used for the other sub-components in the later stage of the project.

3.2.6 Livelihood Improvement Assistance

(1) Basic Concepts of the Component

As described in the previous sections, the project considers livelihood improvement of the local communities as an integral part of the process for achieving sustainable management and preservation of protection forests. Livelihood improvement activities are designed to contribute to: 1) creating an enabling environment for community participation in forest management activities and 2) minimizing human pressure on the forest resources by providing them with alternative means of livelihoods, and 3) encouraging local communities to manage protection forests in a sustainable manner, as discussed below.

a. Creating an enabling environment for community participation in forest management

Sustainable management of protection forests will require coordinated action among the local communities. One of the influential factors that affect active participation of the local communities would be the poverty level. When the local household economy is at a substantial/survival level, they are likely to perceive spending their time in forest management as their cost or loss of opportunity for the earnings. Meanwhile the economically better off household may be less likely to have such perception. Thus, the project intends to introduce

alternative means of livelihoods with the improvement/provision of livelihood infrastructures so that the poor households can afford to take part in the forest management activities.

b. Minimizing human pressure on forest resources

Exploitation of forest resources, such as materials for charcoal and firewood, and farming in protection forests are considered as part of the causes of forest degradation. In particular, households residing near forests have depended on forest resources and used forest areas for their livelihoods. Forest degradation is expected to progress unless alternative sources of income and livelihoods are provided to local communities. Therefore, introduction of alternative livelihood options is crucial for minimizing the human pressure on protection forests.

Meanwhile, introduction of an alternative rural energy, such as introduction of improved stove or biogas, is another option to minimize the human pressure on the forests. Since it will also contribute to improving living conditions of local communities by reducing the time spent for firewood collection and avoiding family members, especially women, from exposure to smoke, such an intervention should also be examined as one of the livelihood improvement options.

c. Encouraging local communities to manage protection forest in a sustainable manner

It is also expected that local communities would change their practices from exploitation to sustainable use and protection of forests when they realize forest resources in protection forests are their assets and can generate profits for them for the long term. It is therefore advisable to introduce livelihood options based on forest resources (timber or non-timber products) available in protection forests, so that local communities can easily have incentive to protect and wisely use such resources as well as the associated protection forest. In addition, the capacity of local communities/community groups in managing their funds should be enhanced so that they can operate such livelihood options in a sustainable manner.

The focus of the component will be put on the enhancement of the capacity of local communities so that they could operate the income generating/livelihood development activities in a self-sustaining manner. Hence, the component will:

a. identify the livelihood development options suitable in the respective localities in a participatory manner;
b develop demonstration plots where local communities can see the effectiveness of techniques and skills introduced;
c. organize a series of training and guidance on techniques and knowledge associated with the selected livelihood development options and management of a group fund; and
d. deepen their understanding of the current marketability of the major forest resources available in the assigned protection forests; and
e. assist local communities in operating and managing livelihood development options including fund management.

The contractors will be hired for the implementation of the activities. The same contractors that work for the Capacity Development and Information Dissemination Component can also work for this component simultaneously. That is, PAFEC in each province will be the most potential organization to be contracted out. State universities and vocational schools likely have potentials in some provinces. Hence, the activities planned in this component could be carried out together with those planned for the capacity development of local communities when the activities share the same participants and can be organized around the same time.

(2) Assessment of the livelihood needs of the local communities

As the livelihood improvement component must consider the specificity of the local settings and socio-economic conditions of local communities, it is appropriate to identify the livelihood options based on the local needs and develop a/ detailed plan/s of the selected option/s in a participatory manner. Therefore, a needs assessment of the livelihood activities and detailed survey will be carried out to develop detailed plans suitable in the respective localities.

(a) Needs assessment

The general needs assessment and scoping of the livelihood activities shall be carried out. This aims to establish consensus among the villagers on the priorities of the livelihood activities to be implemented through the project and to identify target villages/areas for the identified activities. The following workshops will be organized at the village/commune level.

Outline of the Workshops for Needs Assessment and Scoping

Type of workshop	Duration	Objects	Participants	No of participants	Venue	Timing
Need assessment and scoping	1day/ session	To identify the priorities of the livelihood development needs To establish consensus among the villages	• Commune leaders • Households who participate in the project • Group leaders of community groups • Commune extension workers • DEC • PFMB	70	Commune	2012~13
	1day/ session	To select the livelihood options and target villages suitable for the respective selected livelihood development options				

(b) Detailed survey

Based on the outcome of the workshops, a detailed survey will be carried out at selected villages. This aims to identify the potential products and assess the feasibility of each option, by the contractors who have sufficient experience in income generating and NTFP development activities. Local resource assessment, market research and business plan or cost benefit analysis should be conducted during the detailed design stage at each village or any of the potential sites. The project consultant will also support the contractors in the whole process of detailed designing.

Detailed Survey for Income Generation Activities

Type of workshop	Duration	Objectives	Participants	No of participants	Venue	Timing
Detailed survey for income generation activities	5 days/ session	To identify the potential products and marketing outlets To examine the feasibility of the livelihood options To organize a one-day trip to the nearby markets market with local communities to check the market trend of major forest products To prepare a business plan of the options	• Commune leaders • Households who participate in the project • Group leaders of community groups • Commune extension workers • DEC • PFMB	50	Commune	2013~14

As seen in the above table, the participants in the workshops will include the local leaders and other community members, so that local needs can be fully taken into account in the planning.

(3) Development of Demonstration Plots and Livelihood Development Models

The contractors will develop demonstration plots or development models for the identified livelihood options at the commune/village level. The demonstration plots will be the venue for local communities to practice the techniques/skills associated with the identified livelihood options. At the same time, the plots and development models will be the role models for the communities to see the results of the livelihood activities.

Although further examination is necessary for identifying suitable livelihood options, potential livelihood activities may include; 1) establishment of the production forest; 2) NTFP value addition training; 3) bamboo and rattan products processing training; 4) bee keeping; and 5) mushroom cultivation, to name a few. Furthermore, in order to reduce human pressure from firewood collection on protection forests, introduction of biogas may be promoted through model households at selected locations. The table below shows the scope of the potential livelihood activities, which may be considered for implementation.

Possible Livelihood Improvement Activities and Scope

Activities	Scope of demonstration activities
New plantation models* Acacia Sugar palm	 2,500 plants/ha, 5 ha/ commune 500plants/ha, 5 ha/ commune
Mushroom cultivation	1 ton of straw/household, 30 households/ commune
Beekeeping	120 hives /site for 20 farmers, 5 locations / commune
Biogas plant	10 m3.unit/household, 20 households/ commune

Source*: SPL-3 (2007/ approved 2008)
Source **: National Agriculture and Fishery Extension Centre, Hanoi (Collected in Aug 2009 for reference).

Two types of livelihood options will be introduced in each village or commune by the contractors. from 2014 to 2016. Final selection of the livelihood options should be fully based on the results of the needs assessment and detailed survey.

(4) Organization of Series of Technical Training on Livelihood Development

(a) Technical Training at the Demonstration Plots/Models

Simultaneously with the development of demonstration plots and livelihood development models, a series of technical training courses will be organized. The demonstration plots will be used as the venues for training. The contents of technical training will vary with different types of livelihood options.

Outline of Technical Training on Livelihood Development at the Demonstration Plots

Objectives	Topics to be covered <1	Participants	Duration	No of participants	Venue	Timing
To enhance the capacity of local communities to operate the options	- Outlines of the options - Preparation of the options - Operation and maintenance of the options	• Commune leaders • Households who participate in the project • Group leaders of community groups • Commune extension workers • DEC • PFMB	1 day/ session x 5 sessions	50	Commune / village	2014~16
To save the payments and pool a group fund	- Necessity and usefulness of a group fund - Sources of a group fund (saving of payments and pooling of a fund) - Rules on use and management of a group fund					

Objectives	Topics to be covered <1	Participants	Duration	No of participants	Venue	Timing
	- Book keeping - Monitoring of fund management					

Note: Detailed activities will vary with different types of the options.

In addition to technical training on the operations of the livelihood options, the contractors shall guide local communities to pool a group fund saving the payments made under the sub-contract for forest development and protection activities. The principle aim of the pooled fund is to improve their livelihoods by securing a fund for i) emergency purposes and ii) investment in income generating activities run by a community group. When local communities agree on the establishment of a group fund, the above-listed guidance will be given to them so that they could be aware of what they need to do to develop and manage a group fund. After having a series of guidance, local communities will carry out the following activities under the supervision of commune extension workers and PFMBs with the periodical monitoring by the field coordinators of the contractors.

a. to develop a village or group rule on sustainable use and management of the fund
b. to keep a account book for the group fund
c. to monitor the account book and use of the fund
d. to report and share the results of monitoring among the members

The field coordinators hired by the contractors will monitor if the local communities/community groups can manage the group fund and keep the account book in a proper manner. In case they find any malpractice or negligence in operations, they will arrange a meeting with the commune leaders together with commune extension workers as well as PFMBs.

(b) Technical Training at the District Level

The contractors will also introduce new/imporved techniques and skills that would be useful for local communities to improve their economic activities, such as farming, NTFPs harvesting and production, animal husbandry, fish culture, and any other small scale cottage industrial activities. Such training courses will be organized at the district level every six months as outlined below.

Outline of Technical Training at the District Level

Objectives	Possible topics	Participants	Duration	No of participants	Venue	Timing
To introduce new and improved techniques and skills for improvement of the economic activities of local communities	- Farming practices - New variety of crops - Orchard/Industrial trees - Animal husbandry - New breeds - Fish culture - Food processing - Post-harvesting - Cottage industrial options - Market information of timber and wood chips in the district as well as province <1	• Commune leaders • Households who participate in the project • Group leaders of community groups • Commune extension workers • DEC • PFMB	1 day/ session x 2 times/year x 4.5 years	50	District	2014~18

Note: <1 PFMBs and DARD will share the necessary market information (e.g., major buyers, trend in prices, type of products traded, conditions or any privilege) of timber and wood chips with the contractors.

(c) Periodical Coaching by Field Coordinators

It is expected that local communities would need some trials and errors until they can acquire the techniques/skills necessary for implementing the livelihood options introduced in the demonstration

plots/models and managing the group fund in a proper manner. It is therefore important to continuously support local communities in their operations even after the end of the training courses mentioned above. Thus, the contractors will hire competent human resources locally available in the respective communes as field coordinators to periodically monitor and support their livelihood-related activities. The field coordinators together with commune extension workers will organize meetings with local communities every three months to monitor their performance and solve any issues and difficulties that the communities face in the operations. The following table gives the outline of the periodical coaching by the field coordinators.

Outline of Periodical Coaching to Local Communities by Field Coordinator

Objectives	Topics to be disucssed	Participants	Duration	No of participants	Venue	Timing
To assist communities in operating the options and managing the group fund in a proper manner	- Progress - Accomplishments - Status of the fund - Any outstandings - Any difficulties/problems - Action to be taken - Responsible bodies for action	• Households who participate in the project • Group leaders of community groups • Commune extension workers • Filed coordinators	1 day/ session x 4 times/year x 5.5 year	20	Commune /Village	2014~19

(5) Organization of Periodical Meetings

(a) Meetings between the Contractors and Field Coordinators

The contractors shall also arrange periodical meetings with the field coordinators to monitor their performance and give them technical advice in solving the issues that they find in the field. The meetings shall be organized at the provincial level every quarter. The expenses necessary for the meetings will be covered by the management fee under the contract with the contractors.

(b) Field Monitoring by the Contractors

The contractors shall visit the target communes/villages every six months and have a monitoring meeting with local communities to directly give technical advice and assistance not only in the operations of the livelihood development options but also in the management of any other livelihood-related activities, such as management of group fund, conflict management in a community group, any other issues on their activities. The meetings will be organized at the commune/village level bi-annually as summarized below.

Outline of Bi-annual Field Monitoring by the Contractor

Objectives	Potential issues to be addressed	Participants	Duration	No of participants	Venue	Timing
To assist local communities in managing the livelihood options and other related activitirs	- Problems and difficulties in the implementation of the livelihood options - Fund management - Any issues and concerns that affect their livelihood activities - Any conflicts among communities or members of community group	• Commune leaders • Households who participate in the project • Group leaders of community groups • Commune extension workers • DECs • Filed coordinators • PFMBs • Contractors	1 day/ session x 2 times/year x 5.5 year	30	Commune /Village	2014~19

(6) Inter-Province Cross Field Visit

Inter-province cross field visits will be organized by the contractors to give local communities opportunities to observe similar livelihood activities run by similar types of people. The main aims of the cross field visit are to encourage local communities involved in the livelihood options to improve the operations and management of the options by showing a role model for them. At the same time, they can also learn good practices as well as some lessons learned from the discussion with communities in communes/villages that they visit.

The field visits will be undertaken in 2015 for local communities associated with SPL-3 sites and from 2016 to 2018 for those concerned with the new sites.

3.2.7 Small-Scale Infrastructure Development for Livelihood Improvement

(1) Selection of priority sub-projects

More than 200 sub-projects for rural infrastructure improvement and construction were originally proposed by the 12 target provinces as the interventions necessary for the improvement of livelihoods of the target communes. These include rural roads, bridges, irrigation systems, and water supply systems in the 140 communes in 53 districts. Having evaluated them in terms of location, objectives, work components, and possible impacts to local communities' livelihoods, the survey team together with DARDs of the target provinces tentatively short-listed priority sub-projects in each province. In the prioritization of the said sub-projects, the cost-effectiveness and size of investment were also considered. Consequently, sub-projects requiring large or excessive investment were not included in the short-listing process. Detailed information of all the proposed sub-projects including those prioritized are given in Annexes attached to this report.

Summary Long List to Short List in Rural Infrastructure Construction and Improvement

Province	Long List <1 for Improvement and/or Construction					Short List <2 for Improvement and/or Construction			
	Road (km)	Bridge (no.)	Irrigation (ha)	Water Supply (no.)		Road (km)	Bridge (no.)	Irrigation (ha)	Water Supply (no.)
Thanh Hoa	21	-	105	-	→	16.6	-	85	-
Nghe An	20	-	45	-	→	18.0	-	45	-
Ha Tinh	11	-	120	-	→	9.0	-	90	-
Quang Binh	25	-	-	-	→	20.0	-	-	-
Quang Tri	15	-	-	-	→	15.0	-	-	-
Hue	18	-	13	3	→	12.0	-	13	4
Quang Nam	68	-	205	-	→	22.0	-	15	-
Quang Ngai	10	-	-	-	→	10.0	-	-	-
Binh Dinh	140	8	2,422	-	→	22.5	-	-	-
Phu Yen	32	-	300	3	→	18.0	-	150	-
Ninh Thuan	49	-	1,400	2	→	9.0	-	160	2
Binh Thuan	48	-	502	3	→	13.5	-	-	2
Total	457	8	5,112	11	→	186	0	558	8

Sources: <1 DARDs of the 12 provinces (2009)
<2 JICA Preparatory Survey (2009)

(2) Major features of the short-listed infrastructure construction and improvement sub-projects

As described in Chapter 2 (Present Condition of the Target Provinces) in Part II of this report, the conditions of basic infrastructures, such as roads, irrigation facilities, and water supply systems, in rural and mountainous parts of the provinces are poor and insufficient compared to those in urban and township areas. In fact, it was confirmed through the evaluation process mentioned above that all the

target communes were likely in need of the improvement/new construction of such infrastructures to improve their livelihoods. Hence, the rationale for the short-listed sub-projects is considered high.

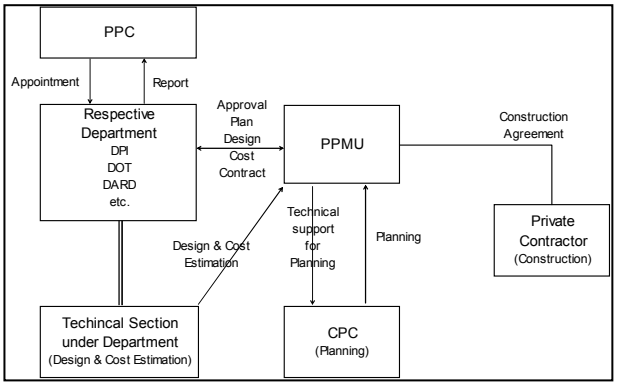
Although the short-listed sub-projects spread over the 12 provinces, the general features of the respective types of infrastructure are considerably similar. For instance, the proposed rural road improvement typically aims at the improvement of existing rural roads with 4 m width on average, by paving the surface with concrete. Meanwhile, construction of a new concrete check dam or concrete lining of main canals will be the major activity of the proposed irrigation scheme. Therefore, the size of the irrigated area covered by one scheme (or sub-project) is as small as 15 ha on average. All the eight water supply systems short-listed below aim to secure safe and stable supply of water for local communities in the target villages. The proposed systems include the construction of intake structure and installation of water pipeline system with public water taps at strategic points. Hence, the installation of such water supply systems would substantially contribute in saving time and cost which local communities used to spend for fetching safe drinking water. The following table specifies the outlines of the construction works related to the respective infrastructure sub-projects' construction and improvement.

Major Components of Works for Short Listed Infrastructure Improvement and Construction

Sub-project	Typical Component of Work
Rural Road Improvement	(1) Stripping of top soils using mechanical grader and removal of soils at defective sections (2) Replacement of road bed material with macadam and then compaction of the surface (3) Preparation of the existing road and placement of 3.0 m width and 0.18 m thick concrete pavement on top of the existing road (4) Construction of necessary side drains to drain rain water and/or inundated water caused by possible flooding (5) Construction of new culverts and installation of retaining walls at proper locations if necessary
Irrigation Improvement and Development	(1) Construction of concrete check dam at the mountain streams with scouring sluice and wooden stop log (2) Installation of galvanized steel pipes as intake for the irrigation water with necessary screen and wooden gate (3) Construction of closed head race canal with steel pipe at paddy fields at the bases of low-lying valleys (4) Installation of diversion box at the edge of canals to divert irrigation water to several open canals leading to the paddy fields. (5) Construction of rectangular open canals with concrete lining for irrigation (6) Construction of necessary related canal structures such as drops and turnout culverts at the irrigation canal (7) Drainage arrangement, if necessary
Domestic Water Supply	(1) Construction of concrete check dam on a mountain stream with scouring sluice and wooden stop log (2) Installation of galvanized steel pipe as intake for water, with screen and wooden gate (3) Construction of head race and galvanized steel pipe for the village (4) Construction of sand trap in head race pipe with blow-off valve (5) Construction of water treatment concrete tank at the end of the head race pipe (6) Construction of PVC water supply pipe to the public tap base (7) Construction and installation of regulating box with valve (8) Construction of public tap base

(3) Typical designs of the short-listed infrastructure facilities

Typical designs of the short-listed infrastructure facilities are presented in Annex attached to this report. The volume of works and quantity of materials were estimated based on the typical designs of the proposed facilities.



(4) Implementation procedures for small-scale

infrastructure development

The construction and improvement of rural infrastructure has been implemented in accordance with the "Law on Construction No. 16-2003-QH11", "Decree No.12/2009/ ND-CP for the management of investment projects on the construction works", "Decree No.99/2007/ND-CP of June 13,2007 for the management of construction work investment expenditure" and "Law on Tendering" and its relevant decrees. As shown in the figure above, several departments are involved in the approval of infrastructure development at the provincial level. It is therefore recommended that the relevant departments in the provinces should be empowered to make decisions and grant approvals to reduce the time of the approval process.

Planning

Although the construction and improvement of rural infrastructure are tentatively selected and proposed by the provinces in this survey, the development needs of small-scale infrastructures should be reviewed and re-examined in a participatory manner at the beginning of the project. To do so, the forest users as well as other community members in the target villages with CPCs and PFMBs concerned should have a meeting facilitated by PPMU or the outsourced contractors.. Infrastructure development options to be identified should be ideally linked to the income generating activities introduced by the project in respective villages. PPMU or the outsourced contractors will prepare plans for infrastructure development of the respective target villages based on the results of the development needs assessment.

Detailed Design

The PPMUs or the outsourced contractors will conduct the detailed design along with the estimation of cost for the proposed plans. Since those short-listed in the survey are small and apparently under the jurisdiction of DARD, its technical design section is considered the appropriate outsourcing organization for PPMU for the detailed design and cost estimation of small-scale infrastructure of the target villages.

Tender

The tentatively short-listed infrastructure development projects are rather small-scale and their estimated costs range from VND 600 to 15,000 million in general. The procedures for tendering will be determined based on the nature and scale of the development project in compliance with Decree No. 61/2005/QH11, "Law on Tendering" and "Construction Law." Although the limited tendering procedure and open tender procedure are commonly adopted, direct appointment can also be considered for projects costing less than VND 1,000 million. Empowerment of the provincial departments concerned with the approval of tendering is also recommended to avoid any delay in the project implementation. In past projects, there were many cases where the project was delayed due to the late approval by PPC.

Construction

In general, the works required for construction of the short-listed infrastructures are mainly earth and concrete works, and will not require special equipment, machineries, and highly skilled laborers. It is therefore considered that the construction work can be undertaken by local contractors in the target provinces. In addition, employment of the local contractors may be effective in the operation and maintenance (O&M) of the infrastructure during the post project period. The duration for the construction of shortlisted infrastructures will range from two to six months depending on the availability of machineries and equipment required for construction.

(5) O&M plan

In SPL3 Project, the operation and maintenance of the infrastructures after the Project phase were handed over to the CPC and the local communities. Before being handed over the responsibility of O

& M, the CPC and the community joined the final inspection for the operations and a series of discussions to arrange the minutes of handing over. The minutes describe the responsibility of the CPC to renovate the facilities properly which needs to allocate the CPC fund and apply some technical solutions while the communities (villagers who use the facility on a daily basis) are responsible to maintain the conditions of facilities to be used safely and smoothly such as removing litters from the canals and clearing the intake of water in small irrigation systems. At the handing over in SPL3, the minutes were signed by the PPMU, the contractors, the representatives of CPC and the community leaders. During the survey in the SPL3 target provinces, the Study Team confirmed O&M by the CPC and the community groups are practiced as agreed in the minutes without problems.

The O & M in this Project follows the policy of SPL3 Project and the lessons leant from its experiences. The responsibility of O&M of the rural infrastructures will be handed over to the concerned CPCs as well as the benefiting local communities. In particular, local communities will perform a vital role in the O&M of irrigation facilities and water supply systems. The CPCs concerned together with PPMUs shall identify the beneficiaries of the proposed facilities and encourage them to organize a beneficiaries' group for each facility in the detailed planning stage for future maintenance works. As shown below, the ownerships of the facilities should belong to CPCs concerned. Therefore, the CPCs should have the overall responsibility for O&M of the facilities. However, the daily O&M will be carried out by local communities who will benefit from the facilities.

Ownership and O&M Responsibility of Short Listed Infrastructure

Type of Infrastructure	Ownership	Operation	Overall Maintenance	Daily Maintenance
Rural Road	CPC	CPC	CPC	CPC
Irrigation Facilities	CPC	Community group	CPC	Community group
Water Supply System	CPC	Community group	CPC	Community group

Adequate training on O&M of the facilities along with awareness-raising shall be provided to local communities before completion of the construction works. This is to ensure that the facilities can be operated and maintained in a proper and sustainable manner.

In any donor-funded and government-initiative projects in rural areas the ownership of small scale infrastructures developed by the projects belongs to the concerned CPCs. In general, the CPCs have secured and allocated their budgets for overall maintenance and repair of the facilities. Local communities who benefit from the facilities have often taken part in daily maintenance works on their own initiatives. It is therefore quite appropriate to hand over the O&M responsibility to the concerned CPCs and local communities after construction.

In general in the rural area of Viet Nam, small scale infrastructures constructed in the communes are maintained by the CPC together with allocating their budgets to rehabilitate and repair them. And the CPC understand that it is their jurisdiction to direct the local community to operate and maintain the rural infrastructure properly. It is therefore quite appropriate to hand over their O & M to the CPC and the community after the Project completion.

3.2.8 Forest Fire Control (FFC)

As described in Section 3.3.5 in Part II of this report, wild forest fire is a major threat prevailing throughout the target provinces. Hence, the main objective of the component is to prevent forest degradation caused by forest wild fires through i) the provision of FFC equipment and ii) training on forest fire control/extinction for PFMBs and members of the local communities. The outlines of the component are highlighted below.

(1) Procurement and provision of FFC equipment

FFC equipment listed below will be procured and provided to PFMBs concerned. The equipment will also be used as training materials in FFC drills, which will be carried out as part of the training on FFC as discussed in the succeeding sub-section. The following table shows the equipment to be provided to one PFMB for FFC purposes and the corresponding estimated quantities of the equipment provided. PFMBs shall use and maintain the equipment in a proper manner and report the status of the said equipment to PPMUs concerned every year based on an inventory made as part of the year end report.

List of Equipment for FFC

Equipment	Quantity
1. Vegetation knife	1
2. Wind blower	1
3. Chainsaw	1
4. Swatter	13
5. Clearing knife	7
6. Portable water container	1
7. Speaker	1
8. Fire protection clothes, shoes and helmet	10
9. Hand fire extinguisher	4
10. Tent (for PPMU)	1

Source: JICA Survey Team

(2) Training on FFC

In addition to the provision of FFC equipment, the component aims to develop the capacity of the government staff at provincial and district levels, staff of PFMBs, leaders of communes, and members of local communities/community groups to control and prevent forest fires. To this end, PPMUs will outsource the training activities to local resources, such as the Forest Protection Agency. The contractor will organize the FFC training at two levels, i.e., provincial and district levels. The training course at provincial level will target the staff of forestry related departments under the DARD. Meanwhile, FFC organized at the districts concerned aim to develop the capacity of the staff of DPCs, commune/village leaders, and local communities/community groups who participate in the project.. Both training courses will be organized in the third to fourth year of the project (2012-2014). The training will comprise of lectures and field drills. The outlines of the training courses are summarized below.

Training Course for FFC

Level of training	Program of training
1. Province level 2 days' training with 40 participants	**Day 1: Lectures by the FFC experts on the topics such as:** 1) General information on forest fires 2) Measures of forest fire prevention 3) Strategy and tactics of forest fire control - Organizing forest fire control teams - Techniques of forest fire control - Safety measures of forest fire control - Use of the forest fire control equipment 4) Laws and decrees on FFC 5) Formulation of forest fire control plan at communal and district levels **Day 2: Field drills of forest fire extinguishing and discussion among the participant**
2. District level 3 days' training with 60 participants	**Day 1: Lectures by the FFC experts on the topics such as;** 1) General information on forest fires 2) Measures of forest fire prevention 3) Contents of community-based forest fire management 4) Laws and decrees on FFC

Level of training	Program of training
	Day 2: Group works and practice by the participants 1) Formulation of village FFC plan 2) Instruction and practice to use machineries, equipment and tools for forest fire extinguishing **Day 3: Field drills of forest fire extinguishing and discussion among the participants**

Source: JICA Survey Team, September 2009

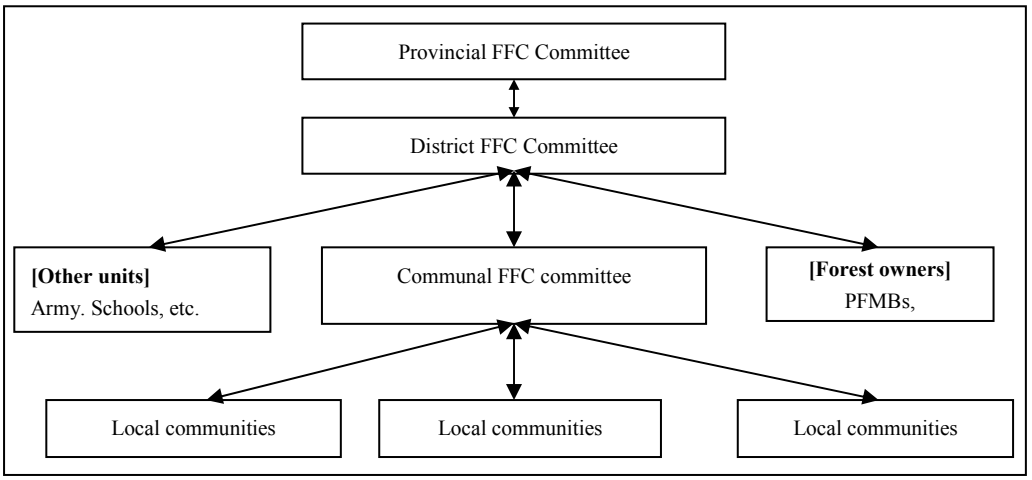
Each province will have one training course for 40 provincial staff, and three to six training courses for 60 stakeholders at district and commune levels. As summarized below, more than 3,700 participants are estimated to attend the training course.

Physical Target of FFC Training

Province	Provincial level at 40 persons/course		District level at 60 persons/course	
	No. of training	No. of participants	No. of training	No. of participants
1. Thanh Hoa	1	40	5	300
2. Nghe An	1	40	6	360
3. Ha Tinh	1	40	5	300
4. Quang Binh	1	40	3	180
5. Quang Tri	1	40	6	360
6. Thua Thien Hue	1	40	5	300
7. Quang Nam	1	40	6	360
8. Quang Ngai	1	40	4	240
9. Binh Dinh	1	40	5	300
10. Phu Yen	1	40	3	180
11. Ninh Thuan	1	40	3	180
12. Binh Thuan	1	40	3	180
Total	12	480	54	3,240

Source: JICA Survey Team, September 2009

In the training courses for provincial staff, the participants will also discuss the organization set-up for FFC in the provinces. In the SPL-3 Afforestation Project, the five provinces (i.e., Quang Tri, T.T.Hue, Quang Nam, Quang Ngai and Phu Yen) established the FFC committees as illustrated below. The establishment of the same organizational set-up will be discussed and examined by the participants from the rest of the target provinces.



Forest Fire Prevention and Control Committees in the Province

3.2.9 Monitoring and Evaluation (M&E)

(1) Objectives of monitoring and evaluation

The main objectives of M&E are i) to systematically manage the project implementation and project resources effectively and efficiently, ii) to assess the project impact adequately, and iii) to ensure the sustainability of the project. Monitoring is relevant to project management, while evaluation is aimed at the assessment of the project impact as well as sustainability. Consequently, the former is to be carried out by a project implementer as one of the project management activities, while the latter is to be done on a periodic or ad hoc basis by an external source.

(2) Relevant existing government regulations

The following decrees and decisions were reviewed to make the M&E component of the project consistent with the existing government regulations.

- Decision No. 555/2007/ND-BKH on May 30, 2007 on issuance of the results of Result-Based Monitoring and Evaluation Framework for Implementation of the 5-year Social-Economic Development Plan 2006-2010[3]
- Decree No. 131/2006/ND-CP on November 9, 2006 on the issuance of the Regulations on Management and Utilization of Official Development Assistance[4]
- MPI Circular No. 4/2007/TT-BKH on July 30, 2007 on the issuance of the Regulations for M&E of the ODA projects
- MARD Circular No. 49/2009/TT-BNNPTNT on July 21, 2009 on Guidance on Management and Utility of Foreign Assistance Loan under MARD

(3) Outlines of the M&E activities defined by the regulations

In compliance with the above-listed guidelines, M&E activities for ODA-funded projects shall be as follows:

[3] For example the state managerial objective in SEDP 2006-2010 includes 21 output indicators and 12 impact indicators.

[4] Article 33, 34 and 35 prescribe the regulations on the monitoring and evaluation of ODA projects.

M&E Activities and Objectives defined by the Government Regulations

Items	Monitoring	Evaluation
Activities <1	- Periodic monitoring and reporting by preparation and submission of i) monthly progress report, ii) quarterly progress report, iii) yearly progress report, and iv) completion report - Periodic monitoring of accomplishment levels of the key monitoring indicators through collection of data related to the indicators.	- Initial Evaluation - Mid-term Evaluation - Terminal Evaluation - Ad-hoc Evaluation (if necessary)
Requirement / Objectives <1	a. To ensure the regular updating of information on the performance and management of the programs and projects with accuracy and adequacy. b. To ensure the timely identification of difficulties, problems and accidents that influence the progress, quality and cost of the programs and projects. c. To ensure timely recommendations to overcome the difficulties and accidents as well as to solve the problems so that the programs and projects are implemented consistently with the planned goals and objectives.	a. To compare the outcomes achieved at the evaluation point of time against the program or project implementation plan. b. To identify the difficulties and problems that have already happened or are possible to happen in process of program or project implementation. c. To assess the status of implementing the managerial principles and procedures of the program or project. d. To initiate measures for accelerating programs and projects to move toward the planned objectives, in line with the regulations on the progress, scope, quantity, quality, and cost in conformity with the managerial principles and procedures. e. To make recommendations for adjustment of certain contents in the program or project document and/or in the program or project implementation plan, if necessary f. To draw the experiences and lessons learned for the next stages of the evaluated programs and projects and/or for other programs and projects.
Reporting requirement< 2	a. Monthly report b. Quarterly report c. Yearly report d. Project completion report	Evaluation reports of the respective evaluation activities

Source: <1 MPI Circular No. 4/ 2007/TT-BKH
<2 Decision 803/2007/QD-BKH

(4) Regular monitoring of the project

PPMUs of the target provinces will monitor the progress and performance of the sub-projects periodically and prepare the following monitoring reports for submission to PPCs (the project owner) and to CPMU in Hanoi.

a. Monthly Progress Report
b. Quarterly Progress Report
c. Yearly Progress Report
d. Project Completion Report

The comprehensive reports that can track physical accomplishments of works and financial performance are important for smooth monitoring. In similar government projects, data on progress of works, contracts management, procurement, disbursement etc. were scattered in different reports and the experience of the SPL-3 indicates that it would be troublesome to absorb the information for management. It is also important to come up with a simple format for monitoring reports based on the available data. In accordance with the government regulations, the monitoring report shall include, but not limited to, the following information:

a. Physical and financial accomplishments
   - Disbursement report of ODA funds
   - Report on special account
   - Bidding results

b. Progress of key monitoring indicators
c. Progress/Results of procurement
d. Any Issues and Concerns on Project Implementation
e. Recommendations

The key monitoring indicators (i.e., operations and effect indicators discussed in Chapter 6) shall be outlined in the project implementation guidelines/regulations, which will be finalized in the preparatory works. It is also necessary to develop a simplified and predetermined format for regular monitoring so as to make the progress monitoring efficient and effective.

The proposed flow of information and reporting in a regular progress monitoring is illustrated in **Figure 3-1.**

(5) Evaluation of the project

The project will conduct the following evaluation activities throughout the project life in line with Circular 4/2007/TT-BKH.

(a) Initial evaluation

The initial evaluation is to be carried out immediately after the commencement of the project. The main aims of the initial evaluation are to review the actual situation of the project areas and target groups ("before project conditions"), and to assess if the project design is still relevant and at the same time the project framework is in line with the government strategies/policies. Consequently, the initial evaluation will collect and analyze the following information:

- Status of CPMU and PPMUs (current resources assigned and allocated to CPMU and PPMUs, and level of staff)
- Socio-economic situation of the target villages
- Present land use/forest cover conditions of the target areas
- Any emerging issues, suggested solutions, and proposed changes

The results of the initial evaluation are intended to update the overall implementation plan of the project and to provide inputs for the detailed implementation plan during the first year. The initial evaluation will be carried out by CPMU and PPMUs with assistance from the project consultant. The results of the baseline survey, which will be carried out in the preparatory work, will be used for the initial evaluation.

(b) Mid-term evaluation

The mid-term evaluation will take place in the middle of the project life, which is at the fifth year of the project. The main aims of the mid-term evaluation are to: i) verify the coherence, consistency and degree of achievement of the project activities in comparison with the original plan; ii) discuss the lessons learned; and iii) propose recommendations and adjustments to the project, if necessary. The proposed works to be carried out in the mid-term evaluation is outlined below.

Items	Outlines
1. Progress of the project	a. Review of the progress of the project as compared to the plan b. Review of accomplishments made by the project
2. Field validation	a. Field validation of physical accomplishments under the forest development component - Afforestation and ANR with enrichment: 350-400 ha - ANR/Protection: 200 ha b. Items to be surveyed - Afforestation and ANR with enrichment: i) Year of planting, ii) No. of trees planted and survival rate of trees planted, iii) Height of trees and diameter of tree trunk, iv) Quality of planted trees, and v) Growing stock of trees - ANR/Protection: i) Year of contract, ii)Vegetation cover, iii) Height of trees and diameter of tree trunk, and iv) Growing stock of trees
3. General social impact	a. Number of village and households involved in the project b. Number of forest users' groups organized c. Any changes in forest management practices / forest resource uses d. Number of beneficiaries involved in the project e. Livelihood improvement activities introduced
4. Evaluation of economic impact on local households	a. Interview survey of sample households b. Items to be covered are: i) cash income generated by the project, ii) any income-generating activities introduced on their own initiatives
5. Evaluation of the performance of the project	Based on the data and information collected
6. Lessons learned though the project implementation	Based on the data and information collected
7. Recommendations on project design	Based on the data and information collected

The above-mentioned works shall be contracted out by CPMU to an external organization/independent evaluator.

(c) Terminal Evaluation

The terminal evaluation will be done one year before the date of project completion. The purposes of the terminal evaluation are to: i) to evaluate the design of the project, process of implementation, management performance, achievements of goals and objectives, and the efficiency in using the resources; ii) to evaluate the benefits of the project, possible impacts, and sustainability; and iii) to discuss the lessons learned and recommendations. Like in the case of the mid-term evaluation, the terminal evaluation shall be outsourced to independent evaluators. Since the terminal evaluation will require in-depth surveys on physical accomplishment made by the project and socio-economic impact on the target villages, two separate surveys, namely, i) forestry inventory survey and ii) socio-economic interview survey, will be carried out by employing external organizations, such as FIPI and NAFEC, respectively. The initial ideas of the forestry inventory survey are summarized below.

Ideas of Forest Inventory Survey

Items	Outlines
1. Analysis of satellite images	a. New purchase of the latest high resolution (2.5 m resolution) satellite images covering the target sites for forestry development components. b. Preparation of photo-like maps with GIS data for forestry inventory survey
2. Forestry Inventory	a. Forest Inventory of the afforestation and enrichment areas - Afforestation and ANR with enrichment: 750 ha - ANR/Protection: 400 ha b. Items to be surveyed - Afforestation and ANR with enrichment: i) Year of planting, ii) No. of trees planted and survival rate of trees planted, iii) Height of trees and diameter of tree trunk, iv) Quality of planted trees, and v) Growing stock of trees - ANR/Protection: i) Year of contract, ii)Vegetation cover, iii) Height of trees and diameter of tree trunk, and iv) Growing stock of trees
3. Evaluation of the efficiency of the inputs and activities	a. Input and activities for forest inventory and detailed design b. Input and activities for forest development and improvement c. Input and activities for silviculture infrastructure development d. Input and activities for forest fire control
4. Sustainability of the project	a. Technical and financial capacity of PFMBs to manage the protection forests b. Technical and financial capacity of PFMBs to manage and maintain silviculture infrastructure c. Technical and financial capacity of forest users' groups to manage the assigned protection forests d. Organizational capacity of the forest users' groups
5. Lessons learned and Recommendation	a. Lessons learned through implementation of the project and sub-projects in the 12 provinces b. Good practices found in the course of the project c. Recommendations

On the other hand, the outlines of the socio-economic survey will be the same as the baseline survey which will be carried out in the preparatory works.

(d) Ad-hoc evaluation

Ad-hoc evaluation may be conducted if there are unpredictable difficulties, problems and impacts in the course of the project. It aims at analyzing the actual situation and the arising issues and providing necessary solutions or recommendations.

(6) Monitoring formats and information management

A simplified monitoring format shall be developed prior to the implementation of the sub-projects in the field. The format should be easy to apply, but at the same time should cover all the items to be monitored by the PPMU. In order for the M&E system to be operational, the management information system to track inputs, outputs, and intermediate outcomes may be necessary.

(7) Equipment necessary for M&E

CPMU and PPMUs need a sufficient number of computers with GIS software (Map Info) for the implementation of the proposed monitoring and data management system. Both offices shall have internet connection so that they can communicate and exchange monitoring data and information in a timely manner. Vehicles and motorbikes are also needed for field monitoring as well as coordinating with contractors.

(8) Training and capacity development

Since the M&E system needs to comply with the requirements of GoV and JICA, and will have to be applied consistently throughout the 12 PPMUs, it is necessary to set the agreed key monitoring indicators and methodologies for data collection prior to the project implementation. Hence, a set of guidelines on M&E shall be prepared and incorporated into the project implementation guidelines. At the same time, appropriate guidance shall be conducted at the beginning of the project so that CPMU and PPMU staff will have the same interpretation/understanding of the M&E system, such as the key monitoring indicators, data collection methods, use of monitoring and reporting forms. Moreover, technical training courses necessary for the implementation of the M&E system, such as training on monitoring and evaluation, operation of GIS and use of GPS, should be organized as part of the capacity development sub-component.

3.2.10 Consulting Services / Technical Cooperation

(1) Rationale

The project covers a variety of components, which require a wide range of expertise from forest planning and management techniques to community organizing, and including but not limited to livelihood development, satellite image analysis and GIS mapping. A number of contractors will be hired for the implementation of the respective components of the project. MARD (PFMB and CPMU) and DARDs (DARDs and PPMUs) shall be responsible for providing technical guidance to the contractors, including supervision of the works and maintenance of the quality of the outputs. It is noted that MARD and DARDs will face difficulties in supervising/guiding all the contractors' activities. Hence, a group of experts who can cover all the technical fields should be hired for CPMU and PPMUs to acquire technical and managerial supports on a daily basis for the smooth implementation of the project.

(2) Tentative scope of works

The Project Consultant is expected to provide the CPMU and PPMUs with overall technical and managerial assistance in project implementation. The objective of assistance is to realize the improvement in efficiency, effectiveness and quality of the project implementation.

The duration of the consulting services is eight years. It is assumed the Project Consultant will be selected through international competitive bidding in accordance with JICA Guidelines and in place towards the end of the first year of the project. The tentative scope of services of the consulting services is as follow:

a) Assist CPMU and PPMUs in managing the project in an effective and efficient manner;

b) Assist CPMU and PPMUs in formulating a project implementation plan of the project at the beginning of the project;

c) Assist CPMU in formulating the project implementation guidelines and necessary materials for smooth implementation of the project;

d) Assist CPMU and PPMUs in formulating the regulations on benefit sharing mechanism on harvests from the project sites;

e) Assist DARDs/PPMUs in developing the Forest Protection and Development Fund in accordance with present regulations so that the provincial government could pool their shares derived from the project areas;

f) Assist CPMU and PPMUs in procuring and supervising the contractors for the project components, namely, Survey and Mapping of the project area, Baseline survey, Capacity Development and Information Dissemination, Development and Improvement of Protection Forests, Livelihood Development Assistance, Small Scale Infrastructure Development, Forest Fire Prevention/Control, and Mid-term and Terminal Impact Assessment;

g) Assist CPMU and PPMUs in procuring necessary equipment;

h) Assist CPMU in improving periodical monitoring system by development of simplified monitoring formats and establishment of user-friendly databases;

i) Assist CPMU and PPMUs in preparing annual work plans and budget plans based on the appropriate estimation of work quantity at the field level and of unit costs;

j) Assist CPMU in fund management and smooth communication / coordination with JICA;

k) Assist CPMU in providing guidance and orientation to DARDs and PPMUs on technical and managerial aspects necessary for implementation of the project;

l) Assist PPMUs in providing guidance and orientation to the contractors hired for the implementing project components;

m) Assist PPMUs, PFMBs and relevant stakeholders in development of an operation and maintenance plan for small scale infrastructure facilities in the post-project periods;

n) Provide technical assistance to CPMU, PPMUs, PFMBs and contractors in the execution of their works; and

o) Review, analyze, and recommend improvement/revision of existing related regulations and guidelines (e.g., circulars and decisions).

(3) Required specializations and man-months

The total inputs of the project consultant for nine years are expected to be 147 man-months for international experts, 253 man-months for national experts and 251 man-months for the national supporting staff. The breakdown of the required man-months presented in **Table 3-2**, and summarized below.

Required Experts and Man-Month of the Project Consultant

International Experts	MM
i) Team leader	52
ii) Forest Development Planning and Monitoring	65
iii) Community / Rural Development	21
iv) Satellite Image Analysis /GIS	9
Sub-total	**147**

National Experts	MM
i) Forest Development and Management	74
ii) Community Organizing	48
iii) Livelihood Development	59
iv) Institutional / Capacity Development	10
v) NTFP Development	33
vi) GIS	29
Sub-total	**253**

National Supporting staff	MM
i) Administrative Officer	100
ii) Interpreter	51
iii) Secretary	100
Sub-total	**251**

The Responsibilities and tasks of the respective experts of the consultant team are described in Annex H.

3.3 Institutional Arrangement for Project Implementation

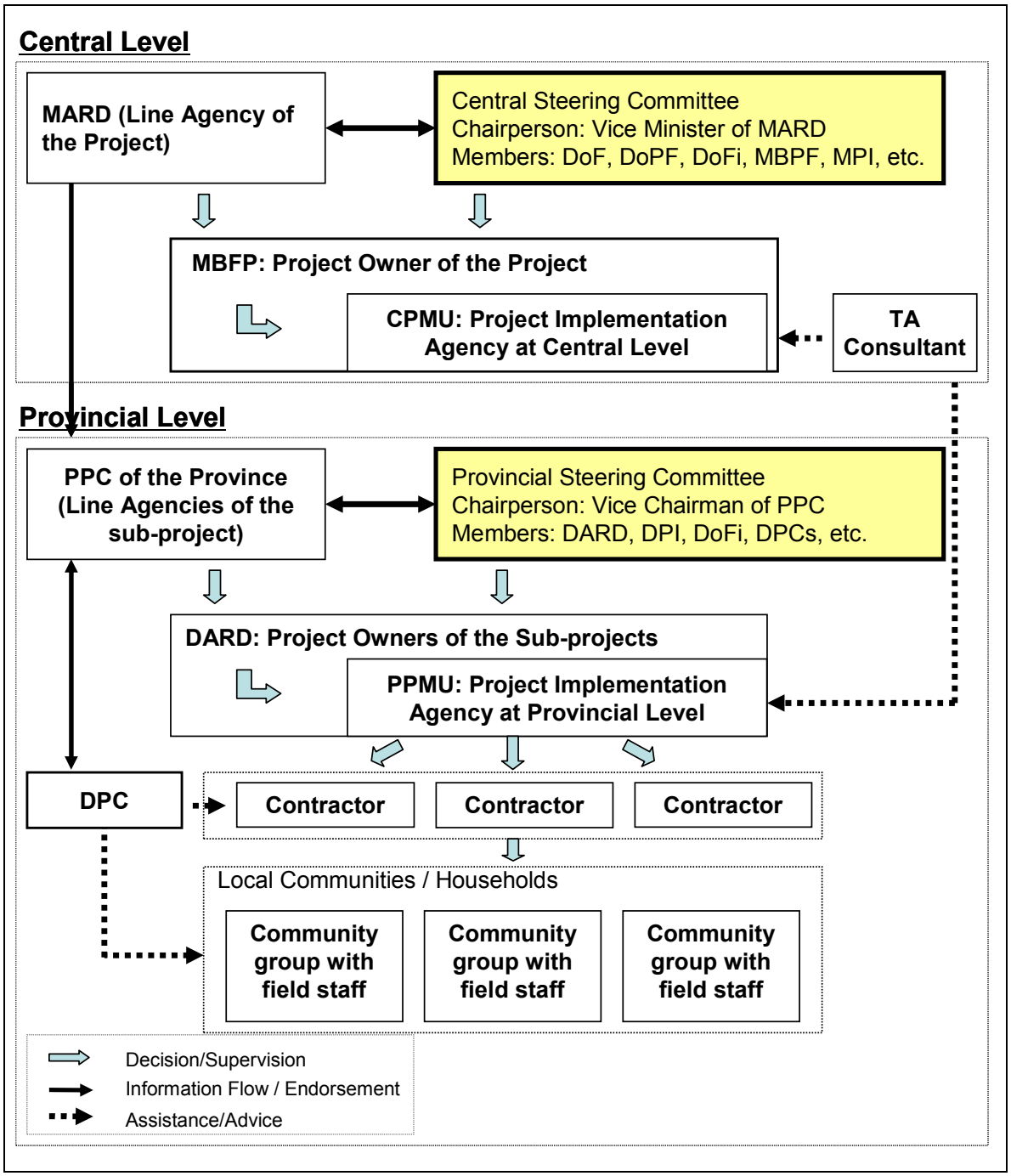
3.3.1 Organizational Setup for Implementation of the Project

(1) Overview of organizational set-up

The project is categorized into "umbrella project" in accordance with MPI Circular No. 04/2007/TT-BKH. As the same circular suggests, and similar forestry projects have already demonstrated, the project will adopt the two-layer management system. Thus, the project management units are established at two levels, i.e., central level and provincial level.

In compliance with MPI Circular No. 04/2007/TT-BKH, MARD, as the line agency or executing agency at the central level, will assign the project owner on a central level. Meanwhile PPCs in the target provinces which are acting as the line agencies on the provincial level will also assign the project owners of the sub-project in each province. MBFP and DARDs will be assigned as the project owners of the whole project and the sub-projects in the target provinces, respectively. Both project owners will establish the project management units upon the issuance of notice to proceed by Prime Minister. The CPMU is responsible for the management of the entire project and coordination with the target provinces, while the PPMUs in the target provinces are responsible for the management of the sub-projects to be implemented in the respective provinces.

In order to accelerate the decision making and approval processes, the steering committees will be established at both central and provincial levels. The figure below shows the proposed institutional set-up for the implementation of the project.



Institutional Set-up for Project Implementation

(2) Necessary arrangements for effective project management

As discussed and examined in Section 5.3.2 in Part II of this report, there are concerns that one CPMU at the central level might not be able to lead the 12 PPMUs in the same direction providing them with consistent understanding of the project or to monitor PPMUs' activities in a timely manner. Although there is an option to establish a branch of CPMU in one of the target provinces to address such concerns, the survey team judges that the enhancement of the capacity of PPMUs along with the regular support and monitoring by CPMU will be more effective and efficient. It is realized that the establishment of a sub-CPMU is not ideal from the viewpoints of the cost effectiveness and sustainability of the project. In order to make the proposed institutional set-up effective, the following arrangements are needed.

- Develop comprehensive project implementation guidelines that will clearly state the procedures or steps to be taken by PPMUs for the sub-project implementation;

- Familiarize the staff of CPMU and PPMUs with the project implementation guidelines;

- Develop a simplified but comprehensive monitoring report format for monthly reporting from PPMUs to CPMU, so that the latter could grasp and assess the progress of the sub-projects in a timely manner;

- Institutionalize CPMU's periodic visits to the target provinces and secure the budget to allow the staff of CPMU to travel to the provinces (It is recommended that CPMU should visit the target provinces at least every quarter.)

- Secure the sufficient number of CPMU staff to monitor the sub-projects in the 12 provinces (there should be at least four technical staff who will monitor the progress and performance of the sub-projects in the 12 provinces.)

(3) Staffing and constitution of the steering committees and project management units

(a) Central Steering Committee (CSC)

The CSC is to be organized at ministerial level to approve the overall plans and project regulations, handle/solve cross sector issues, and facilitate the coordination between/among the departments and sub-departments under MARD for enhancing synergy and convergence effects. Considering the nature of the tasks given to CSC, the survey team proposes that CSC should be chaired by Vice Minister of MARD. The constitution of CSC is proposed as follows:

Members of CSC

Constitution	Responsible organization/personnel
Chairperson:	Vice Minister of MARD
Secretariat:	CPMU/MBFP
Members	Dept of Forest, Dept of Forest Protection, Dept of Finance, Dept of Planning, Dept of Construction and Management, Dept of Legislation, MBFP

(b) Central Project Management Unit (CPMU)

The CPMU will be responsible for coordinating the target provinces, monitoring the performance of the sub-projects, providing guidance and assistance to PPMUs for executing quality control during the project implementation. The CPMU will be headed by a director and a vice director as discussed in Section 5.3.4 of this report. The constitution as well as roles and responsibilities of CPMU are given below.

Constitution of CPMU and Roles and Responsibilities of the Sections under CPMU

Constitution	No. of staff	Roles and Responsibilities
Director	1	Overall management and supervision of the unit Responsible for implementation of the entire project and coordination with MBFP, DARDs and PPMUs of the target provinces
Vice Director	1	Assistance to the Director Act as Director in case the Director cannot perform or fulfill his tasks.
Planning	1	Development of an overall work plan and detailed annual work plans Preparation of project regulations Management of bidding and contractors Overall monitoring of the progress of the project
Accounting	3	Financial and asset management Management of financial records Process of billing documents
Technical	3	Monitoring and supervision of the performance and progress of the sub-project Technical and managerial advice and guidance to PPMUs/DARDs of the target provinces Supervision of any technical matters
Administration including driver	3	Management of administrative and organizational matters

(c) Provincial Steering Committee (PSC)

The PSC is to be organized at the provincial level to have the same functions as those of CSC, but limited to the sub-projects implemented in the respective provinces. Hence, the main functions of PSC are to: i) approve the overall plan as well as annual plans of the sub-projects, ii) approve project regulations, iii) handle/solve cross sectoral issues, and iv) facilitate the coordination between/among the departments and sub-departments under PPC. The PSC should be chaired by Vice Chairperson of PPC. The constitution of PSC is proposed as follows:

Members of PSC

Constitution	Responsible organization/personnel
Chairperson:	Vice Chairperson of PPC
Secretariat:	PPMU/DARD
Members	Vice Director of the Dept. of Agriculture and Rural Development Vice Director of the Dept. of Planning and Investment Vice Director of the Dept. of Finance Vice Chairperson of DPCs concerned Director of Sub-dept. of Forestry, DARD Director of Sub-dept. of Forest Protection, DARD Director of Sub-dept. of Rural Development, DARD Director of Planning and Finance Section, DARD

(d) Provincial Project Management Unit (PPMU)

The PPMU will be responsible for the implementation of the sub-projects at provincial level. The major tasks of PPMU are: i) preparation of the project, ii) procurement of contractors, iii) management, monitoring and supervision of the works of contractors, iv) processing of documents for billing and disbursement, v) report to DARD, PPC, and CPMU, and vi) coordination with relevant organizations/agencies, especially DPCs, as mentioned in the preceding section. The constitution of PPMU will be the same as CPMU. Roles and responsibilities of each section of PPMU is also the same as those of CPMU, since the former can be considered a miniature CPMU at the provincial level.

Constitution of PPMU and Roles and Responsibilities of its Sections

Constitution	No. of staff	Roles and Responsibilities
Director	1	Overall management and supervision of the unit Responsible for implementation of the sub-projects and coordination with PPC, relevant departments of PPC and sub-department of DARD
Vice Director	1	Provision of assistance to Director Act as Director in case Director can not perform or fulfil his tasks.
Planning	1	Development of an overall work plan and detailed annual work plans Preparation of project regulations Management of bidding and contractors Overall monitoring of the progress of the project
Accounting	3	Financial and asset management Management of financial records Process of billing documents
Technical	3	Monitoring and supervision of the performance of the contractors and progress of the sub-project Technical and managerial advice and guidance to the contractors Supervision of any technical matters
Administration including driver	3	Management of administrative and organizational matters

3.3.2 Roles and Responsibility of the Stakeholders

(1) Roles and responsibilities of the stakeholders involved in the project implementation

Based on Decree No. 131/2006/ND-CP issued on November 6, 2006 (related to the issuance of the Regulation on Management and Utilization of Official Development Assistance) and its implementation guidelines, MPI Circular No. 04/2007/TT-BKH dated July 30, 2007, as well as the experiences from SPL-3 project, the roles and responsibilities of the stakeholders involved in the project implementation are tentatively defined as follows.

Roles and Responsibilities of Relevant Stakeholders within the Proposed Institutional Set-up

Stakeholders	Roles and Responsibilities
MARD	MARD is the line agency at the central level for the project, which shall be responsible for ensuring the effectiveness and efficiency of the project, smooth operation of the project including allocation of sufficient counterpart funds as scheduled, monitoring and supervision of the performance of the project owner, and coordination with PPCs concerned.
Steering Committee at Central Level	Steering committee at central level will make final decisions on the key managerial issues/matters such as approval of annual work plan, evaluation of annual accomplishments, and approval of regulations and guidelines for project implementation. The committee would be chaired by either Vice Minister of MARD or Director General of DoF. The committee meetings shall be organized at least every six months.
MBFP	MBFP will be assigned as the project owner by MARD. MBFP must ensure adequate and capable management resources and will be responsible for the approval of technical design and cost estimate of the project, negotiation and supervision of contracts, management and utilization of investment funds, and monitoring and evaluation of the project.
CPMU	CPMU will have the following tasks, namely, i) preparation and development of overall and detailed annual plans of the entire project, ii) management of the entire project, iii) preparation of technical guidance and orientation to PPMUs and DARDs, iv) financial and asset management of the project, v) coordination with relevant agencies (e.g., MoF and MPI) and JICA, vi) monitoring, evaluation and reporting of the project implementation.
Project Consultant	Technical assistant consultant will provide technical and managerial support to CPMU and PPMU in the implementation of the project.

Stakeholders	Roles and Responsibilities
PPC	PPCs will be the line agencies at the provincial level and shall have the same responsibilities as MARD for the implementation of the sub-projects in the respective provinces.
Steering Committee at Provincial Level	Steering Committee at provincial level will be chaired by Vice Chairperson of PPC and responsible for making decisions related to the sub-projects in the province, approving the project regulations and overall/annual plans, and monitoring and evaluating the project implementation at provincial level. Like in the case of CSC, committee meetings shall be organized at least every six months.
DARD	DARD will be the project owner of the sub-projects at the provincial level. It shall be responsible for the establishment of PPMU. At the same time, it shall have the responsibilities for provision of guidance and orientation of PPMU, execution of appraisal and approval of designs, cost estimates, and contracts of the project activities, monitoring and supervising the sub-project, and management of the project fund.
PPMU	PPMU will be the management body responsible for implementation and management of the sub-project activities. It shall have roles similar to those given to CPMU. Specifically, PPMU shall: i) prepare an annual operational and financial plan of the provincial project, ii) procure and liquidate contracts, iii) implement, monitor and supervise the provincial project, iv) prepare progress reports and submit them to DARD/PPC/CPMU, and v) coordinate with local government and institutions concerned.
DPC	DPC's function is to provide support or cooperation at the field level. It will be involved in the monitoring of the project activities, and information dissemination and agriculture and forestry extension to local communities.
Contractors / Implementers	Contractors/implementers will be the actual implementers for the respective project activities on a contract basis with PPMU. In SPL-3, the public institutions, such as PFMBs, provincial agriculture and forestry extension centers, and state universities, became the contractors/implementers for implementation of the project components.
CPC	CPC will cooperate with PPMU and the contractors/implementers on the implementation of the project activities at commune/village level. Particularly, it will facilitate the community participation in meetings/consultations organized by PPMU and the contractors/implementers.
Local Communities	Local communities will take part in the forest development / improvement components as a sub-contractor for actual field works. They will not be treated as laborers, but shall be treated as future managers of the project area. Hence, they should be involved in planning / designing of the project components at the beginning of the project and preferably organized into a group at the village or kinship group level. During the contract period of the sub-contract with PFMB, local communities will afforest, maintain and protect the assigned protection forests in accordance with the specifications defined in the contract. In the post-contract period, they will be encouraged to enter into the long-term contract and those concluding the long-term contract will have the responsibility for protection and management of the assigned areas without cash payment.

(2) Other important stakeholders at field levels

(a) District / commune extension workers

District and commune extension workers shall be involved in the process of community organization and livelihood development under the capacity development, information dissemination and phase-in/phase-out components. After the project, they would be the ones to co-work with local communities/members of the local communities for the continuation and expansion of livelihood development activities introduced by the project. To do so, the project will also organize a series of training sessions for the extension workers as discussed in Section 3.2.6. This is intended to enable them to provide technical and managerial assistance to the local communities without assistance from the project.

(b) Field workers / coordinators at the target villages

Field workers or coordinators will be local households or members of public organizations, such as youth groups, women's groups in the target communes, who will be hired by the contractors for executing capacity development, information dissemination and phase-in/phase-out components. They will coordinate with local communities/community groups as focal persons at the target villages, so that through them, the contractors could smoothly organize meetings and provide technical assistance to the groups continuously. Field coordinators shall attend all the meetings, guidance sessions, and training courses organized by the contractors in the course of the project and also organize a meeting with local communities every three months to monitor their activities and provide necessary advice. Ideally, each field coordinator should be allocated to each village or hamlet. However, there should be at least one coordinator at one target commune.

3.4 Procurement and Implementation Methods

(1) Implementation and procurement methods

In terms of the implementation, the project activities can be broadly divided into the following categories:

i) Force account or works conducted directly by CPMU or PPMUs with or without assistance from the project consultant; and

ii) Works contracted out to resource organizations, which are mainly public institutions, such as NAFEC, FIPI, PAFECs, PFMBs, state university, vocational college or school, and design and construction center.

In addition, the project activities under the forestry development and improvement component, such as afforestation and protection of natural forest, will be further sublet to local communities and/or community groups organized by local communities. Almost all the works except those under the preparatory work will be contracted out to resource organizations. The following table gives the implementation method for each project component.

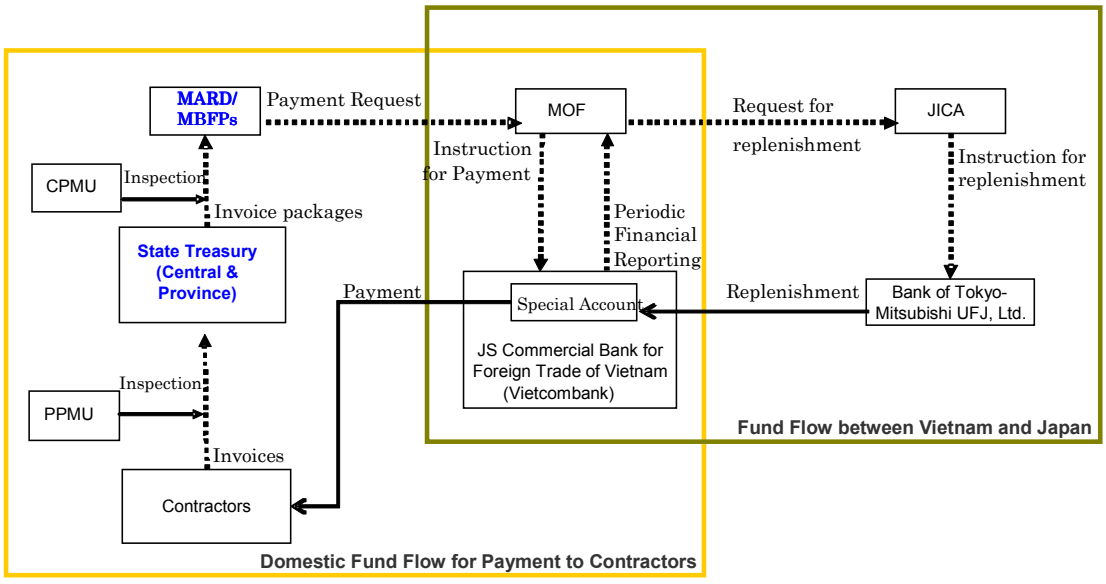
Implementation and Procurement Methods for the Project Components

Components	Implementation Method	Potential Executers / Contractors	Procurement Method
1. Preparatory work			
1.1 Approval of the project	Force account	MARD and DARD	Direct undertaking
1.2 Organizational setup	Force account	MBFP, DARD, PPCs, & CPMU	
1.3 Preparation and approval of regulations and guidelines	Force account	CPMU, MARD, PPC, & MARD	
1.4 Selection of Consultant	Force account	MBFP	
2. Survey and Detailed Planning			
2.1 Forest inventory and mapping	Contract out	FIPI	Local bidding / Direct appointment
2.2 Selection of sites	- ditto -	PFMBs with facilitators	
2.3 Participatory land use planning	- ditto -	- ditto -	
2.4 Detailed planning and designing	- ditto -	Design centers	
2.5 Socio-economic baseline survey	- ditto -	NAFEC	
3. Capacity Dev't., Info. Dissemination, and Phase-in/-out Works			
3.1 Capacity development by CPMU	Contract out	NAFEC	Direct appointment
3.2 Capacity development by PPMUs	- ditto -	PAFECs	
3.3 Phase-out/-in works	- ditto -	- ditto -	

Components	Implementation Method	Potential Executers / Contractors	Procurement Method
4. Development and Improvement of Protection Forests			
4.1 Development and improvement of watershed protection forest	Contract out	PFMBs	Direct appointment
4.2 Development and improvement of coastal protection forest	- ditto -	- ditto -	
4.3 Improvement of SPL-3 forests	- ditto -	- ditto -	
5. Livelihood Improvement			
5.1 Needs Assessment	Contract out	PAFECs/Universities	Local bidding /
5.2 Development of demo-plots and models	- ditto -	- ditto -	Direct appointment
5.3 Technical assistance in livelihood development	- ditto -	- ditto -	
5.4 Cross field visit	- ditto -	- ditto -	
6. Small-scale Infrastructure Development			
6.1 Needs Assessment/Selection	Contract out	PAFECs	Direct appointment
6.2 Planning	- ditto -	Design centers	
6.3 Survey and detailed design	- ditto -	- ditto-	
6.4 Tender	Force account	PPMUs	Direct undertaking
6.5 Construction	Contract out	Contractors	Local bidding
6.6 Operation and maintenance	Force account	CPC/Local communities	-
7. Forest Fire Prevention/Control			
7.1 Procurement of fire extinction equipment	Force account -	PPMUs/Suppliers	Direct undertaking
7.2 Training	Contract out	Forest Protection Agency	Local bidding
8. Monitoring and Evaluation			
8.1 Development of monitoring formats	Force account	CPMU/Project consultant	Direct undertaking
8.2 Progress monitoring	- ditto -	- ditto -	
8.3 Mid-term evaluation (Physical)	Contract ouT	FIPI	Direct appointment
8.4 Mid-term evaluation (Social)	- ditto -	NAFEC	
8.5 Terminal evaluation (Physical)	- ditto -	FIPI	
8.6 Terminal evaluation (Social)	- ditto -	NAFEC	
9. Consulting Services	Contract out	International and national consulting firms	International Bidding

(2) Fund management

The project budget will be managed in the same manner as that of the SPL-3 project. The following flow chart shows the overall fund management of the budget for the project.



Overall Fund Management of the Project

As illustrated above, payment proposals (invoices) submitted by contractors are first reviewed and inspected by PPMU. PPMU then, submits an approved proposal to the provincial state treasury for review. Packaged invoices are forwarded by the provincial state treasury to CPMU for processing of payment. Then, CPMU reviews the payment proposals and further endorse them to MoF for payment. Finally, MoF will perform reviews and eventually instructs Vietcom Bank for the payment of contractors.

3.5 Implementation Schedule

The proposed implementation schedule of the project is shown in **Figure 3-2** and summarized below**.**

Implementation Schedule of the Project

Project components		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Loan Agreement Period (10 years: from the mid of 2010 until 2020)												
1 Preparatory Work												
1.1 Approval of the Project												
1.2 Oganizational Setup												
1.3 Preparation and Approval of Regulations and Guidelines												
1.4 Selection of Consultant												
2 Survey and Detailed Panning												
2.1 Forest Inventory and Mapping												
2.2 Selection of Sites for Forest Protection and Development												
2.3 Participaotry Land Use Planning												
2.4 Detailed Planning and Designing of Forest Development												
2.5 Socio-economic Baseline Survey												
3 Capacity Development, Information Dissemination, and Phase-in / Phase-out Works												
3.1 Capacity Development of Government Staff												
3.2 Capacity Development of Local Communities												
3.3 Phase-out/-in works												
4 Development and Improvement of Protection Forest												
4.1 Procurement of Contractors												
4.2 Development and Improvement of Watershed Protection Forest												
a. Afforestation and Improvement of existing forests	1st batch											
	2nd batch											
	3rd batch											
b Protection of natural forest	1st batch											
	2nd batch											
c ANR with and without enrichment	1st batch											
	2nd batch											
4.3 Development and Improvement of Coastal Protection Forest												
a. Afforestation and Improvement of existing forests	1st batch											
	2nd batch											
	3rd batch											
b. Enrichment Planting	1st batch											
	2nd batch											
4.4 Improvement of SPL-3 Forests												
a. Protection of Natural Forest	1st batch											
	2nd batch											
b. Protection of Natural Forest	1st batch											
	2nd batch											
	3rd batch											
4.3 Improvement of SPL-3 Forests												
a. Enrichment Planting	1st batch											
	2nd batch											
	3rd batch											
b. Vegetation Clearing & Thinning	1st batch											
	2nd batch											
4.4 Silviculture Infrastructure Development												
3.5 Vegetation clearing & thinning	1st batch 2nd batch											
5 Livelihood Improvement												
5.1 Needs Assessment for Livelihood Development in the new and SPL-3 sites												
5.2 Development of Demo Plots and Livelihood Development Models												
5.3 Technical Assistance in Livelihood Development												
5.4 Cross Field Visit												
6 Small Scale Infrastructure for Livelihood Development												
6.1 Selection of priority sub-projects												
6.2 Planning												
6.3 Survey and detailed design												
6.4 Tender												
6.5 Construction												
6.6 Operation and maintenance												
7 Forest Fire Control												
7.1 Provision of Equipment for Forest Fire Control												
7.2 Forest Fire Control Training												
8 Monitoring & Evaluation												
8.1 Development of Monitoring Form												
8.2 Progress Monitoring and Update of Database												
8.3 Preparation of Reports												
8.4 Evaluation of the Project												
a. Mid-term evaluation (Physical and Social)												
b. Terminal evaluation (Physical and Social)												
9 Technical Cooperation / Consulting Services												
9.1 Consulting Services												

▪▪▪▪▪ Operation and Maintenance Works

In the above-mentioned implementation schedule, the following assumptions were made.

- Loan Agreement (L/A) would be signed in the third quarter of 2010.
- The loan for the project would be effective within a month after the agreement is signed.
- The loan validity period is between the third quarter of 2010 and the third quarter of 2020.

As shown in the schedule, the project components will be implemented for about nine years. The first two years will focus on, but not limited to, the following activities:

i) Preparatory works, including organizational set-ups, procurement of project consultant, and formulation of the project implementation guidelines, and selection of the target villages;

ii) Selection of and contracts with, contractors;

iii) Forestry inventory and mapping;

iv) Orientation and guidance for the project staff as well as contractors; and

v) Orientation for and information dissemination to local communities in the target villages.

The physical development works, such as afforestation, ANR, improvement of existing plantations, protection of natural forests/plantations and small-scale infrastructure development, will be implemented in a phased manner. The first batches of the physical development works will mainly be commenced in 2013, except for that of enrichment planting for improvement of SPL forests. The last batches of the sub-components under the development and improvement of protection forest will end in the third quarter of 2019.

The mid-term evaluation of the project performance will be carried out in 2015, while the termination evaluation will be conducted in the latter half of 2019.

Chapter 4 PROJECT COST

4.1 Conditions of Cost Estimate

4.1.1 Conditions and Assumptions

The project costs are estimated under the following conditions:

a. The project costs in the project period of ten years are estimated based on July 2009 constant prices in Vietnamese dong.

b. The daily wage for unskilled labor is estimated at VND 60,000. The daily wages originally proposed by DARDs ranged from VND 45,000 to VND 80,000. Some DARDs estimated the wage rate for forest development according to the regulations on estimating the daily payment for contractual workers on a monthly basis, as there is no government fixed wage for unskilled labor. Since the wage estimated by such method is higher than the prevailing wages, and considering the suggestion from MBFP that said estimation was not applicable to forest development, the average prevailing labor wage of VND 60,000 was adopted as a labor wage used for the sub-projects[1].

c. The exchange rates of US$1.0 = VND 16,968 as of July 2009 and US$ 1.0 = JPY 89.6 as of December 2009 are applied, respectively.

d. Price escalation is estimated at 10.3% per annum for local currency components and 3.1% for foreign currency components.

e. Physical contingency is 5% of the sum of base costs, including administration cost.

f. The unit costs for the project components and sub-components were estimated on the basis of the detailed cost breakdown for each unit cost. The government's cost norms were adopted for the components of capacity development, information dissemination and phase-in/-out works, development and improvement of protection forest, livelihood development assistance, and small scale infrastructure development. Meanwhile, price quotations and past experiences were used for the other components.

4.1.2 Cost Component

(1) Direct cost

The direct cost of the project consists of costs for all the components, namely, preparatory works, survey and planning, capacity development, information dissemination and phase-in/-out works, development and improvement of protection forest, livelihood development assistance, small-scale infrastructure development, FFC, and monitoring and evaluation. The total cost of all these components is estimated to be VND 1,362.7 billion.

Since only protection forest is targeted under the development and improvement of protection forest component and all the facilities to be developed under the small-scale infrastructure development

[1] The calcuration of the daily labor wage can be indicated by the following formula.
650,000 (minimum monthly labor wage) × 2.04 (coefficient for unskilled labor) ÷ 22 working days per month = 60,273 ≒ 60,000 VND.

component are limited in scope or size, no land acquisition is expected for the project. Therefore, no land acquisition cost is taken into account.

(2) Administration cost

Administration costs consist of i) personnel expenditures of CPMU and PPMUs and ii) operational expenses necessary for CPMU's and PPMUs' operations, such as allowance and travel expenses, fuel and maintenance of vehicles, utility charges, maintenance of offices, office supplies, expenses for supporting staff, and costs for meetings and workshops. The total administration cost is estimated at VND 113.6 billion as the base cost.

(3) Price Contingency

Price contingency is the amount of price escalation during the project period, and is applied separately for local and foreign currency portions for all the cost components. Price contingency is estimated at VND 933.6 billion.

(4) Physical contingency

Physical contingency of 5% is applied to all costs for the various project components. Physical contingency is estimated at VND 120.5 billion.

(5) Project consultant

The unit costs for the consultancy services were derived from the market price corresponding to the expected appropriate qualifications. The total estimated cost for consulting services, excluding taxes and duties, is tabulated below.

Cost for Consulting Services

Currency	Item	Cost (VND million)
Foreign currency portion	Base Cost (w/o tax)	96,496
	Physical and price contingency	19,628
Local currency portion	Base Cost (w/o tax)	26,326
	Physical and price contingency	18,352
Total		160,802

Source: JICA Preparatory Survey Team (2009)

(6) Taxes and duties

The value added tax for costs of all materials, consumables and services is calculated in the cost estimation. Tariffs on imported equipment are also included in the estimates.

4.2 Cost Estimate

The total project cost is estimated to be VND 2,950 billion. The summary of the project cost breakdown is shown in the following table, while the details as well as the cost estimates for the 12 target provinces are presented in **Tables 4.1** and **Table 4.2.** Detailed cost estimates of the project components are presented in Annexes.

Summary of Project Cost

Component	Cost (VND million)
1. Preparatory Works	15,432
2. Survey and Planning	20,750
3. Capacity Development, Information Dissemination, Phase-in/-out Works	53,160
4. Development of Watershed Protection Forest	845,441
5. Improvement of SPL-3 forests	38,927
6. Development of Coastal Protection Forest	61,732
7. Livelihood Development Assistance	75,127
8. Infrastructure for Livelihood Development	231,158
9. Forest Fire Control	5,274
10. Monitoring and Evaluation	15,661
11. Sub-total of Direct Costs (Sum of 1~10)	**1,362,662**
12. Project Management	113,580
13. Sub-total (11+12)	**1,476,242**
14. Price Contingency	933,584
15. Sub-total (13+14)	**2,409,826**
16. Physical contingency	120,491
17. Consulting Services	160,802
18. Taxes and Duties	258,484
19. Grand Total (Sum of 15~18)	**2,949,603**

Source: JICA Preparatory Survey Team (2009)

4.3 Annual Cost Schedule

Annual cost schedule was estimated based on the project implementation schedule shown in **Figure 3.2.** The annual cost disbursement schedule for the whole project is shown in **Table 4.1**, and summarized below.

Summary of Annual Cost Schedule of the Whole Project

(Unit: VND million)

Items	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Direct cost	0	15,346	23,338	188,257	342,161	386,852	243,453	104,792	38,782	18,059	0	1,362,662
Administration	2,840	11,358	11,358	11,358	11,358	11,358	11,358	11,358	11,358	11,358	8,519	113,580
Price contingency	0	1,328	7,516	68,252	169,738	251,905	204,040	114,550	59,707	41,667	14,186	933,584
Physical contingency	142	711	2,111	13,393	26,163	32,506	22,943	11,535	5,492	3,554	1,135	120,491
Consulting services	0	9,955	23,619	23,562	24,994	21,364	17,083	14,193	11,619	14,414	0	160,802
Taxes & duties	0	12,724	5,343	28,882	55,676	68,739	47,740	23,274	10,083	6,024	0	258,484
Total	2,981	52,562	73,284	333,705	630,089	774,706	546,617	279,701	137,042	95,075	23,840	2,949,603

Source: JICA Preparatory Survey Team (2009)

4.4 Currency Component

The project cost was divided into foreign and local currency components, with the assumptions that i) all goods and services are available locally and ii) international consultants' services will be procured from overseas. Hence, foreign currency components cover the cost for the project consultant only, while all other costs are estimated as local currency components. The currency components of the project cost are summarized as follows.

Summary of Currency Components for the Project Cost

(Unit: VND million)

Component	FC	LC	Total
1. Preparatory Works	15,432	0	15,432
2. Survey and Planning	0	20,750	20,750
3. Capacity Development, Information Dissemination, Phase-in/-out Works	0	53,160	53,160
4. Development of Watershed Protection Forest	0	845,441	845,441
5. Improvement of SPL-3 Forests	0	38,927	38,927
6. Development of Coastal Protection Forest	0	61,732	61,732
7. Livelihood Development Assistance	0	75,127	75,127
8. Infrastructure for Livelihood Development	0	231,158	231,158
9. Forest Fire Control	0	5,274	5,274
10. Monitoring and Evaluation	0	15,661	15,661
11. Sub-total of Direct Costs (Sum of 1~10)	**15,432**	**1,347,230**	**1,362,662**
12. Project Management	0	113,580	113,580
13. Sub-total (9+10)	**15,432**	**1,460,810**	**1,476,242**
14. Price Contingency	696	932,889	933,584
15. Sub-total (11+12)	**16,127**	**2,393,699**	**2,409,826**
16. Physical Contingency	806	119,685	120,491
17. Consulting Services	116,124	44,678	160,802
18. Taxes and Duties	23,450	235,034	258,484
19. Grand Total (Sum of 13~16)	**156,508**	**2,769,256**	**2,949,603**

Source: JICA Preparatory Survey Team (2009)

4.5 Financial Plan

Based on the JICA funding policy, administration cost, and taxes and duties related to the project activities will not be covered by the JICA loan. As a result, the total cost to be borne by the GoV is estimated at VND 466.2 billion, while the total cost to be covered by the JICA loan is estimated at VND 2,483.4 billion (JPY 13,100 million). Breakdown of the financial plan is presented in **Table 4.3**, and its summary is given below.

Summary of Fund Requirement

(Unit: VND million)

Component	GoV	Loan	Total
1. Preparatory Works	0	15,432	15,432
2. Survey and Planning	0	20,750	20,750
3. Capacity Development, Information Dissemination, Phase-in/-out Works	0	53,160	53,160
4. Development of Watershed Protection Forest	0	845,441	845,441
5. Improvement of SPL-3 Forests	0	38,927	38,927
6. Development of Coastal Protection Forest	0	61,732	61,732
7. Livelihood Development Assistance	0	75,127	75,127
8. Infrastructure for Livelihood Development	0	231,158	231,158
9. Forest Fire Control	0	5,274	5,274
10. Monitoring and Evaluation	0	15,661	15,661
11. Sub-total of Direct Costs (Sum of 1~10)	**0**	**1,362,662**	**1,362,662**
(Million Yen Equivalent at JPY 1=VND 189.576)		**(7,187.9)**	**(7,187.9)**
12. Administration Cost	113,580		113,580
13. Sub-total (11+12)	**113,580**	**1,362,662**	**1,476,242**
(Million Yen Equivalent at JPY 1=VND 189.576)	**(619.8)**	**(7,187.9)**	**(7,787.1)**
14. Price Contingency	84,248	849,336	933,584
15. Sub-total (13+14)	**197,828**	**2,211,998**	**2,409,826**
(Million Yen Equivalent at JPY 1=VND 189.576)	**(1,043.5)**	**(11,668.1)**	**(12,711.7)**
16. Physical Contingency	9,891	110,600	120,491
17. Consulting Services	0	160,802	160,802
18. Taxes and Duties	258,484	0	258,484
19. Grand Total (Sum of 15~18)	**466,204**	**2,483,400**	**2,949,603**
(Million Yen Equivalent at JPY 1= VND 189.576)	**(2,459.2)**	**(13,099.8)**	**(15,558.9)**

Source: JICA Preparatory Survey Team (2009)

Chapter 5 PROJECT EVALUATION

5.1 Economic Analysis

5.1.1 Basic Assumption for Economic Analysis

The following basic assumptions are set for the project economic analysis.

a. The economic life of the project is assumed to be 50 years since this type of forest development takes a longer time for exerting the effects or producing the returns as compared to ordinary infrastructure development projects.

b. A discount rate of 10% is used for the calculation of the net present value.

c. The costs and benefits of the project are estimated based on July 2009 constant prices in Vietnamese Dong (VND).

d. Exchange rate of US dollar against Vietnamese Dong as of July 2009 (US$1.00 = VND 16,968) and that of US dollar against Japanese yen as of December 2009 (US$1.00 = JPY 89.6) are used for calculation.

e. In the "without-project" scenario, the existing forests in the project areas in the target provinces might be further degraded by continuous interventions, or the yields of agricultural crops may also decrease. However, due to limited data, the survey team took a conservative approach with the assumption that the present vegetation will not change throughout the project life.

f. The market prices of project inputs and outputs are converted into shadow prices to calculate the corresponding opportunity costs. In order to correct the market prices of inputs and outputs, the following factors are used.

- Standard Conversion Factor (SCF): 0.97 for non-tradable goods/commodities.
- Shadow Wage Rate for semi/unskilled labor: 0.6 for labor for forest development activities and small-scale infrastructure development

g. The farm gate prices of agricultural and forest products are assumed to be equivalent to the economic prices with no price distortions.

h. Price contingencies, taxes and other kinds of transfer payments are excluded from the estimation of the economic costs.

i. Physical contingency of 5% is adopted.

5.1.2 Economic Cost of the Project

(1) Capital cost

The economic cost of the project is estimated based on the conditions mentioned above. The financial cost and estimated economic cost are summarized in the table below. Breakdown of the estimated economic costs of the project components are given in **Table 5.1.**

Summary of Financial and Economic Cost of the Project Components

(Unit: VND million)

Component	Financial Cost	Economic Cost
1. Preparatory Works	15,432	14,968
2. Survey and Planning	20,750	19,880
3. Capacity Development, Information Dissemination, Phase-in/-out Works	53,160	51,556
4. Development of Watershed Protection Forest	845,441	565,464
5. Improvement of SPL-3 Forests	38,927	23,933
6. Development of Coastal Protection Forest	61,732	40,715
7. Livelihood Development Assistance	75,127	72,859
8. Infrastructure for Livelihood Development	231,158	207,205
9. Forest Fire Control	5,274	5,115
10. Monitoring and Evaluation	15,661	14,890
11. Sub-total of Direct Costs (Sum of 1~10)	**1,362,662**	**1,110,204**
12. Project Management	113,580	110,891
13. Sub-total (11+12)	**1,476,242**	**1,118,476**
14. Price Contingency	933,584	0
15. Sub-total (13+14)	**2,409,826**	**1,118,476**
16. Physical Contingency	120,491	55,924
17. Consulting Services	160,802	128,129
18. Taxes and Duties	258,484	0
19. Grand Total (Sum of 15~18)	**2,949,603**	**1,302,528**

Source: JICA Preparatory Survey Team (2009)

(2) O&M Cost

In addition to the capital costs stated above, the following O&M costs are estimated for the economic analysis.

a. Maintenance cost for protection forests

b. Operation cost for forest exploitation activities

c. O&M cost for small-scale rural infrastructure

The following table presents the estimated O&M costs and the bases for calculation.

Annual Operation and Maintenance Cost

(Unit: VND million)

Items	Economic Cost	Basis for Estimation
Maintenance cost for protection forests	VND 265,000 ~ 483,000/ha/yr	Labor cost for patrolling and other protection activities
Operation cost for forest exploitation	VND 72,000 ~ 144,000/ha/time	Labor cost for timber exploitation
O&M cost for small-scale rural infrastructure	VND 0.99 million for road in watershed VND 0.87 million for road in coastal VND 0.60 million for unit (for 15 ha) VND 0.21 million for unit	0.5% of the economic cost for small-scale infrastructure development

Source: JICA Preparatory Survey Team (2009)

More details about the operation and maintenance costs associated with protection, management and use of protection forests are shown in Annex I.

(3) Replacement cost

The following replacement costs are taken into account in the estimation.

- Sixty four units of watch tower would be replaced every 15 years at VND 6,714 million (in economic term)

- Sixty four units of forest protection station would be reconstructed every 20 years at VND 11,469 million.
- Irrigation systems covering 558 ha would be replaced every 20 years at 22,553 million.
- Eight units of water supply systems would be reinstalled every 20 years at VND 2,636 million.

5.1.3 Expected Economic Benefits

Various activities that are expected to bring economic benefits through the implementation of the project are identified as outlined below.

a. Benefits from harvest in protection forest[1]
b. Benefits from CO2 sequestration through Afforestation – AR-CDM
c. Benefits from CO2 sequestration through sustainable forest management – REDD
d. Benefits from incremental agricultural production with the development of irrigation facilities
e. Benefits from savings in vehicle operating cost through construction of rural roads

Detailed methodologies of estimation/valuation of the above-listed economic benefits are described in Annex I. The total values of the economic benefits over the 50-year project period are summarized as follows.

Estimated Economic Benefits

(Unit: VND million)

Items	Estimated Economic Benefits
Benefits from harvest	15,799,156
Benefits from ARCDM	646,833
Benefits from REDD	4,422,199
Benefits from incremental production	899
Benefits from VOC savings	316,433
Total	21,245,520

Source: JICA Preparatory Survey Team (2009)

In addition to the quantifiable economic benefits above, several intangible economic benefits are expected to be generated with the implementation of the project. These benefits are assessed in a qualitative manner as described in Section 5.1.6 of this chapter.

5.1.4 Cost-Benefit Analysis

To validate the economic feasibility of the project, the net present value (NPV) and economic internal rate of return (EIRR) are calculated. **Table 5.2** shows the projected economic cash flow of the estimated project benefits and economic costs of the project. As a result, the NPV and EIRR are estimated at VND 478 billion and 13.3 % at the 10% discount rate.

Results of Economic Analysis

Items	Result
Net present value	VND 478 billion
EIRR	13.3 %

Source: JICA Preparatory Survey Team (2009)

[1] The benefit from the SPL-assisted plantations is not calculated in the evaluation, since most of the investments made are not originated from this project.

In general, community-based forestry development projects do not generate substantial direct benefits in a short period, unlike infrastructure development projects. Furthermore, since the main objective of the project is to restore the protection forests where forest resources shall be secured from harvesting in principle, it is unrealistic to expect the project to generate substantial tangible benefits from its implementation.

5.1.5 Sensitivity Analysis

Sensitivity analyses are carried out to examine the viability of the project under enforceable negative changes in costs and benefits, namely, i) 10% increase in cost, ii) 20% increase in cost, iii) 10% decrease in benefit, iv) 20% decrease in benefit, and their combinations. The results of the calculation are given in Annexes, and summarized as follows.

Sensitivity Analyses by EIRR and NPV

EIRR	Change in Benefit		
Change in cost	Base case	- 10 %	-20 %
Base case	13.3 %	12.6 %	11.7 %
+10 %	12.0 %	11.9 %	11.1 %
+20 %	9.8 %	11.3 %	10.5 %

Source: JICA Preparatory Survey Team (2009)

NPV	Change in Benefit		
Change in cost	Base case	- 10 %	-20 %
Base case	478 billion	355 billion	232 billion
+10 %	403 billion	280 billion	157 billion
+20 %	328 billion	205 billion	82 billion

Source: JICA Preparatory Survey Team (2009)

5.1.6 Other Intangible Benefits

In addition to the benefits described above, the project is expected to generate other benefits, which may not be exhibited in a tangible and measurable manner due to lack of data. Some of the intangible benefits are discussed below.

Intangible Benefits

Expected Benefits	Relevant Component	Remarks
Stabilization of peak flows and reduction of downstream flooding	Development and Improvement of Watershed Protection Forest	Rehabilitation of forest coverage and protection of existing natural forests will contribute to water conservation/harvesting in the area and help stabilize water flows of rivers.
Reduction of soil erosions and inflow of sedimentation into rivers	Development and Improvement of Watershed Protection Forest	Likewise, rehabilitation of forest cover will contribute to the protection of soils from surface erosion, as branches and leaves of trees can check raindrops and protect soils from direct exposure to strong rains.
Climate and moisture regulation	Development and Improvement of Watershed and Coastal Protection Forests	Rehabilitation and increase of forest coverage will contribute to the improvement and regulation of micro-climate and moisture conditions in the area.
Protection of socio-economic facilities and assets	Development and Improvement of Coastal Protection Forests	Coastal protection forests established by the project as sand- and wind-shielding forests will contribute to the prevention of soil movement and therefore ensures protection of rural infrastructure, houses, and socio-economic facilities from damages caused by sand movement and strong wind.
Improvement of livelihoods of local communities	Livelihood Development Assistance Small Scale Infrastructure Development	Members of the forest management groups and other community members will have chances to attend technical training courses on alternative livelihood options, along with the demonstration models/plots of the options in villages. These extension services will contribute to the expansion of opportunities for them to earn additional income.

Expected Benefits	Relevant Component	Remarks
Reduction of forest fires	Forest Fire Control	Proper management of forest and fire prevention activities will reduce damages caused by forest fires, and will eventually contribute to the conservation of vegetation.
Biodiversity conservation	Development and Improvement of Protection Forest Forest Fire Control	Protection of natural forest will contribute to the protection and conservation of the biodiversity in the project area. In addition, rehabilitation of protection forest will result in the expansion of wildlife habitats.

5.2 Financial Analysis

In principle, profitability and financial sustainability of a business/project should be the main factor to be examined in the financial analysis. Since the main objectives of the project are to restore and preserve the protection forests, which should not be harvested for commercial purposes and be maintained for environmental protection of the downstream basin, the general concept of financial analysis does not fit with the nature of the project. On the other hand, sustainable forest management of protection forest will significantly depend on whether or not local communities or members of the community groups will obtain continuous substantial benefits from the protection forest. As long as they regard the forest as part of their assets, it is expected that they would protect and manage the area on their own initiative. Therefore, the economy of a member household under typical cases is analyzed with the aim of undertaking the financial analysis of the project. However, since reliable data were not sufficiently available, the results of the analysis/estimation should be considered as indicative. The results of the analysis are presented in **Table 5.3**, and summarized in the following table.

Analysis of Household Economy under "With-Project" Conditions

Case 1: 2 ha of Afforestation

Items	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6-15	Yr16~25
1. Basic Income <1	4.2	4.2	4.2	4.2	4.2	4.2/yr	4.2/yr
2. Gross Income from the Project							
2.1 Wage <2	17.9	8.5	4.8	4.8	0.0	0.0	0.0
2.2 Forest resources <3	0.0	0.0	0.0	0.0	0.0	0.5~14.8	0.0~31.3
3. Cash expenditures							
3.1 Harvesting and transportation	0.0	0.0	0.0	0.0	0.0	0.4~0.8	0.0~0.9
3.2 Sharing benefit with GoV	0.0	0.0	0.0	0.0	0.0	0.7~1.4	0.0~3.1
4. Labor requirement <4							
3.1 Family labor	298.7	142.2	80.0	80.0	14.6	19.6~23.6	17.6~19.6
3.2 Hired labor	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. Net Cash Benefit							
5.1 Total Net Cash Income	22.1	12.7	9.0	9.0	4.2	8.6~16.9	4.2~32.0
5.2 Additional Cash Income	17.9	8.5	4.8	4.8	0.0	4.4~12.7	0.0~27.8
Ave. add. income from 1st to 5th	11.4						
Ave. add. income from 6th to 15th						11.8	
Ave. add. income from 16th to 25th							13.2

Case 2: 5 ha of ANR with enrichment

Items	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6-15	Yr16~25
1. Basic Income <1	4.2	4.2	4.2	4.2	4.2	4.2/yr	4.2/yr
2. Gross Income from the Project							
2.1 Wage <2	12.3	8.7	7.2	2.8	2.8	0.0	0.0
2.2 Forest resources <3	0.0	0.0	0.0	0.0	0.0	0.5~14.8	0.0~31.3
3. Cash expenditures							
3.1 Harvesting and transportation	0.0	0.0	0.0	0.0	0.0	0.0	0.0~0.1
3.2 Sharing benefit with GoV	0.0	0.0	0.0	0.0	0.0	0.0	0.0~3.0
4. Labor requirement <4							
3.1 Family labor	205.1	144.5	119.4	46.4	46.4	36.4~41.4	36.4~51.4
3.2 Hired labor	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. Net Cash Benefit							
5.1 Total Net Cash Income	16.5	12.9	11.4	7.0	4.2	4.2	4.2~31.1
5.2 Additional Cash Income	12.3	8.7	7.2	2.8	2.8	0.0	0.0~8.9
Ave. add. income from 1st to 5th	6.7						
Ave. add. income from 6th to 15th						0.3	
Ave. add. income from 16th to 25th							3.6

Case 3: 20 ha of Protection

Items	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6-15	Yr16~25
1. Basic Income <1	4.2	4.2	4.2	4.2	4.2	4.2/yr	4.2/yr
2. Gross Income from the Project							
2.1 Wage <2	8.7	8.7	8.7	8.7	8.7	0.0	0.0
2.2 Forest resources <3, <5	0.0	0.0	0.0	0.0	0.0	0.0~130.6	0.0~253.5
3. Cash expenditures							
3.1 Harvesting and transportation	0.0	0.0	0.0	0.0	0.0	0.0~1.4	0.0~2.5
3.2 Sharing benefit with GoV	0.0	0.0	0.0	0.0	0.0	0.0~12.9	0.0~25.1
4. Labor requirement <4							
3.1 Family labor	145.6	145.6	145.6	145.6	145.6	145.6~205.6	145.6~205.6
3.2 Hired labor	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. Net Cash Benefit							
5.1 Total Net Cash Income	12.9	12.9	12.9	12.9	12.9	4.2~120.5	4.2~230.1
5.2 Additional Cash Income	8.7	8.7	8.7	8.7	8.7	0.0~116.3	0.0~225.9
Ave. cash income from 1st to 5th	8.7						
Ave. cash income from 6th to 15th						11.4	
Ave. cash income from 16th to 25th							22.6

Note: <1 Basic income is based on the average household income given by the socio-economic survey conducted by the JICA Preparatory Survey (2009)
<2 Wages are the payments made by PFMBs under the project.
<3 Firewood, chip woods and timber are considered as forest resources that can be exploited by the forest management group in the post-project period in accordance with the long-term agreement between the management group and PFMB.
<4 Labor cost is not estimated assuming only family members will be used for management and maintenance works.
<5 Prices of medium grade of wood/timber in the country is employed for estimation.

Local communities may be able to earn VND 6.7 million ~ VND 11.4 million annually for the first five years as payments for the project activities. Although they will not be able to receive cash income on a constant basis from the 6th year, the rough estimation suggests that they could earn VND 11.8 million/year from 6th year to 15th year and VND 13.2 million/year from 16th year to 25th year from the 2 ha afforested/reforested protection forest. The returns from ANR are estimated to be rather low. The estimated average additional income from 5 ha of ANR with enrichment ranges from VND 0.3 million to VND 3.6 million per annum. Although its members will not harvest forest resources every year, they may be able to earn as high as VND 22.6 million/year from the 20 ha natural forest, between 16th year and 25th year.

5.3 Review of Environmental and Social Considerations

5.3.1 Government of Vietnam's Legal Framework and its Requirements

(1) Legal framework

The following laws and regulations define the structure of the legislative framework of the environmental protection and social considerations in Vietnam.

Environmental Protection and Management:

a. Law on Environmental Protection (No. 52/2005/QH11) of November 29, 2005

b. Government's Decree No.80/2006/ND-CP of August 9, 2006, detailing and guiding the implementation of a number of articles of the Law on Environmental Protection

c. MONRE Circular No. 08/2006/TT-BTNMT of September 8, 2006, guiding the implementation of the contents of Strategic Environment Assessment, Environmental Impact Assessment and Environmental Protection Commitments

d. MONRE Decision No. 19/2007/QD-BTNMT of November 26, 2007, promulgating the regulation on the conditions for and provision of the service of appraising Environmental Impact Assessment Reports

e. Government's Decree No. 21/2008/ND-CP of February 28, 2008, amending and supplementing a number of articles of the Government's Decree No.80/2006/ND-CP of August 9, 2006

f. MARD Directive No.36/2008/CT-BNN of February 20, 2008, enhancing environmental protection activities in agriculture and rural development

g. MARD Notice No.6494/TB-BNN-VP of November 3, 2008, the conclusion given by the MARD Minister Cao Duc Phat at the conference on agriculture and rural environmental protection

Social and Land Use Issues:

a. Land Law (No. 13/2003/QH11) of November 26, 2003

b. Government's Decree No. 181/2004/ND-CP of October 29, 2004, on the implementation of the land law

c. Government's Decree No.197/2004/ND-CP of December 2, 2004, on compensation, support and resettlement when land is recovered by the state

d. Government's Decree No.17/2006/ND-CP dated on January 27, 2006 amending and supplementing a number of articles of the decrees guiding the implementation of the land law and Decree No.187/2004/ND-CP on transformation of state companies into joint-stock companies

e. Government's Decree No.84/2007/ND-CP dated on May 25, 2007 Additionally stipulating the granting of land use right certificates, recovery of land, exercise of land use rights, order and procedures for compensation, support and resettlement upon land recovery by the state, and settlement of land-related complaints

f. MONRE Circular No.06/2007/TT-BTNMT dated on June 2, 2007 Guiding the implementation of a number of articles of the government's Decree No.84/2007/ND-CP of May 25, 2007

Overall issue:

a. Government's Decree No.131/2006/ND-CP of November 9, 2006, issuing regulation on management and utilization of official development assistance (ODA)

b. Prime Minister's Decision No.48/2008/QD-TTg of April 5, 2008, regarding general guidelines on feasibility study reports of projects using ODA Funds

(2) Requirements of impact assessment in the project

The Law on Environmental Protection (No.52, dated on 29/11/2005) specifies the nature and types of project that require strategic environmental assessment (SEA), and those which need submittal of EIA report as shown below.

Requirement	Types and Natures of the Project
Project requires SEA.	i) National socio-economic development project ii) Development of branches or domains on a national scale iii) Socio-economic development project in provinces, cities under direct management of central government or regions iv) Land use, forest protection and development, exploitation and utilization project in inter-provincial or inter-regional areas v) Development in key economic regions vi) Project of inter-provincial river watersheds.
Project requires EIA.	i) National important project ii) Projects that plan to use part of land of or exerting adverse impacts on, the natural sanctuaries, national parks, historical and cultural relic sites, natural heritages or beautiful landscapes iii) Projects that potentially predict adverse impacts on the river watershed, coastal areas or areas of protected ecosystems iv) Projects that construct infrastructure facilities in economic zones, industrial parks, high-tech parks, export-processing zones or craft village areas v) Projects that construct new urban centers or concentrated residential areas vi) Projects that exploit and use groundwater or natural resources on a large scale vii) Other projects that have potential risks or adverse impacts on the environment

Source: Law on Environmental Protection (No. 52/2005/QH11)

In the case of this project, each target province directly and independently implements and manages the related activities and the whole project is an aggregation of the sub-projects in the 12 provinces. Therefore, this project is not regarded as inter-provincial project and is not subject to SEA application.

However, the project will be required to submit an EIA report for approval in accordance with Decree No.21/2008/ND-CP (later amended and supplemented by the government's Decree No.80/2006/ND-CP), which legitimately states that forestation projects of 1,000 ha or more and forest exploitation projects of 200 ha or more are subject to the submission of EIA reports for appraisal and approval. As the project areas of all the provinces are over 1,000 ha for afforestation, the project owner (MARD/DARDs) is obliged to submit an EIA report. The suggested contents of EIA report given the decree are as follows:

Contents of EIA Report

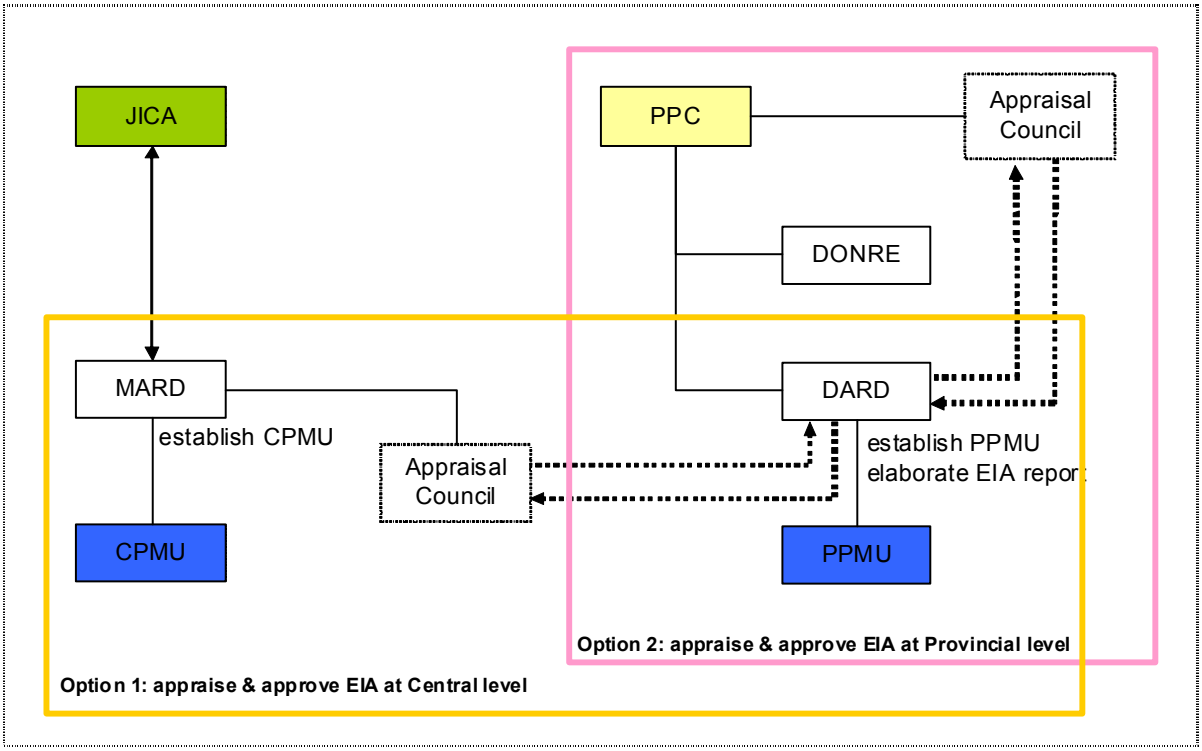
(3) Organization and procedures for appraisal and approval of EIA

The Law on Environmental Protection also stipulates that a council or a service organization shall be established to appraise an EIA report at any one of the following: i) Ministry of Natural Resources and Environment (MONRE), ii) other ministries that implement the project, and iii) PPC where the project is located. The organization where the council shall be placed is determined based on the nature of the project. For the project which ought to be decided or approved by the National Assembly, the cabinet council and Prime Minister, the appraisal council shall be organized at MONRE. Meanwhile, the implementing ministries will be the appropriate organizations where the council is placed for the projects managed by the line ministries. For the projects which are located in a province and under the direct responsibility of PPC, the council shall be organized at PPC.

Since the project is categorized as the umbrella project which has implementing agencies (or so-called line agencies) at both the central and provincial levels, the appraisal council for EIA should be established at either MARD or PPC.

In case MARD is the responsible body for the council as illustrated in Option 1 below, the Department of Science, Technology and Environment (DSTE) under MARD is the focal point for appraising and monitoring of SEA and EIA, in accordance with MARD Directive No.36/2008/CT-BNN on enhancing environmental protection activities. Minister of MARD will be the chairperson of the council and will be responsible for the appraisal and final approval of EIA. When PPC establishes the council as shown in Option 2, the council responsible for reviewing and

assessing the possible environmental impacts of the Project comprise of the director and representatives of the environmental division of DONRE, experts on forestry, DARD representatives, and representatives of concerned DPCs.



EIA Appraisal Council

(4) Roles and responsibilities of the stakeholders

DARD is responsible for sharing the EIA report and other related documents with the Commune People's Committees (CPCs) and other representatives of the communes concerned in the project areas. This is intended to disclose the relevant information including possible adverse impacts and mitigation measures to people who might be affected by the project. Local residents are also given the right to express their public opinions and comments on the project.

PPMU can start the implementation of the project prior to the official approval of an EIA report. However, they are not allowed to start any physical development, such as infrastructure development, forest development, and introduction of demonstration model for livelihood improvement, before official approval is granted by the approving council.

5.3.2 Environmental and Socio-economic Impacts of the Project

(1) Assessment of environmental aspects

After analyzing all environmental aspects related to the Project, the survey team does not anticipate any significant adverse socio-economic and environmental impacts unlike large-scale infrastructure projects. Furthermore, the Project is expected to bring positive impacts to the environment of its areas by planting trees and preserving the protection forests. **Table 5.4** shows the environmental checklist prepared by the survey team, and the following is its summary.

Summary of Environmental Checklist

Environmental items	Possible effects
Natural Environment	
Air Quality	None
Water Quality	None or minimal effect on river water
Wastes	None
Soil contamination	None
Protected areas	None
Ecosystem	Positive impact on ecosystems.
Hydrology	None or minimal effect on hydrology
Topography and geology	Positive impact on stabilization of slope.
Management of abandoned sites	None
Social Environment	
Resettlement	None
Living and livelihood	Improvement of living conditions of local communities
Heritage	None
Landscape	Scenery will be diversified or greened by the project.
Ethnic minorities & indigenous people	None
Impacts during construction	None

Some highlights of the environmental reviews made by the survey team are summarized as follows.

(2) Examination of Potential Impacts on Natural Environment

(a) Positive effects by afforestation and forest management

Forest development and improvement activities (such as afforestation of bare lands, ANR with enrichment planting, ANR, protection of natural forests, improvement of existing plantation, etc.) are all expected to help increase water retention capacity and soil stability, and improve drainage patterns of major rivers running through the target watersheds. It is also anticipated that the project would contribute in reducing the cases of floods, slope failures and landslides in the target watersheds. Furthermore, the project is expected to improve the landscapes of the project areas by planting indigenous tree species in bare lands and bushes.

(b) Harvest of sub-ordinate/main tree species

Sub-ordinate or fast growing species planted by afforestation activities can be harvested seven to ten years after being planted. The forest management groups who make long-term agreements with the respective PFMBs on forest management and protection shall follow the government regulations, which clearly state that the volume of exploitable trees in the area shall be less than 20 % of the total volume of wood and at the same time canopy enclosure shall be maintained at 60% after cutting trees. Consequently, the impact caused by harvesting is expected to be minimal as long as the forest management groups follow the regulations. It is therefore important to familiarize the forest management groups with the regulations and to keep on guiding them to follow the rules.

(c) Selection of tree species introduced

Tree species proposed in the plan were carefully examined and selected to ensure that no negative impacts are caused on the existing ecosystems of the surrounding project areas. As a result, mix plantation models including both indigenous and fast growing species are proposed as the standard designs for the project. Its aim is to improve the soil fertility

simultaneously while restoring the forest cover, dominated by indigenous tree species. Since almost all of the fast growing species will be cut before the secondary forest with indigenous species is established, the survey team does not anticipate any significant environmental impact.

(d) Construction of silvicultural infrastructure and small scale infrastructure

Construction and improvement of silviculture infrastructure and small-scale rural infrastructure is planned in the project. As all infrastructures are micro or small scale, it is expected that construction activities would not adversely affect the natural environment (ecosystem), unlike a large-scale infrastructure development. However, there is a possibility of causing soil erosion or sedimentation into rivers in small scale and temporal nature due to poor implementation of construction methods, such as improper cutting of earth materials and unnecessary excavation of earth fill. It is therefore important for the PPMUs to provide necessary guidance and monitoring/supervision to the contractors to ensure that that they l employ suitable construction methods and utilize cut and fill materials properly.

(e) Other environmental aspects

There was no air pollutant such as dust, soot and dust, sulfur oxides (SOx), nitrogen oxides (NOx), and organic chemical substances emitted from various sources in the implementation of SPL-III project. As most of the Project's activities are the same as those under SPL-III, there is no air pollution anticipated. Likewise, there is no major adverse impact expected with the use of chemicals such as fertilizers and agrochemical, because the amount of fertilizer to be applied in planting seedlings is too small to affect the environmental. In addition, the use of agrochemical is not programmed in the plan.

The survey team also confirmed that the Project areas are not located in or adjacent to special use forests, primary forests, and tropical rain forests which are ecologically valuable habitats for endangered species, designated by Vietnam's laws or international treaties and conventions.

(3) Examination of Potential Impacts on Social Environment

(a) Resettlement or Land Acquisition

As stated in Chapter 5 of PART II of the report, the project areas were selected in accordance with the pre-determined minimum requirements for the selection of the target areas. One of the minimum requirements is that there should be no resettlement or land acquisition with the introduction/implementation of the project. In fact, as far as the Survey Team has confirmed in the field, all the Project areas are apparently located in protection forests which are not utilized for farming or any economic activities. Furthermore, the project areas will be determined and confirmed by local communities in the process of the participatory land use planning. Consequently, no land acquisition, involuntary resettlement, or loss of means of livelihoods is expected during and after the project. If by any change land acquisition or resettlement was required for use of the selected areas and/or any other conflicts took place among the communities owing to the site selection, such areas shall be canceled.

(b) Heritage sites

There are no activities planned that may damage the local archaeological, historical, cultural, and religious heritage sites.

(c) Conflict on future land use

According to DARDs in the target provinces, there is no plan to convert the project areas into industrial/agricultural development area/zone in the future. Hence, it is unlikely that any social and/or political conflicts will occur over land use of the project sites.

(d) Improvement of living and livelihood conditions

It is expected that the project will contribute to improving the livelihood conditions of local communities by providing agriculture and forestry extension services, and conducting training on livelihood development to the forest management groups. Since the project will pay particular attention to the social welfare of the local residents involved in the project, it is expected that the project would bring significant positive impact on the socio-economic conditions of the people living in hilly and mountainous areas, who mainly belong to ethnic minority groups.

(e) Changes in lifestyle of ethnic minorities

There may be a worry that increase of cash income might affect their traditional lifestyle or culture of ethnic minorities. However, no drastic change in their lifestyle/culture is expected, as they have already been exposed to the market economy. On the contrary, the living conditions and access to the social services will be significantly improved by the implementation of the project, such as i) construction of small scale rural infrastructure, ii) training on livelihood development, and iii) introduction of the long-term agreement/contract on protection, management and use of protection forests. In the course of the Capacity Development and Phase-in/-out Works and Livelihood Development Assistance, the contractors will give a series of guidance and coaching to ethnic minorities so that they could use their earnings in a wise and effective manner without spoiling themselves. CPMU and PPMUs with the assistance of the project consultant shall also make their efforts to minimize the negative impact but maximize the positive impact on them.

Chapter 6 Operation and Effect Indicators

6.1 Logical Framework

Logical framework is a planning tool in a matrix format, presenting objectives, expected results and related activities as well as corresponding assumptions and/or risks to a project. **Table 6.1** outlines the logical framework matrix for the project.

The project is designed to (i) manage protection forests in a self-sustained way by forest owners, (ii) restore and conserve biodiversity, and (iii) reduce poverty in mountainous areas in the long run. To contribute to the achievement of these long-term goals, the project's purposes are: (i) to restore and improve watershed and coastal protection forests, (ii) to strengthen the capacity of the local governments and the owners of protection forests, and (iii) to improve the livelihood of communities who would manage the protection forests.

The project may involve monitoring of a number of operation (progress) and effect (impact) indicators, as the forest sector includes a set of 72 indicators.[1] However, it might be more feasible to focus on and observe the key monitoring indicators. Given the fact that the SPL-3 did not set the monitoring indicators for the project and sub-projects, the survey team considers that the monitoring activity should focus on the selected key indicators. Moreover, in the absence of the enterprise resource planning (ERP) system, the indicators should be easily available/accessible. As a result, the simplicity and feasibility of data collection were emphasized in selecting the key monitoring indicators of the project.

The following table outlines the initial ideas of the key monitoring indicators to be monitored consistently throughout the project. These indicators should be subject to change based on the results of i) survey and mapping, ii) baseline survey, iii) consultation between the relevant stakeholders of the project and iv) collective decisions among those concerned. In fact, the logical framework and indicators should be reviewed periodically and modified/updated, when appropriate.

Key Monitoring Indicators

Category	Key Operation (Progress) and Effect (Impact) Indicators *
Effect Indicators *	<u>For Overall Goal</u> a. Proportion of Group IV Forest in the target protection forests in 2040 b. Increase in income level of local communities in the target communes/villages in 2030 <u>For Project Purpose</u> a. Forest cover in the project areas will be 135,930 ha in 2020 b. The quality of vegetation/forest covers in the project areas will be improved in 2020, to wit: - 24,640 ha of bush/woodlot (1a and 1b) will be changed to recovering forest (II). - 14,320 ha of young plantations /poorly maintained plantations (Ic) will become quality plantations. - 68,420 ha of natural forest will be maintained properly. c. The incidence of forest fires in the project areas will be halved in 2020. d. More than 80 % of the project area will be managed by local communities under the long-term agreement/contract on protection and management of protection forests in 2020. e. The average annual household income will increase by *** % in 2020.

[1] Vietnam Forest Sector Indicators and 2005 Baseline Data Report;

Category	Key Operation (Progress) and Effect (Impact) Indicators *
Operation Indicators *	a. Issued regulations and circulars on project implementation guidelines, benefit sharing mechanism, and forest development and protection fund b. Land use and forest classification maps covering 135,930 ha will be updated. . c. Detailed plans for the concerned 57 PFMBs will be prepared. d. More than 750 government staff will be trained. e. More than 75% of local communities will be organized into forest management groups. f. New plantations of 24,640 ha (23,090 ha in the watersheds and 1,550 ha in the coastal area) will be developed by the afforestation sub-component. g. Existing poorly-maintained plantations of 14,320 ha (3,300 ha in the watersheds, 800 ha in the coastal area and 10,220 ha in SPL3 sites) will be improved. h. Degraded natural forests of 28,550 ha (25,950 ha in the watersheds, 1,600 ha in the coastal area and 1,000 ha in SPL3 sites) by ANR with/without enrichment planting. i. Natural forests of 68,420 ha (63,970 ha in the watersheds and 4,450 ha in the coastal area) will be protected. j. A total of *** demonstration plots/livelihood development models will be introduced or demonstrated in the target villages. k. A total of 188,363 households residing in 167 communes will be trained on forest management and livelihood development. l. About 186 km of rural roads, 558 ha of irrigated rice fields and 8 units of water systems will be developed by the project. m. A total of 719 PPMU and PFMB staff as well as **** households will be trained on FFC.

*Indicators shall be determined in the detailed planning stage based on the results of baseline survey and survey and mapping.

6.2 Means of Verification

PPMUs are responsible for monitoring the progress of the sub-projects, and assess the operation and effect indicators of the sub-project in principle. Thus, it is recommended to set operation and effect indicators per province and agree on the indicators and means of verification/data collection among the PPMUs and CPMU. With such arrangements, CPMU can monitor the progress of the whole project based on the quality data and information collected by each PPMU.

As given in the logical framework of the project in **Table 6.1**, the data and information for monitoring the operation indicators will come from the following sources:

- Annual reports of the project
- Records, data and reports in CPMU, PPMUs, and PFMBs
- MARD's and PPC's circulars
- Internal outputs in the course of the project (e.g., updated land use/forest classification map, detailed plans, and project implementation guidelines)
- Any reports submitted by the contractors

On the other hand, the following will be the major sources for the evaluation of effect indicators.

- Terminal evaluation (physical and socio-economic evaluation)
- Completion report of the project
- District statistics
- Results of forest classification survey to be undertaken by FIPF
- Any impact assessment survey in post-project period

Chapter 7 PROJECT RISKS / IMPORTANT ASSUMPTIONS

For the effective and smooth implementation of the project, the following external conditions and requirements, which would have significant impacts on project implementation, must be met.

a. There is no delay in fund disbursement during the implementation.

b. There is no delay in procurement, approval and any other decision making by CPMU/MARD at central level and DARDs/PPCs at provincial level.

c. There is no change in forest development strategies and policies.

d. There is no social conflict or dispute taking place in the target communes / villages.

The following external conditions and requirements must also be met in order for the envisaged project outcomes to have the desired and expected effects and impacts.

a. No large scale and destructive natural disaster, such as severe drought or strong cyclone, takes place in the target provinces.

b. The categories of watershed protection forest or forest classification are not changed by PPCs.

c. The prices of wood chips and timber do not drastically drop.

d. Employment conditions in rural areas in the regions/target provinces are not drastically changed.

e. The macro economy of the country must be stable.

f. Climatic conditions in the target provinces must be unchanged.

Tables

Table 1-1 List of Target Districts and Communes with their Project Target Areas

Province	District	Commune	Protection Forest (ha)	Project Area (ha)
Thanh Hoá	Thường Xuân	Luận Khê	1,786	900
		Luận Thành*	266	1,670
	Như Xuân	Thanh Hoa	4,272	2,100
	Như Thành	Xuân Thái	4,350	1,700
	Thạch Thành	Ngọc Trao	332	800
		Thanh Long	941	
		Thạch Lâm	1,180	250
	Hà Trung	Hà Linh	1,206	800
	Tĩnh Gia	Trức Lâm	430	250
		Trường Lâm	459	300
		Nguyên Bình	1,791	1,400
		Định Hải	920	
Nghệ An	Tương Dương	Tam Thái	1,306	1,200
		Tam Hợp	16,765	
		Thạch Giám	1,064	
		Tam Đình	2,764	
		Yên Na	976	
		Yên Thắng	1,855	
		Yên Tĩnh	6,575	
	Nam Đàn	Nam Giang	183	995
		Nam Nghĩa	293	
		Nam Thái	131	
		Nam Hưng	240	
		Nam Thanh	225	
	Nghi Lộc	Nghi Đồng	522	2,200
		Nghi Công Bắc	229	
		Nghi Quang	273	
		Nghi Thiết	339	
		Phúc Thọ	164	
		Nghi Công Nam	364	
		Nghi Yên	1,091	
		Nghi Lâm	541	
	Yên Thành	Đồng Thanh	521	656
		Hậu Thanh	408	
		Minh Thành	337	
		Thịnh Thành	371	
	Tân Ky	Nghĩa Dũng	1,274	800
		Đồng Văn	2,366	
		Giai Xuân	374	
	Quỳnh Luu	Quỳnh Thắng	580	1,446
		Tân Sơn	207	
		Quỳnh Bang	28	
		Quỳnh Lương	66	
		Quỳnh Lập	721	
		Quỳnh Liên	27	
		Quỳnh Minh	47	
		Quỳnh Nghĩa	164	
		Quỳnh Phương	8	

Table 1-1 List of Target Districts and Communes with their Project Target Areas

Province	District	Commune	Protection Forest (ha)	Project Area (ha)
		Quỳnh Thọ	20	
		Tiến Thủy	92	
		Tân Thaắng	1,862	
Hà Tĩnh	Nghi Xuân	Cổ Đạm	1,207	3,885
		Xuân Linh	876	
		Xuân Hồng	431	
		Xuân Viên	619	
	Can Lộc	Thiên Lộc	1,532	
		Thuận Thiên	1,037	
	Cẩm Xuyên	Cẩm Lĩnh	812	2,140
		Cẩm Minh	1,126	
		Cẩm Lạc	1,698	
		Cẩm Quan	1,641	
		Cẩm Thạch	702	259
	Thạch Hà	Thạch Bàn	331	1,635
		Bắc Sơn	545	
		Thạch Xuân	867	
		Thạch Điền	679	
	Hương Sơn	Sơn Lâm	1,377	3,552
		Sơn Lệ	963	
		Sơn Tiến	1,176	
Quảng Bình	Quảng Trạch	Quảng Hợp	6,934	3,400
		Quảng Kim	1,595	
		Quảng Lưu	1,759	
		Quảng Thạch	2,368	
	Quảng Ninh	Truong Xuan	4,498	2,000
		Trường Sơn	21,034	
		Võ Ninh	639	650
		Gia Ninh	1,112	
		Hải Ninh	1,563	
	Lệ Thủy	Hưng Thủy	694	550
		Hồng Thủy	314	
		Ngư Thủy Bắc	1,868	
		Thanh Thủy	277	
		Cẩm Thủy	530	
Quang Tri	Hướng Hóa	Hướng Phùng	3,530	3,200
		Hướng Tân	1,242	
		Hướng Linh	5,511	
		Tân Thanh	993	
		Hương Sơn	8,463	
		Tân Hợp	1,176	
	Dakrong	Dakrong	10,374	700
		Hướng Hiệp	13,345	
		Mò Ó	2,121	
		Krong Klang	1,470	
	Vĩnh Linh	Vĩnh Hà	13,228	1,550
		Vĩnh Ô	8,235	
	Gio Linh	Linh Thượng	16,747	2,800
	Hải Lăng	Hải Lâm	6,522	1,100
		Hải Sơn	3,961	
	Triệu Phong	Triệu Thượng	4,352	
	Thị xã Quảng Trị	Hải Lệ	4,312	300
T.T.Huế	Hương Thủy	Dương Hòa	5,547	5,510
		Bình Thành	401	
		Hồng Tiến	373	

Table 1-1 List of Target Districts and Communes with their Project Target Areas

Province	District	Commune	Protection Forest (ha)	Project Area (ha)
	Hương Trà	Bình Điền	86	5,010
		Hương Vân	177	
		Hương Thọ	290	
	Phong Điền	Phong Xuân	1,352	2,980
		Phong Sơn	985	
Quảng Nam	Đông Giang	Sông Kôn	2,772	2,000
		Jơ Ngây	3,159	
		A Ting	2,136	
		Ma Cooih	16,012	1,500
	Phước Sơn	Phước Hiệp	7,358	1,570
		Phúc Hòa	9,536	
	Bắc Trà My	Trà Bui	14,875	3,000
	Phú Ninh	Tam Đại	1,920	1,100
		Tam Dân	988	
		Tam Lãnh	2,799	
	Núi Thành	Tam Sơn	4,822	1,500
		Tam Thạnh	1,303	
		Tam Trà	8,496	
	Duy Xuyên	Duy Trung	2,041	500
		Duy Sơn	5,512	
		Duy Hòa	1,100	
		Duy Phú	2,877	
		Duy Trinh	1,250	
		Duy Thu	698	
Quảng Ngãi	Ba Tơ	Ba Trang	6,327	2,000
		Ba Liên	3,129	
		Ba Xa	5,238	2,450
		Ba Dinh	2,517	
	Sơn Hà	Sơn Ba	2,208	3,050
		Sơn Kỳ	9,313	
	Sơn Tây	Sơn Bua	2,585	600
	Tây Trà	Trà Lãnh	750	1,900
		Trà Xinh	6,204	
Bình Định	Hoài Nhơn	Hoài Sơn*	436	467
	Hoài An	Bok Toi	7,455	973
		An Nghĩa*	531	1,965
		An Sơn	5,283	149
	Phú Mỹ	Mỹ An	1,298	259
		Mỹ Hiệp	659	348
		Mỹ Phong	139	104
	Vĩnh Thanh	Vĩnh Kim	14,022	2,815
	Tây Sơn	Tây Phú	1,303	1,022
		Vĩnh An	8,013	2,780
Phú Yên	Đồng Xuân	Phú Mỡ	27,841	2,200
	Sông Hinh	Ea Trol	1,811	3,400
		Sông Hinh	9,961	
	Song Hoa	Phước Tân	2,689	1,150
Ninh Thuận	Bác Ái	Phước Thành	9,422	968
	Ninh Hải	Phước Chiến	3,882	
		Phước Kháng	4,421	
	Ninh Sơn	Lam Sơn	11,793	5,558
	Ninh Phước	Phước Hà	16,407	3,468
		Phước Nam	1,833	2,271
		Phước Dinh	10,539	
Bình Thuận		Phan Dũng	17,640	1,000

Table 1-1 List of Target Districts and Communes with their Project Target Areas

Province	District	Commune	Protection Forest (ha)	Project Area (ha)
	Tuy Phong	Chí Công	475	100
		Phong Phú	2,206	1,300
	Bắc Bình	Hòa Thắng	9,195	2,250
		Phan Lâm	22,506	800
	Hàm Thuận Bắc	Thuận Minh	5,784	1,700
		Đồng Tiến	9,128	1,700
		Đa Mi	8,691	1,300
		Hồng Sơn	1,540	350

* The target of the Project is bigger than the protection forest. Some parts of "unused land" is supposed to be included in the target.

Table 1-2. Land Use of Protection Forest Land in the Target Communes

Thanh Hoa Province Unit: ha

Districts/Communes in the project area	Protection Forest										
	Total Area of Protection Forest	Forested Area				Non-Forested Area					
		Natural Forest	Plantation Forest	Total	%	Ia	Ib	Ic	Others	Total	%
	(a)	(b)	(c)	(d = b + c)	(d / a)	(e)	(f)	(g)	(h)	(i = e+f+g+h)	(i / a)
Total	**21,149**	**13,080**	**5,678**	**18,758**		**742**	**428**	**1,220**		**2,391**	
Thường Xuân	**2,052**	**1,221**	**450**	**1,671**		**60**		**322**		**381**	
Luận Khê	1,786	1,123	350	1,473	82%	40		273		313	18%
Luận Thanh	266	98	100	198	74%	20		49		69	26%
Như Xuân	**7,488**	**6,613**	**45**	**6,658**		**300**	**234**	**296**		**830**	
Thạnh Hoa	4,272	4,197		4,197	98%			75		75	2%
Như THành	**4,350**	**3,675**	**643**	**4,318**				**32**		**32**	
Xuân Thái	4,350	3,675	643	4,318	99%			32		32	1%
Thạch Thành	**2,453**	**750**	**1,238**	**1,988**		**65**		**400**		**465**	
Ngọc Trạo	332		332	332	100%						
Thanh Long	941		906	906	96%	35				35	4%
Thạch Lâm	1,180	750		750	64%	30		400		430	36%
Tĩnh Gia	**3,600**	**643**	**2,395**	**3,038**		**218**	**194**	**150**		**562**	
Trúc Lâm	430		430	430	100%						
Trường Lâm	459	50	354	404	88%	55				55	12%
Nguyên Bình	1,791	593	797	1,390	78%	90	162	150		401	22%
Định Hải	920		814	814	88%	73	33			106	12%
Hà Trung	**1,206**	**179**	**907**	**1,086**		**100**		**20**		**120**	
Hà Lĩnh	1,206	179	907	1,086	90%	100		20		120	10%

Nghe An Province Unit: ha

Districts/Communes in the project area	Protection Forest										
	Total Area of Protection Forest	Forested Area				Non-Forested Area					
		Natural Forest	Plantation Forest	Total	%	Ia	Ib	Ic	Others	Total	%
	(a)	(b)	(c)	(d = b + c)	(d / a)	(e)	(f)	(g)	(h)	(i = e+f+g+h)	(i / a)
Total	**45,371**	**26,530**	**5,282**	**31,811**		**4,058**	**6,385**	**2,998**	**119**	**13,560**	
Yên Thành	**1,637**	**824**	**94**	**918**		**122**	**157**	**440**		**719**	
Đồng Thành	521	297	60	357	69%	30	83	51		164	31%
Hậu Thành	408	299		299	73%	52	43	14		109	27%
Minh Thành	337	42	23	65	19%		2	270		272	81%
Thịnh Thành	371	186	11	197	53%	40	30	104		174	47%
Tương Dương	**31,305**	**23,271**		**23,271**		**1,453**	**4,932**	**1,649**		**8,034**	
Tam Thái	1,306	756		756	58%	343	115	92		550	42%
Tam Đình	2,764	2,419		2,419	88%			345		345	12%
Tam Hợp	16,765	15,446		15,446	92%	359	702	259		1,319	8%
Thạch Giám	1,064	931		931	88%	24	97	11		133	12%
Yên Na	976	571		571	58%	347	38	20		405	42%
Yên Thắng	1,855	1,438		1,438	78%	139	279			417	22%
Yên Tĩnh	6,575	1,710		1,710	26%	242	3,701	922		4,865	74%
Tam Kỳ	**4,013**	**1,812**	**224**	**2,036**		**857**	**535**	**585**		**1,977**	
Đồng Văn	2,366	1,619		1,619	68%	667		80		747	32%
Giai Xuân	374	14	192	206	55%	86		82		168	45%
Nghĩa Dũng	1,274	179	32	211	17%	105	535	423		1,063	83%
Quỳnh Lưu	**3,821**	**566**	**993**	**1,558**		**1,148**	**761**	**324**	**29**	**2,263**	
Quỳnh Thắng	580	229	195	424	73%	58	64	34		156	27%
Tân Sơn	207							207		207	100%
Quỳnh Bang	28		12	12	44%	10			5	15	56%
Quỳnh Lương	66		35	35	53%	24			8	31	47%
Quỳnh Lập	721		346	346	48%	189	158	29		375	52%
Quỳnh Liên	27		27	27	100%						
Quỳnh Minh	47		30	30	65%				17	17	35%
Quỳnh Nghĩa	164	8	71	79	48%	85				85	52%
Quỳnh Phương	8		8	8	100%						
Quỳnh Thọ	20		20	20	100%						
Tiến Thủy	92		55	55	60%	37				37	40%
Tân Thắng	1,862	329	193	522	28%	746	539	54		1,340	72%
Nam Đàn	**1,073**	**3**	**993**	**996**		**77**				**77**	
Nam Giang	183		183	183	100%						
Nam Nghĩa	293		285	285	97%	8				8	3%
Nam Thái	131	3	104	107	82%	24				24	18%
Nam Hưng	240		240	240	100%						
Nam Thanh	225		180	180	80%	46				46	20%
Nghi Lộc	**3,522**	**54**	**2,978**	**3,032**		**400**			**90**	**490**	
Nghi Đồng	522		461	461	88%	60				60	12%
Nghi Công Bắc	229		202	202	88%	27				27	12%
Nghi Quang	273		261	261	96%	11				11	4%
Nghi Thiết	339		202	202	60%	47			90	137	40%
Phúc Thọ	164	54		54	33%	110				110	67%
Nghi Công Nam	364		283	283	78%	81				81	22%
Nghi Yên	1,091		1,063	1,063	97%	28				28	3%
Nghi Lâm	541		505	505	93%	35				35	7%

Table 1-2. Land Use of Protection Forest Land in the Target Communes

Ha Tinh Province Unit: ha

Districts/Communes in the project area	Protection Forest										
	Total Area of Protection Forest	Forested Area				Non-Forested Area					
		Natural Forest	Plantation Forest	Total	%	Ia	Ib	Ic	Others	Total	%
	(a)	(b)	(c)	(d = b + c)	(d / a)	(e)	(f)	(g)	(h)	(i = e+f+g+h)	(i / a)
Total	**17,619**	**2,284**	**9,301**	**11,585**		**822**	**3,836**	**1,376**		**6,034**	
Hương Sơn	**3,516**	**984**	**1,730**	**2,714**		**179**	**623**			**802**	
Sơn Lâm	1,377	984	99	1,083	79%		294			294	21%
Sơn Lễ	963		800	800	83%	49	114			163	17%
Sơn Tiến	1,176		831	831	71%	130	215			345	29%
Nghi Xuân	**3,133**		**1,642**	**1,642**		**206**	**1,285**			**1,491**	
Cổ Đạm	1,207		481	481	40%	111	615			726	60%
Xuân Lĩnh	876		481	481	55%		395			395	45%
Xuân Hồng	431		336	336	78%	95				95	22%
Xuân Viên	619		344	344	56%		275			275	44%
Can Lộc	**2,569**		**2,077**	**2,077**			**392**	**100**		**492**	
Thiên Lộc	1,532		1,339	1,339	87%		193			193	13%
Thuận Thiên	1,037		738	738	71%		199	100		299	29%
Thạch Hà	**2,422**	**30**	**1,673**	**1,703**		**44**	**434**	**241**		**719**	
Thạch Bàn	331		156	156	47%	36	139			175	53%
Bắc Sơn	545		295	295	54%		126	124		250	46%
Thạch Xuân	867		673	673	78%	8	129	57		194	22%
Thạch Điền	679	30	549	579	85%		40	60		100	15%
Cẩm Xuyên	**5,979**	**1,270**	**2,179**	**3,449**		**393**	**1,102**	**1,035**		**2,530**	
Cẩm Thạch	702	11	415	426	61%	13	80	183		276	39%
Cẩm Lĩnh	812		476	476	59%	180	156			336	41%
Cẩm Minh	1,126	90	546	636	56%		126	364		490	44%
Cẩm Lạc	1,698	701	569	1,270	75%		180	248		428	25%
Cẩm Quan	1,641	468	173	641	39%	200	560	240		1,000	61%

Quang Binh Province Unit: ha

Districts/Communes in the project area	Protection Forest										
	Total Area of Protection Forest	Forested Area				Non-Forested Area					
		Natural Forest	Plantation Forest	Total	%	Ia	Ib	Ic	Others	Total	%
	(a)	(b)	(c)	(d = b + c)	(d / a)	(e)	(f)	(g)	(h)	(i = e+f+g+h)	(i / a)
Total	**47,990**	**28,382**	**11,147**	**39,529**		**389**	**1,360**	**6,627**	**85**	**8,461**	
Quảng Trạch	**12,656**	**9,044**	**1,095**	**10,139**		**88**	**1,277**	**1,152**		**2,517**	
Quảng Thạch	2,368	1,492	223	1,715	72%	16	213	424		653	28%
Quảng Kim	1,595	1,120	116	1,236	77%	72	91	196		359	23%
Quảng Hợp	6,934	5,071	685	5,756	83%		973	205		1,178	17%
Quảng Lưu	1,759	1,361	71	1,432	81%			327		327	19%
Quảng Ninh	**28,846**	**19,338**	**3,649**	**22,987**		**301**	**83**	**5,475**		**5,859**	
Trường Sơn	21,034	16,567		16,567	79%	301	76	4,090		4,467	21%
Trường Xuân	4,498	2,771	335	3,106	69%		7	1,385		1,392	31%
Võ Ninh	639		639	639	100%						
Gia Ninh	1,112		1,112	1,112	100%						
Hải Ninh	1,563		1,563	1,563	100%						
Lệ Thủy	**6,488**		**6,403**	**6,403**					**85**	**85**	
Hưng Thủy	694		694	694	100%						
Hồng Thủy	314		314	314	100%						
Ngư Thủy Bắc	1,868		1,868	1,868	100%						
Thanh Thủy	277		277	277	100%						
Cam Thủy	530		530	530	100%						
Sen Thủy	2,805		2,720	2,720	97%				85	85	3%

Table 1-2. Land Use of Protection Forest Land in the Target Communes

Quang Tri Province Unit: ha

Districts/Communes in the project area	Protection Forest										
	Total Area of Protection Forest	Forested Area				Non-Forested Area					
		Natural Forest	Plantation Forest	Total	%	Ia	Ib	Ic	Others	Total	%
	(a)	(b)	(c)	(d = b + c)	(d / a)	(e)	(f)	(g)	(h)	(i = e+f+g+h)	(i / a)
Total	**105,582**	**44,825**	**24,040**	**68,865**		**17,461**	**9,791**	**8,833**	**633**	**36,717**	
Hướng Hóa	**20,915**	**8,681**	**1,684**	**10,366**		**5,850**	**1,190**	**3,509**		**10,550**	
Hướng Sơn	8,463	5,585	220	5,805	68.6%	1,321	637	700		2,658	31.4%
Hướng Phùng	3,530	815	323	1,138	32.2%	1,250	357	786		2,393	67.8%
Hướng Linh	5,511	1,587	199	1,786	32.4%	1,873	102	1,750		3,725	67.6%
Hướng Tân	1,242	118	528	646	52.0%	494	95	9		597	48.0%
Tân Thanh	993	158	255	413	41.6%	511		69		580	58.4%
Tân Hợp	1,176	419	159	578	49.2%	401		196		597	50.8%
Da Krong	**27,310**	**13,454**	**2,289**	**15,743**		**5,342**	**2,992**	**2,600**	**633**	**11,567**	
Hướng Hiệp	13,345	7,117	961	8,078	60.5%	3,015	1,153	794	305	5,267	39.5%
Krong Klang	1,470	271	662	933	63.4%	132	406			538	36.6%
DaKrong	10,374	4,749	454	5,203	50.2%	2,191	849	1,803	328	5,171	49.8%
Mò Ó	2,121	1,317	212	1,529	72.1%	4	585	3		592	27.9%
Vĩnh Linh	**21,463**	**15,963**	**2,277**	**18,240**		**490**	**1,442**	**1,291**		**3,223**	
Vĩnh Hà	13,228	8,631	2,191	10,823	81.8%	490	1,442	473		2,405	18.2%
Vĩnh Ô	8,235	7,331	86	7,417	90.1%			818		818	9.9%
Gio Linh	**16,747**	**4,675**	**4,770**	**9,445**		**3,576**	**2,716**	**1,011**		**7,302**	
Linh Thượng	16,747	4,675	4,770	9,445	56.4%	3,576	2,716	1,011		7,302	43.6%
Hải Lăng	**10,483**	**1,287**	**6,053**	**7,340**		**1,753**	**987**	**403**		**3,143**	
Hải Lâm	6,522	1,062	3,317	4,379	67.1%	1,213	930			2,143	32.9%
Hải Sơn	3,961	225	2,736	2,961	74.7%	540	57	403		1,000	25.3%
Triệu Phong	**4,352**	**434**	**3,465**	**3,898**			**435**	**19**		**454**	
Triệu Thượng	4,352	434	3,465	3,898	89.6%		435	19		454	10.4%
Quảng Trị (Thị Xã)	**4,312**	**331**	**3,502**	**3,833**		**450**	**29**			**479**	
Hải Lệ	4,312	331	3,502	3,833	88.9%	450	29			479	11.1%

Thua Thien Hue Province Unit: ha

Districts/Communes in the project area	Protection Forest										
	Total Area of Protection Forest	Forested Area				Non-Forested Area					
		Natural Forest	Plantation Forest	Total	%	Ia	Ib	Ic	Others	Total	%
	(a)	(b)	(c)	(d = b + c)	(d / a)	(e)	(f)	(g)	(h)	(i = e+f+g+h)	(i / a)
Total	**9,210**	**7,589**	**1,537**	**9,126**				**84**		**84**	
Phong Điền	**2,337**	**2,117**	**220**	**2,337**							
Phong Xuân	1,352	1,132	220	1,352	100%		(893)			(893)	
Phong Sơn	985	985		985	100%		(713)	(398)		(1,111)	
Hương Trà	**1,326**	**677**	**566**	**1,242**				**84**		**84**	
Hương Vân	177	177		177	100%		(236)	(4)		(239)	
Hông Tiến	373	158	214	373	100%		(19)	(3)		(22)	
Bình Thành	401	253	149	401	100%		(11)	(46)		(57)	
Bình Điền	86	86		86	100%			(131)		(131)	
Hương Thọ	290	3	203	206	71%			84		84	29%
Hương Thủy	**5,547**	**4,796**	**751**	**5,547**							
Dương Hòa	5,547	4,796	751	5,547	100%		(1)	(2,047.3)		(2,048)	

Table 1-2. Land Use of Protection Forest Land in the Target Communes

Quang Nam Province Unit: ha

Districts/Communes in the project area	Protection Forest										
	Total Area of Protection Forest	Forested Area				Non-Forested Area					
		Natural Forest	Plantation Forest	Total	%	Ia	Ib	Ic	Others	Total	%
	(a)	(b)	(c)	(d = b + c)	(d / a)	(e)	(f)	(g)	(h)	(i = e+f+g+h)	(i / a)
Total	**89,654**	**42,825**	**9,188**	**52,012**		**190**	**7,499**	**6,816**	**23,136**	**37,641**	
Đông Giang	**24,079**	**15,705**	**393**	**16,098**			**2,122**	**1,737**	**4,122**	**7,981**	
Sông Kôn	2,772	1,941	20	1,961	71%		283	313	215	811	29%
Jơ Ngây	3,159	1,124	54	1,178	37%		512	38	1,431	1,981	63%
A Ting	2,136	1,720		1,720	81%		77	293	46	416	19%
Ma Cooih	16,012	10,920	319	11,239	70%		1,250	1,093	2,430	4,773	30%
Phước Sơn	**16,894**	**10,045**	**938**	**10,983**			**750**	**1,057**	**4,104**	**5,911**	
Phước Hiệp	7,358	3,859	869	4,728	64%		116	79	2,435	2,630	36%
Phước Hòa	9,536	6,186	69	6,255	66%		634	978	1,669	3,281	34%
Trà My	**14,875**	**9,765**	**375**	**10,140**				**1,304**	**3,431**	**4,735**	
Trà Bui	14,875	9,765	375	10,140	68%			1,304	3,431	4,735	32%
Phú Ninh	**5,707**		**929**	**929**			**142**	**610**	**4,026**	**4,778**	
Tam Dân	988		302	302	31%				686	686	69%
Tam Đại	1,920		383	383	20%				1,537	1,537	80%
Tam Lãnh	2,799		244	244	9%		142	610	1,803	2,555	91%
Núi Thành	**14,621**	**6,899**	**1,895**	**8,794**			**610**	**1,164**	**4,053**	**5,827**	
Tam Sơn	4,822	1,312	764	2,076	43%		151	736	1,859	2,746	57%
Tam Trà	8,496	5,365	710	6,075	72%		459	428	1,534	2,421	28%
Tam Thạnh	1,303	222	421	643	49%				660	660	51%
Duy Xuyên	**13,478**	**411**	**4,658**	**5,069**		**190**	**3,875**	**944**	**3,400**	**8,409**	
Duy Phú	2,877	411	773	1,184	41%		922		772	1,694	59%
Duy Hòa	1,100		653	653	59%				447	447	41%
Duy Sơn	5,512		1,883	1,883	34%		2,547	233	849	3,629	66%
Duy Trung	2,041		671	671	33%		241	711	418	1,370	67%
Duy Thu	698		185	185	27%		130		383	513	73%
Duy Trinh	1,250		493	493	39%	190	35		532	757	61%

Quang Ngai Province Unit: ha

Districts/Communes in the project area	Protection Forest										
	Total Area of Protection Forest	Forested Area				Non-Forested Area					
		Natural Forest	Plantation Forest	Total	%	Ia	Ib	Ic	Others	Total	%
	(a)	(b)	(c)	(d = b + c)	(d / a)	(e)	(f)	(g)	(h)	(i = e+f+g+h)	(i / a)
Total	**38,271**	**25,907**	**1,512**	**27,419**		**855**	**4,574**	**5,423**		**10,852**	
Ba Tơ	**17,211**	**12,014**	**1,033**	**13,047**		**700**	**948**	**2,516**		**4,164**	
Ba Xa	5,238	4,693		4,693	90%	168	377			545	10%
Ba Dinh	2,517	1,839		1,839	73%		388	290		678	27%
Ba Trang	6,327	4,674	150	4,824	76%	186	97	1,220		1,503	24%
Ba Liên	3,129	808	883	1,691	54%	346	86	1,006		1,438	46%
Sơn Hà	**11,521**	**7,196**	**351**	**7,547**		**7**	**1,998**	**1,969**		**3,974**	
Sơn Ba	2,208	893		893	40%	7	419	889		1,315	60%
Sơn Kỳ	9,313	6,303	351	6,654	71%		1,579	1,080		2,659	29%
Sơn Tây	**2,585**	**1,987**		**1,987**			**432**	**166**		**598**	
Sơn Bua	2,585	1,987		1,987	77%		432	166		598	23%
Tây Trà	**6,954**	**4,710**	**128**	**4,838**		**148**	**1,196**	**772**		**2,116**	
Trà Lanh	750	24	128	152	20%	123	442	33		598	80%
Trà Xinh	6,204	4,686		4,686	76%	25	754	739		1,518	24%

Table 1-2. Land Use of Protection Forest Land in the Target Communes

Binh Dinh Province Unit: ha

Districts/Communes in the project area	Protection Forest										
	Total Area of Protection Forest	Forested Area				Non-Forested Area					
		Natural Forest	Plantation Forest	Total	%	Ia	Ib	Ic	Others	Total	%
	(a)	(b)	(c)	(d = b + c)	(d / a)	(e)	(f)	(g)	(h)	(i = e+f+g+h)	(i / a)
Total	**39,138**	**26,991**	**1,137**	**28,127**		**2,918**	**4,567**	**3,280**	**247**	**11,011**	
Hoài Nhơn	**436**	**145**	**51**	**197**			**183**	**57**		**239**	
Hoài Sơn	436	145	51	197	45%		183	57		239	55%
Hoài An	**13,268**	**9,104**	**231**	**9,335**		**2,177**	**1,228**	**528**		**3,933**	
Bok Toi	7,455	5,050	54	5,104	68%	1,190	694	466		2,351	32%
An Nghĩa	531	414	101	515	97%			16		16	3%
An Sơn	5,283	3,640	77	3,716	70%	987	534	46		1,566	30%
Phú Mỹ	**2,096**	**242**	**591**	**833**		**151**	**606**	**259**	**247**	**1,263**	
Mỹ An	1,298		579	579	45%	146	396	60	118	719	55%
Mỹ Hiệp	659	242	2	244	37%	5	211	200		415	63%
Mỹ Phong	139		10	10	7%				129	129	93%
Vĩnh Thanh	**14,022**	**8,992**	**194**	**9,186**		**144**	**2,366**	**2,326**		**4,837**	
Vĩnh Kim	14,022	8,992	194	9,186	66%	144	2,366	2,326		4,837	34%
Tây Sơn	**9,316**	**8,508**	**69**	**8,577**		**446**	**184**	**110**		**739**	
Tây Phú	1,303	1,195	7	1,202	92%		13	87		101	8%
Vĩnh An	8,013	7,314	62	7,375	92%	446	170	22		638	8%

Phu Yen Province Unit: ha

Districts/Communes in the project area	Protection Forest										
	Total Area of Protection Forest	Forested Area				Non-Forested Area					
		Natural Forest	Plantation Forest	Total	%	Ia	Ib	Ic	Others	Total	%
	(a)	(b)	(c)	(d = b + c)	(d / a)	(e)	(f)	(g)	(h)	(i = e+f+g+h)	(i / a)
Total	**42,302**	**24,872**	**3,936**	**28,808**		**7,186**	**1,813**	**4,495**		**13,495**	
Đồng Xuân	**27,841**	**11,411**	**3,896**	**15,307**		**7,052**	**1,234**	**4,248**		**12,534**	
Phú Mỡ	27,841	11,411	3,896	15,307	55%	7,052	1,234	4,248		12,534	45%
Sông Hinh	**11,772**	**11,291**	**23**	**11,314**			**211**	**248**		**459**	
Ea Trol	1,811	1,638	15	1,653	91%		117	42		159	9%
Sơn Hinh	9,961	9,653	8	9,661	97%		95	206		300	3%
Sơn Hòa	**2,689**	**2,171**	**16**	**2,187**		**134**	**368**			**502**	
Phước Tân	2,689	2,171	16	2,187	81%	134	368			502	19%

Ninh Thuan Province Unit: ha

Districts/Communes in the project area	Protection Forest										
	Total Area of Protection Forest	Forested Area				Non-Forested Area					
		Natural Forest	Plantation Forest	Total	%	Ia	Ib	Ic	Others	Total	%
	(a)	(b)	(c)	(d = b + c)	(d / a)	(e)	(f)	(g)	(h)	(i = e+f+g+h)	(i / a)
Total	**58,298**	**25,307**	**1,911**	**27,218**		**3,595**	**10,218**	**2,930**	**14,336**	**31,080**	
Bác Ái	**17,725**	**6,225**	**296**	**6,521**		**1,736**	**2,934**	**1,277**	**5,258**	**11,204**	
Phước Thành	9,422	3,817	88	3,905	41%	366	694	988	3,470	5,517	59%
Phước Chiến	3,882	1,103	179	1,282	33%	601	1,065	138	796	2,600	67%
Phước Kháng	4,421	1,305	29	1,334	30%	769	1,175	151	992	3,087	70%
Ninh Sơn	**11,793**	**5,702**	**149**	**5,851**		**707**	**1,856**	**1,586**	**1,793**	**5,943**	
Lam Son	11,793	5,702	149	5,851	50%	707	1,856	1,586	1,793	5,943	50%
Ninh Phước	**28,779**	**13,380**	**1,466**	**14,846**		**1,153**	**5,429**	**66**	**7,285**	**13,933**	
Phước Hà	16,407	12,489	166	12,655	77%	97	1,468	66	2,121	3,752	23%
Phước Nam	1,833		121	121	7%	653	566		492	1,712	93%
Phước Dinh	10,539	891	1,179	2,070	20%	402	3,395		4,672	8,469	80%

Binh Thuan Province Unit: ha

Districts/Communes in the project area	Protection Forest										
	Total Area of Protection Forest	Forested Area				Non-Forested Area					
		Natural Forest	Plantation Forest	Total	%	Ia	Ib	Ic	Others	Total	%
	(a)	(b)	(c)	(d = b + c)	(d / a)	(e)	(f)	(g)	(h)	(i = e+f+g+h)	(i / a)
Total	**77,165**	**61,979**	**628**	**62,607**		**1,485**	**3,499**	**2,051**	**7,523**	**14,558**	
Tuy Phong	**20,321**	**15,694**	**240**	**15,934**		**509**	**185**	**596**	**3,097**	**4,387**	
Phan Dũng	17,640	14,222		14,222	81%	494	183	596	2,145	3,418	19%
Chí Công	475		240	240	51%	15	2		218	235	49%
Phong Phú	2,206	1,472		1,472	67%				734	734	33%
Bắc Bình	**31,701**	**27,282**	**133**	**27,415**		**381**	**294**	**590**	**3,021**	**4,286**	
Hòa Thắng	9,195	6,519	133	6,652	72%	3	134	4	2,402	2,543	28%
Phan Lâm	22,506	20,763		20,763	92%	378	160	586	619	1,743	8%
Hàm Thuận Bắc	**25,143**	**19,003**	**255**	**19,258**		**595**	**3,020**	**865**	**1,405**	**5,885**	
Thuận Minh	5,784	5,473		5,473	95%	127	68	65	51	311	5%
Đồng Tiến	9,128	6,547		6,547	72%	119	1,540	440	482	2,581	28%
Đa Mi	8,691	6,983		6,983	80%	251	835	360	262	1,708	20%
Hồng Sơn	1,540		255	255	17%	98	577		610	1,285	83%
G.Total	**591,749**	**330,570**	**75,295**	**405,866**	**69%**	**39,700**	**53,971**	**46,133**	**46,079**	**185,883**	**31%**

Table 1-3 Demographic Profile and Poverty Situation in the Target Communes

	Project Area		Population			Total No. of HH	No. of HH below poverty line	% HH below poverty line
	No of Target Districts	No of Target Communes	Female	Male	Total			
Thanh Hoa *	6	12	27,646	28,524	56,170	14,340	2,408	18%
Nghe An *	6	39	123,570	121,001	244,571	55,821	9,181	18%
Ha Tinh *	5	18	23,363	22,897	46,260	11,701	1,643	14%
Quang Binh *	3	15	35,652	35,765	71,417	16,334	3,681	23%
Quang Tri **	7	17	28,228	27,323	55,551	12,573	3,512	28%
T.T. Hue *	3	8	18,459	17,842	36,301	7,824	415	10%
Quang Nam	6	19	50,863	47,937	98,800	22,988	6,063	26%
Quang Ngai	4	9	13,097	13,065	26,162	6,356	3,775	59%
Bin Dhin	5	10	29,616	27,639	57,255	16,051	2,570	16%
Phu Yen	3	4	5,278	5,551	10,829	2,417	1,114	46%
Ninh Thuan *	4	7	23,907	23,936	47,843	9,244	2,198	24%
Binh Thuan	3	9	30,194	29,857	60,051	12,714	1,105	9%
Total	**55**	**167**	**409,873**	**401,337**	**811,210**	**188,363**	**37,665**	**21%**

Note: * Data were not available in some target communes..

** No.of taraget district included six dintricts and one township.

Source: JICA Survey Team

Table 1-4 Ethnic Compostion of the Target Communes in 12 Provinces

Unit: No. of household

Name of Ethnic Group	Thanh Hoa	Nghe An	Ha Tinh	Quang Binh	Quang Tri *	T.T. Hue	Quang Nam	Quang Ngai *	Binh Dinh	Phu Yen	Ninh Thuan	Binh Thuan *	Total by Ethnic Group
Kinh	4,421	24,806	10,525	14,390	-	21,127	17,591	-	16,992	618	3,825	-	114,295
Thai	5,722	1,896	-	-	-	-	-	-	-	-	-	-	7,618
Mong	2,364	182	-	-	-	-	-	-	-	-	-	-	2,546
Tho	264	-	-	-	-	-	-	-	-	-	-	-	264
Khac	136	-	-	-	-	-	-	-	-	-	-	-	136
Bru-Van kieu	-	-	-	656	-	7	-	-	-	-	-	-	663
Pa Hy	-	-	-	-	-	181	-	-	-	-	-	-	181
Mo Nong	-	-	-	-	-	-	180	-	-	-	-	-	180
Ca dong	-	-	-	-	-	-	221	-	-	-	-	-	221
Co tu	-	-	-	-	-	-	1,258	-	-	-	-	-	1,258
Hre	-	-	-	-	-	-	-	-	80	-	-	-	80
Bana	-	-	-	-	-	-	-	-	954	358	-	-	1,312
Ede	-	-	-	-	-	-	-	-	-	570	-	-	570
Cham	-	-	-	-	-	-	-	-	-	865	2,299	-	3,164
Tay	-	-	-	-	-	-	-	-	-	5	-	-	5
Rac Lay	-	-	-	-	-	-	-	-	-	1	1,316	-	1,317
K Ho	-	-	-	-	-	-	-	-	-	-	625	-	625
Thanh	-	294	-	-	-	-	-	-	-	-	-	-	294
Pang	-	119	-	-	-	-	-	-	-	-	-	-	119
Kho mu	-	10	-	-	-	-	-	-	-	-	-	-	10
Others	-	-	-	-	-	-	664	-	12	-	82	-	758
Total No of reported HH	**12,907**	**27,307**	**10,525**	**15,046**	**12,573**	**21,315**	**19,914**	**11,300**	**18,038**	**2,417**	**8,147**	**6,040**	**135,616**
% of Kinh	34%	91%	100%	96%		99%	88%		94%	26%	47%		84%
% of Other groups	66%	9%	0%	4%		1%	12%		6%	74%	53%		16%

Note; * Data are not available.

Source: JICA Survey Team

Table 3-1. Work Quantity of the Project Components in the CPMU and 12 Provinces

Component / Sub-component		CPMU	Thanh Hoa	Nghe An	Ha Tinh	Quang Binh	Quang Tri	T.T.Hue	Quang Nam	Quang Ngai	Binh Dinh	Phu Yen	Ninh Thuan	Binh Thuan	Total
1 Preparatory work															
1.1 Establishment of CPMU and PPMU	no.	1	1	1	1	1	1	1	1	1	1	1	1	1	12
1.2 Allocation and employment of the project staff	no.	12	12	12	12	12	12	12	12	12	12	12	12	12	144
1.3 Preparation and establishment of regulations and guidelines for implementatoin of the Project	set	1													
1.4 Procurement of equipments	set	1	1	1	1	1	1	1	1	1	1	1	1	1	12
1.5 Development of forms/formats for regular monitoring	no.	1													
2 Survey and Detailed Planning															
2.1 133,000 ha of forest inventory (watershed & coastal)	ha		**10,170**	**7,300**	**11,470**	**7,800**	**9,650**	**13,500**	**11,170**	**10,000**	**10,890**	**6,750**	**12,310**	**13,200**	**124,210**
2.2 Preparatoin of land use plan of 120,260 ha in 167 commune	no.		12	39	18	15	17	8	19	9	10	4	7	9	167
2.3 Baseline survey in 167 communes	no.		12	39	18	15	17	8	19	9	10	4	7	9	167
2.4 Preparatoin of detialed design	Set														
3 Capacity Development of the Government Staff, Information Dissemination, and Phase-in/-out Works															
Capacity Development of Government Staff															
3.1 Capacity development at the central level															
(1) Project orientation to CPMU, MBFP and Relevant Depts. of MARD	no.	1													
(2) Project orientation to PPMU and DARD (4 provinces/batch)	no.	3													
(3) Technical guidance to PAFEC (4 provinces/batch x 6 sessoins)	no.	18													
(4) Training of and guidance to CPMU on Project Management	no.	1													
(5) Training of and guidance to PPMU on Project Management (4 provinces/batch)	no.	3													
(6) Guidance to MARD and CPMU on Benefit Sharing Mechanism and FDP Fund	no.	1													
(7) Guidance to DARD and PPMUon Benefit Sharing Mechanism and FDP Fund (4	no.	3													
(8) Guidance to CPMU on Monitoring and Evaluation	no.	1													
(9) Monitoring of PAFEC's Performance (every six months for 4 provinces/batch)	no.	24													
3.2 Capacity development at the provincial level															
(1) Project orientation to Relevant Depts of PPC/DARD and DPCs	no.		1	1	1	1	1	1	1	1	1	1	1	1	12
(2) Project orientation to PFMBs, DECs, CPCs	no.		1	1	1	1	1	1	1	1	1	1	1	1	12
(3) Training of PPMU	no.		8	8	8	8	8	8	8	8	8	8	8	8	96
(4) Training of PFMBs	no.		14	14	14	14	14	14	14	14	14	14	14	14	168
(5) Training of DEC amd extension workers for facilitation of local people	no.		42	42	35	23	49	21	42	28	35	21	28	21	387
3.3 Study tour															
(1) Overseas tours (10 person/batch x 3 times)	no.	3													
3.4 Review meetings															
(1) Semi-annual Review meeting at central level	no.	19													
(2) Semi-annual Review meeting at provincial level	no.		19	19	19	19	19	19	19	19	19	19	19	19	228
Capacity Development of Local Communities															
3.5 Information dissemination at local level (2 times per commune)	no.		28	28	32	18	26	38	32	28	30	18	34	30	342
3.6 Information dissemination at local level (for SPL-3 sites- 2 times per commune							24	24	12	12		2			74
3.7 Guidance and Training on Forest Management															
(1) Consultation of long-term agreement and benefit sharing (one time per commune)	no.		14	10	16	9	13	19	16	14	15	9	17	15	167
(2) Facilitation of group organization for contract (one time per commune)	no.		14	10	16	9	13	19	16	14	15	9	17	15	167
(3) Preparation of a work plan under the sub-contract with PFMB (one time per commune)	no.		14	10	16	9	13	19	16	14	15	9	17	15	167
(4) Silvicultural techniques	no.														
(5) Development of rules on forest protection and management (2 times per commune)	no.		28	20	32	18	26	18	32	28	30	18	34	30	314
(6) Guidance on forest management planning (2 times per commune)	no.		28	20	32	18	26	18	32	28	30	18	34	30	314
(7) Trial preparation of a forest management plan (one time per commune)	no.		14	10	16	9	13	19	16	14	15	9	17	15	167
(8) Semi-annual meetings with local communities (per PFMB)	no.		84	84	56	56	42	42	84	70	70	42	56	112	798
3.8 Guidance and Training on Forest Management (**for SPL-3 sites**)															
(1) Consultation of long-term agreement and benefit sharing (one time per commune)	no.						12	12	6	6		1			37
(2) Facilitation of group organization for contract (one time per commune)	no.						12	12	6	6		1			37
(3) Preparation of a work plan under the sub-contract with PFMB (one time per commune)	no.						12	12	6	6		1			37
(4) Silvicultural techniques	no.														
(5) Development of rules on forest protection and management (2 times per commune)	no.						24	24	12	12		2			74
(6) Guidance on forest management planning (2 times per commune)	no.						24	24	12	12		2			74
(7) Trial preparation of a forest management plan (one time per commune)	no.						12	12	6	6		1			37
(8) Semi-annual meetings with local communities (per PFMB)	no.						18	18	9	18		9			72
Phase-in and Phase-out Works															
3.9 Guidance to PPMUs, PFMBs and PAFECs (4 provinces/batch/year x 3 years)	no.	9													
3.10 Guidance to PPMUs, PFMBs and PAFECs (for SPL-3 sites)	no.	2													
3.11 Guidance to local communities (one time per commune)	no.		14	10	16	9	13	19	16	14	15	9	17	15	167
3.1 Guidance to local communities (for SPL-3 sites)- one time per commune	no.						12	12	6	6		1			37

Table 3-1. Work Quantity of the Project Components in the CPMU and 12 Provinces

Component / Sub-component		CPMU	Thanh Hoa	Nghe An	Ha Tinh	Quang Binh	Quang Tri	T.T.Hue	Quang Nam	Quang Ngai	Binh Dinh	Phu Yen	Ninh Thuan	Binh Thuan	Total
4 Development of Watershed Protection Forest			**10,170**	**7,300**	**11,470**	**6,600**	**9,650**	**13,500**	**11,170**	**10,000**	**10,890**	**6,750**	**12,260**	**10,500**	**120,260**
4.1 Afforestation	ha		1,270	2,300	1,960	1,600	2,900	3,000	970	3,500	2,480	1,500	1,610		23,090
4.2 Improvement of existing plantations	ha		1,400	900	1,000										3,300
4.3 Forest Protection	ha		6,600	4,100	8,510	3,000	4,000	8,000	7,000	3,200	3,710	4,350	7,900	3,600	63,970
4.4 ANR + Enrichment	ha						300	500	2,100	600			1,200		4,700
4.5 ANR	ha		900			800	2,450	2,000	1,100	2,700	4,700	900	1,500	4,200	21,250
4.6 Silviculture Infrastructure															
(1) Forestry roads	km		19	50	34	20	40	23	44	40	40	30	20	27	387
(2) Fire beakline (FBL)	km		6		30	24	140	38	20	40	50	30	34		412
(3) Fire watch towers	no.		6	3	6	5	4	8	8	9	9		4		62
(4) Forest protection stations	no.		5	5	5	5	3	6	9	4	5	3	4	6	60
(5)Information boards	no.		7	6	6	5	9	19		4	11				67
(6)Nursery	no.			3	2	2			6	4	4		1		22
5 Improvement of SPL-3 forests							**3,610**	**4,100**	**1,550**	**3,790**		**2,620**			**15,670**
5.1 Forest Protection (3 years)	ha						1,610	700	120			2,020			4,450
5.2 Enrichment planting (one time)	ha						400					600			1,000
5.3 Vegetation clearing & thinning	ha						1,600	3,400	1,430	3,790					10,220
6 Development of Coastal Protection Forest						**1,200**							**50**	**2,700**	**3,950**
6.1 Afforestation in sandy area	ha					400							50	1,100	1,550
6.2 Improvement of existing plantations	ha					800									800
6.3 Enrichment Planting in sandy area	ha													1,600	1,600
6.4 Forest protection in sandy area	ha														
6.5 Silviculture Infrastructure															
> Forestry roads	km					5								11	16
> Fire beakline (FBL)	km					6								22	28
> Fire watch towers	no.					2									2
> Forest protection stations	no.					2								2	4
> Information boards	no.					3									3
> Nursery	no.					1									1
7 Livelihood Development Support															
7.1 Needs Assessment for Livelihood Development (New sites)															
(1) Scoping	no.		16	10	17	8	14	20	16	16	16	10	17	15	175
(2) Detailed survey	no.		16	10	17	8	14	20	16	16	16	10	17	15	175
7.2 Development of Demo Plots & Livelihood Development Models															
(1) Guidance on the techniques introduced and identification of demonstration plots.	no.		16	10	17	8	14	20	16	16	16	10	17	15	175
(2) Development of demonstration plots															
- Establishment of demonstration plots (Acacia/Sugar Palm) - 5ha per commune	no.		80	50	85	40	70	100	80	80	80	50	85	75	875
- Establishment of other livelihood models - one model per commune	no.		16	10	17	8	14	20	16	16	16	10	17	15	175
7.3 Technical Assistance in Livelihood Development															
(1) Technical training on livelihood development activities															
- Organization of technical training at the demonstration plots - 5 times per commune	no.		80	50	85	40	70	100	80	80	80	50	85	75	875
- Organization of technical training at the district level - 9 times per district	no.		54	54	45	27	63	45	54	36	45	27	36	27	513
- Quarterly coaching to local communities by field coordinators - for 22 quarters	no.		279	174	296	139	244	349	279	279	279	174	296	261	3,049
(2) Periodical meetings with communities															
- Quarterly meeting between field coordinatos and PAFEC	no.		176	132	88	88	66	88	132	132	110	66	88	176	1,342
- Bi-annual monitoring at field by PAFEC	no.		140	87	148	70	122	175	140	140	140	87	148	131	1,528
7.4 Inter-province Cross Field Visit	no.		6	6	6	6	6	6	6	6	6	6	6	6	72
7.5 Needs Assessment for Livelihood Development (SPL-3 sites)															
(1) Scoping	no.						11	11	4	4		7			37
(2) Detailed survey	no.						11	11	4	4		7			37
7.6 Development of Demo Plots & Livelihood Development Models (SPL-3 sites)															
(1) Guidance on the techniques introduced and identification of demonstration plots.	no.						11	11	4	4		7			37
(2) Development of demonstration plots															
- Establishment of demonstration plots (Acacia/Sugar Palm) - 5ha per commune	no.						33	33	12	12		21			111
- Establishment of other livelihood models - one model per commune	no.						6	6	2	2		4			20
7.7 Technical Assistance in Livelihood Development (SPL-3 sites)															
(1) Technical training on livelihood development activities															
- Organization of technical training at the demonstration plots - 5 times per commune	no.						22	22	8	8		14			74
- Organization of technical training at the district level - 9 times per district	no.						12	6	3	6		3			30
- Quarterly coaching to local communities by field coordinators - for 22 quarters	no.						198	198	72	72		126			666
(2) Periodical meetings with communities															
- Quarterly meeting between field coordinatos and PAFEC	no.						20	30	10	10		10			80
- Bi-annual monitoring at field by PAFEC	no.						99	99	36	36		63			333
7.8 Inter-province Cross Field Visit (SPL-3 sites)	no.						2	2	2	2		2			10
8 Small scale infrastructure															
8.1 Small-scale infrastructure development															
> Rural roads	km		17	18	9	20	15	12	22	10	23	18	9	14	186
> Irrigation	ha		85	45	90			13	15			150	160		558
> Water supply	no.							4					2	2	8
9 Forest Fire Control															
9.1 Provisoin of equipment for forest fire control to 12 province	set		1	1	1	1	1	1	1	1	1	1	1	1	12
9.2 Forest Fire cntrol training in 12 provinces	no.		6	6	5	3	7	3	6	4	5	3	4	3	55

Table 3.2 Proposed Assignment Schedule and Cost Estimates for Consulting Services

	Rate	Man-Months												Amount											
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Remuneration of International Experts (1,000 Yen/month)		-	11	26	24	24	19	14	11	8	10	-	147.0	-	29,900	71,000	66,400	66,400	52,500	38,800	30,700	22,400	27,400	-	348,800
1 Team Leader	2,900		4.0	8.0	8.0	8.0	6.0	5.0	5.0	4.0	4.0		52.0	-	11,600	23,200	23,200	23,200	17,400	14,500	14,500	11,600	11,600	-	150,800
2 Forest Development Planning and Monitoring	2,700		4.0	11.0	11.0	11.0	8.0	6.0	6.0	4.0	4.0		65.0	-	10,800	29,700	29,700	29,700	21,600	16,200	16,200	10,800	10,800	-	175,500
3 Community / Rural Development	2,700			3.0	5.0	5.0	5.0	3.0					21.0	-	-	8,100	13,500	13,500	13,500	8,100	-	-	-	-	
4 Satellite Data Analysis/ GIS	2,500		3.0	4.0							2.0		9.0	-	7,500	10,000	-	-	-	-	-	-	5,000	-	22,500
Direct Expenses (1,000 Yen)														-	6,150	13,700	12,600	12,600	10,350	7,900	6,350	5,000	6,100	-	80,750
Per Diem (per day)	15													-	4,950	11,700	10,800	10,800	8,550	6,300	4,950	3,600	4,500	-	66,150
International Travel (round trip)	200	0	3	7	6	6	6	5	4	4	5	0	46	-	600	1,400	1,200	1,200	1,200	1,000	800	800	1,000	-	9,200
International Communication (month)	50													-	600	600	600	600	600	600	600	600	600		5,400
Total (1,000 Yen)														-	36,050	84,700	79,000	79,000	62,850	46,700	37,050	27,400	33,500	-	486,250
Exchange Rate (1.0Yen= VND)														189	189	189	189	189	189	189	189	189	189	189	
VND Equivallent (mil. VND)														-	6,813	16,008	14,931	14,931	11,879	8,826	7,002	5,179	6,332	-	91,901
Remuneration of National Experts (mil. VND)		0.0	13.0	40.0	43.0	47.0	35.0	30.0	18.0	12.0	15.0	0.0	253.0	-	325	1,000	1,075	1,175	875	750	450	300	375	-	6,325
1 Forest Development and Management	25		4.0	11.0	11.0	11.0	11.0	8.0	6.0	6.0	6.0		74.0	-	100	275	275	275	275	200	150	150	150	-	1,850
2 Community Organizing	25		2.0	11.0	11.0	11.0	5.0	5.0	3.0				48.0	-	50	275	275	275	125	125	75	-	-	-	1,200
3 Livelihood Development	25			3.0	8.0	11.0	11.0	11.0	6.0	6.0	3.0		59.0	-	-	75	200	275	275	275	150	150	75	-	1,475
4 Institutional/ Capacity Development	25		4.0	6.0									10.0	-	100	150	-	-	-	-	-	-	-	-	250
5 NTFP Development	25			3.0	5.0	8.0	8.0	6.0	3.0				33.0	-	-	75	125	200	200	150	75	-	-	-	825
6 GIS	25		3.0	6.0	8.0	6.0					6.0		29.0	-	75	150	200	150	-	-	-	-	150	-	725
Remuneration of National Supporting Staff (mil. VND)		0.0	12.0	34.0	34.0	34.0	29.0	27.0	27.0	27.0	27.0	0.0	251.0	-	176	496	496	496	416	384	384	384	384	-	3,616
1 Administrative Officer	16		4.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		100.0	-	64	192	192	192	192	192	192	192	192	-	1,600
2 Interpreter	16		4.0	10.0	10.0	10.0	5.0	3.0	3.0	3.0	3.0		51.0	-	64	160	160	160	80	48	48	48	48	-	816
3 Secretary	12		4.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0		100.0	-	48	144	144	144	144	144	144	144	144	-	1,200
Out-of-Pocket Expenses (mil. VND)	Unit Rate													-	1,317	2,127	2,162	2,248	2,102	1,584	1,282	1,109	1,203	-	15,131
Out of Station Allowance (per day for local experts/staff only)	0.65	0.0	12.5	37.0	38.5	40.5	32.0	28.5	22.5	19.5	21.0	0.0		-	244	722	751	790	624	556	439	380	410	-	4,914
Rental Vehicle in Hanoi (for 60% of Inter'l experts' MM)	5.00	0.0	6.6	15.6	14.4	14.4	11.4	8.4	6.6	4.8	6.0	0.0		-	33	78	72	72	57	42	33	24	30	-	441
Rental Vehicle (4x4) in the field (per day)	2.00	0	180	500	505	525	415	355	280	235	260	0		-	360	1,000	1,010	1,050	830	710	560	470	520	-	6,510
Travel Expenses (Airfare)	2.50	0	25	70	71	74	58	50	39	33	36	0		-	63	175	177	184	145	124	98	82	91	-	1,139
Office Equipment															553				294						847
Local Communication (per month)	6.00													-	24	72	72	72	72	72	72	72	72	-	600
Office Stationary (per month)	5.00													-	20	60	60	60	60	60	60	60	60	-	500
Printing															20	20	20	20	20	20	20	20	20		180
TOTAL (1) -mil. VND														-	8,631	19,631	18,664	18,850	15,272	11,544	9,118	6,971	8,293	-	116,973
- FC														-	6,813	16,008	14,931	14,931	11,879	8,826	7,002	5,179	6,332	-	91,901
- LC														-	1,818	3,623	3,733	3,919	3,393	2,718	2,116	1,793	1,962	-	25,072
Tax (CIT: 5%)														-	432	982	933	942	764	577	456	349	415	-	5,849
- FC	5%													-	341	800	747	747	594	441	350	259	317	-	4,595
- LC	5%													-	91	181	187	196	170	136	106	90	98	-	1,254
TOTAL (2) - mil. VND														-	9,063	20,612	19,597	19,792	16,035	12,122	9,574	7,320	8,708	-	122,822
- FC														-	7,154	16,809	15,678	15,678	12,473	9,268	7,353	5,438	6,648	-	96,496
- LC														-	1,908	3,804	3,919	4,114	3,563	2,854	2,222	1,882	2,060	-	26,326
Price Escalation														-	418	1,882	2,844	4,012	4,311	4,148	3,943	3,745	5,020	-	30,323
- FC (% per annum.)	3.1%													-	222	1,058	1,504	2,036	2,057	1,863	1,752	1,504	2,102	-	14,098
- LC (% per annum.)	10.3%													-	197	824	1,340	1,975	2,254	2,285	2,191	2,241	2,917	-	16,225
TOTAL (3) -mil. VND														-	9,481	22,495	22,440	23,804	20,346	16,270	13,517	11,065	13,727	-	153,145
- FC														-	7,376	17,867	17,181	17,714	14,529	11,131	9,104	6,942	8,750	-	110,595
- LC														-	2,105	4,628	5,259	6,090	5,817	5,139	4,412	4,123	4,977	-	42,550
Physical Contingency (5%)														-	474	1,125	1,122	1,190	1,017	813	676	553	686	-	7,657
- FC	5%													-	369	893	859	886	726	557	455	347	438	-	5,530
- LC	5%													-	105	231	263	304	291	257	221	206	249	-	2,128
TOTAL (4) - mil. VND														-	9,955	23,619	23,562	24,994	21,364	17,083	14,193	11,618	14,414	-	160,802
- FC														-	7,745	18,760	18,040	18,600	15,256	11,687	9,560	7,289	9,188	-	116,124
- LC														-	2,210	4,859	5,522	6,394	6,108	5,396	4,633	4,330	5,226	-	44,678
VAT (10%)														-	995	2,362	2,356	2,499	2,136	1,708	1,419	1,162	1,441	-	16,080
- FC	10%													-	774	1,876	1,804	1,860	1,526	1,169	956	729	919	-	11,612
- LC	10%													-	221	486	552	639	611	540	463	433	523	-	4,468
GRAND TOTAL (mil. VND)														-	10,950	25,981	25,919	27,493	23,500	18,792	15,612	12,780	15,855	-	176,882
- FC														-	8,519	20,636	19,844	20,459	16,782	12,856	10,516	8,018	10,107	-	127,737
- LC														-	2,431	5,345	6,074	7,034	6,718	5,936	5,096	4,762	5,748	-	49,146

Table 4.1 Annual Cost Disbursement Schedule of the Project

Project components	Unit	Q'ty	Unit Cost (mil. VND)	Project Cost (mil. VND)				Annual Cost Estimation (mil. VND)																			
								1st (2010)		2nd (2011)		3rd (2012)		4th (2013)		5th (2014)		6th (2015)		7th (2016)		8th (2017)		9th (2018)		10th (2019)		11th (2020)	
				Total		LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC
1 Preparatory Work				15,432	1%		15,432				13,810								1,621										
1.1 Procurement of equipment		-	-	15,432			15,432				13,810								1,621										
2 Survey and Planning				20,750	1%	20,750						8,506		5,163		4,622		2,458											
2.1 Forest Inventory (including purchase of satellite images)				6,503		6,503						6,503																	
2.2 Participatory Land Use Planning		167	26.90	4,492		4,492						1,184		1,964		1,345													
2.3 Detailed Designing		1		8,196		8,196						820		1,640		3,277		2,458											
2.4 Socio-economic Baseline Survey				1,559		1,559								1,559															
3 Capacity Development and Phase-in/-out Works				53,160	2%	53,160				1,536		13,621		8,433		7,444		5,831		5,967		4,935		3,449		1,944			
3.1 Capacity building of staff/local gov.				32,477		32,477				1,536		8,742		4,850		5,569		3,337		3,337		2,492		1,664		949			
3.2 Capacity building of local communities				19,156		19,156						4,879		3,583		1,875		2,368		2,154		1,980		1,323		994			
3.3 Phase-in/-out works				1,527		1,527												126		476		463		463					
4 Development of Watershed Protection Forest				845,441	29%	845,441								129,746		234,902		244,467		139,490		67,117		29,415		305			
4.1 Afforestation	ha	23,090	21.03	485,483		485,483								79,381		136,649		138,186		72,173		41,365		17,728					
4.2 Improvement of existing plantations	ha	3,300	13.82	45,590		45,590								6,210		11,186		12,365		8,227		5,321		2,280					
4.3 Forest Protection (5years)	ha	63,970	1.08	69,088		69,088								6,909		13,818		13,818		13,818		13,818		6,909					
4.4 ANR + Enrichment	ha	4,700	7.23	33,960		33,960								5,402		9,560		10,365		5,088		2,531		711		305			
4.5 ANR	ha	21,250	4.26	90,450		90,450								13,714		27,429		27,429		16,009		4,082		1,787					
4.6 Silviculture Infrastructure				120,869		120,869								18,130		36,261		42,304		24,174									
> Forestry roads	km	387	224.35	86,825		86,825								13,024		26,047		30,389		17,365									
> Fire beakline (FBL)	km	412	24.49	10,090		10,090								1,513		3,027		3,531		2,018									
> Fire watch towers	no.	62	120.97	7,500		7,500								1,125		2,250		2,625		1,500									
> Forest protection stations	no.	60	208.95	12,537		12,537								1,881		3,761		4,388		2,507									
> Information boards	no.	67	16.19	1,085		1,085								163		326		380		217									
> Nursery	no.	22	128.77	2,833		2,833								425		850		992		567									
5 Improvement of SPL-3 forests				38,927	1%	38,927						678		14,653		16,142		3,447		2,839		1,169							
5.1 Forest Protection	ha	4,450	0.65	2,884		2,884								481		961		961		481									
5.2 Enrichment planting	ha	1,000	3.00	2,996		2,996						678		995		864		243		151		65							
5.3 Vegetation clearing & thinning	ha	10,220	3.23	33,047		33,047								13,177		14,316		2,243		2,208		1,104							
6 Development of Coastal Protection Forest				61,732	2%	61,732								11,385		18,839		18,278		7,835		3,716		1,576		104			
6.1 Afforestation in sandy area	ha	1,550	23.89	37,032		37,032								7,840		12,335		11,043		3,501		1,619		694					
6.2 Improvement of existing plantations	ha	800	13.49	10,794		10,794								1,202		2,359		2,851		2,249		1,493		640					
6.3 Forest Protection (5years)	ha																												
6.4 ANR/ Enrichment Planting in sandy area	ha	1,600	5.71	9,130		9,130								1,627		2,712		2,713		1,129		603		242		104			
6.5 Silviculture Infrastructure				4,775		4,775								716		1,433		1,671		955									
> Forestry roads	km	16	197.25	3,156		3,156								473		947		1,105		631									
> Fire beakline (FBL)	km	28	21.35	598		598								90		179		209		120									
> Fire watch towers	no.	2	108.80	218		218								33		65		76		44									
> Forest protection stations	no.	4	189.89	760		760								114		228		266		152									
> Information boards	no.	3	14.74	44		44								7		13		15		9									
> Nursery	no.	1	107.79	108		108								16		32		38		22									
7 Livelihood Development Assistance				75,127	3%	75,127						533		15,691		12,888		17,291		17,975		4,740		4,342		1,667			
7.1 Livelihood Development Support				75,127		75,127						533		15,691		12,888		17,291		17,975		4,740		4,342		1,667			
8 Infrastructure for Livelihood Development				231,158	8%	231,158										46,232		92,463		69,348		23,116							
8.1 Rural roads (Watershed)	km	170		183,912		183,912										36,782		73,565		55,174		18,391							
8.2 Rural roads (Coastal)	km	16		15,066		15,066										3,013		6,026		4,520		1,507							
8.3 Irrigation system	ha	558		28,973		28,973										5,795		11,589		8,692		2,897							
8.4 Water supply system	no.	8		3,207		3,207										641		1,283		962		321							
9 Forest Fire Control				5,274	0%	5,274								3,186		1,091		997											
9.1 Purchase of equipment & tools				3,186		3,186								3,186															
9.2 Training				2,088		2,088										1,091		997											
10 Monitoring and Evaluation				15,661	1%	15,661												1,621								14,039			
10.1 Mide-term evaluation	no.			1,621		1,621												1,621											
10.2 Terminal Evaluation	no.			14,039		14,039																				14,039			
11 Sub-total of Direct Costs (1~10)				1,362,662	46%	1,347,230	15,432			1,536	13,810	23,338		188,257		342,161		386,852	1,621	243,453		104,792		38,782		18,059			
12 Project Management				113,580	4%	113,580		2,840		11,358		11,358		11,358		11,358		11,358		11,358		11,358		11,358		11,358		8,519	
12.1 Staff salary and allowance	year	10		62,580	0	62,580		1,565		6,258		6,258		6,258		6,258		6,258		6,258		6,258		6,258		6,258		4,694	
12.2 Direct operation expenses	year	10		51,000	13	51,000		1,275		5,100		5,100		5,100		5,100		5,100		5,100		5,100		5,100		5,100		3,825	
13 Sub-total (11+12)				1,476,242	50%	1,452,292	15,432	2,840		12,894	13,810	34,696		199,615		353,519		398,210	1,621	254,811		116,150		50,140		29,417		8,519	
14 Price contingency (LC: 10.3%/year, FC: 3.1%/year)				933,584	32%	932,889	696			1,328	428	7,516		68,252		169,738		251,905	267	204,040		114,550		59,707		41,667		14,186	
15 Sub-total (13+14)				2,409,826	82%	2,370,994	16,127	2,840		14,222	14,238	42,212		267,867		523,256		650,115	1,889	458,851		230,699		109,848		71,084		22,705	
16 Physical Contingency (5% of items 15)			5%	120,491	4%	119,685	806	142		711	712	2,111		13,393		26,163		32,506	94	22,943		11,535		5,492		3,554		1,135	
17 Consulting Services				160,802	5%	44,678	116,124			2,210	7,745	4,859	18,760	5,522	18,040	6,394	18,600	6,108	15,256	5,396	11,687	4,633	9,560	4,330	7,289	5,226	9,188		
17.1 Consulting services w/o contingencies				122,822		26,326	96,496			1,908	7,154	3,804	16,809	3,919	15,678	4,114	15,678	3,563	12,473	2,854	9,268	2,222	7,353	1,882	5,438	2,060	6,648		
17.2 Physical and price contigencies				37,980		18,352	19,628			302	591	1,055	1,952	1,603	2,363	2,280	2,922	2,545	2,783	2,542	2,420	2,412	2,207	2,447	1,851	3,166	2,540		
18 Taxes and Duties				258,484	9%	235,034	23,450			399	12,325	3,467	1,876	27,078	1,804	53,816	1,860	66,926	1,813	46,571	1,169	22,318	956	9,354	729	5,105	919		
19 GRAND TOTAL (15+16+17+18)				2,949,603	100%	2,769,256	156,508	2,981		17,542	35,020	52,648	20,636	313,861	19,844	609,630	20,459	755,654	19,052	533,761	12,856	269,185	10,516	129,024	8,018	84,968	10,107	23,840	

Table 4.2 Estimated Project Cost by Province

724,572

Project components	Unit	Total of 12 Provinces + CPMU			CPMU			Thanh Hoa			Nghe An			Ha Tinh			Quang Binh			Quan	
		Q'ty	Unit Cost (mil. VND)	Amount (mil. VND)	Q'ty	Unit Cost (mil. VND)	Amount (mil. VND)	Q'ty	Unit Cost (mil. VND)	Amount (mil. VND)	Q'ty	Unit Cost (mil. VND)	Amount (mil. VND)	Q'ty	Unit Cost (mil. VND)	Amount (mil. VND)	Q'ty	Unit Cost (mil. VND)	Amount (mil. VND)	Q'ty	Unit Cost (mil. VND)
1 Preparatory Work				15,432 1%			1,204 0%			1,154 1%			1,154 1%			1,154 1%			1,154 1%		
1.1 Procurement of equipment				15,432			1,204			1,154			1,154			1,154			1,154		
2 Survey and Planning				20,750 1%			8,062 3%			893 0%			1,701 1%			1,126 1%			1,010 1%		
2.1 Forest Inventory (including purchase of satellite images)				6,503	133,000	0.05	6,503														
2.2 Participatory Land Use Planning		167	26.90	4,492				12	26.90	323	39	26.90	1,049	18	26.90	484	15	26.90	404	17	26.90
2.3 Detailed Designing (1 % of sum of 4, 5 and 6)				8,196						570			652			642			607		
2.4 Socio-economic Baseline Survey		1	1,559.20	1,559	1	1,559.20	1,559														
3 Capacity Development and Phase-in/-out Works				53,160 2%			5,494			3,993			3,774			3,909			3,321		
3.1 Capacity building of staff/local gov.				32,477			4,561			2,471			2,471			2,369			2,164		
3.2 Capacity building of local communities				19,156			415			1,452			1,253			1,460			1,113		
3.3 Phase-in/-out works				1,527			518			70			50			80			45		
4 Development of Watershed Protection Forest				845,441 29%						63,262 32%			78,117 35%			74,560 36%			47,299 24%		
4.1 Afforestation	ha	23,090	21.03	485,483				1,270	21.03	26,703	2,300	21.03	48,359	1,960	21.03	41,210	1,600	21.03	33,641	2,900	21.03
4.2 Improvement of existing plantations	ha	3,300	13.82	45,590				1,400	13.82	19,341	900	13.82	12,434	1,000	13.82	13,815					
4.3 Forest Protection (5years)	ha	63,970	1.08	69,088				6,600	1.08	7,128	4,100	1.08	4,428	8,510	1.08	9,191	3,000	1.08	3,240	4,000	1.08
4.4 ANR + Enrichment	ha	4,700	7.23	33,960																300	7.23
4.5 ANR	ha	21,250	4.26	90,450				900	4.30	3,874							800	4.30	3,443	2,450	4.30
4.6 Silviculture Infrastructure				120,869 (17%)			#DIV/0!			6,216 (11%)			12,896 (20%)			10,343 (16%)			6,974 (17%)		
> Forestry roads	km	387	224.35	86,825				19	220.34	4,186	50	220.34	11,017	34	220.34	7,492	20	220.34	4,407	40	220.34
> Fire beakline (FBL)	km	412	24.49	10,090				6	24.49	147				30	24.49	735	24	24.49	588	140	24.49
> Fire watch towers	no.	62	120.97	7,500				6	121.22	727	3	121.22	364	6	121.22	727	5	121.22	606	4	121.22
> Forest protection stations	no.	60	208.95	12,537				5	208.40	1,042	5	208.40	1,042	5	208.40	1,042	5	208.40	1,042	3	208.40
> Information boards	no.	67	16.19	1,085				7	16.19	113	6	16.19	97	6	16.19	97	5	16.19	81	9	16.19
> Nursery	no.	22	128.77	2,833							3	125.35	376	2	125.35	251	2	125.35	251		
5 Improvement of SPL-3 forests				38,927 1%																	
5.1 Forest Protection	ha	4,450	0.65	2,884																1,610	0.65
5.2 Enrichment planting	ha	1,000	3.00	2,996																400	3.00
5.3 Vegetation clearing & thinning	ha	10,220	3.23	33,047																1,600	3.23
6 Development of Coastal Protection Forest				61,732 2%															22,107 11%		
6.1 Afforestation in sandy area	ha	1,550	23.89	37,032													400	23.89	9,557		
6.2 Improvement of existing plantations	ha	800	13.49	10,794													800	13.49	10,794		
6.3 Forest Protection (5years)	ha																				
6.4 ANR/ Enrichment Planting in sandy area	ha	1,600	5.71	9,130																	
6.5 Silviculture Infrastructure				4,775														532.18	1,756		
> Forestry roads	km	16	197.25	3,156													5	197.11	986		
> Fire beakline (FBL)	km	28	21.35	598													6	21.35	128		
> Fire watch towers	no.	2	108.80	218													2	108.80	218		
> Forest protection stations	no.	4	189.89	760													2	190.18	380		
> Information boards	no.	3	14.74	44													3	14.74	44		
> Nursery	no.	1	107.79	108													1	107.79	108		
7 Livelihood Development Assistance				75,127 3%						5,680 3%			4,319 2%			6,228 3%			3,580 2%		
7.1 Livelihood Development Support				75,127						5,680			4,319			6,228			3,580		
8 Infrastructure for Livelihood Development				231,158 8%						21,414 11%			20,831 9%			13,835 7%			19,600 10%		
8.1 Rural roads (Watershed)	km	170	1,084.39	183,912				16.6	1,030.60	17,108	18.0	1,030.60	18,551	9.0	1,030.60	9,275	10.0	1,030.60	10,306	15.0	1,030.60
8.2 Rural roads (Coastal)	km	16	941.64	15,066													10	929.42	9,294		
8.3 Irrigation system	ha	558	51.92	28,973				85.00	50.66	4,306	45.00	50.66	2,280	90.00	50.66	4,560					
8.4 Water supply system	no.	8	400.87	3,207																	
9 Forest Fire Control				5,274 0.2%						569 0%			548 0%			407 0%			340 0%		
9.1 Purchase of equipment & tools				3,186						378			324			216			216		
9.2 Training				2,088						191			224			191			124		
10 Monitoring and Evaluation				15,661 1%			15,661 6%														
10.1 Mide-term evaluation		1	1,621.08	1,621	1	1,621.08	1,621														
10.2 Terminal Evaluation		1	14,039.45	14,039	1	14,039.45	14,039														
11 Sub-total of Direct Costs (1~10)				1,362,662			30,421			96,964			110,443			101,219			98,411		
12 Project Management				113,580 4%			20,620 7%			7,650 4%			7,650 3%			7,650 4%			7,650 4%		
12.1 Staff salary and allowance	year			62,580	10	1,066.00	10,660	10	425.00	4,250	11	386.36	4,250	10	425.00	4,250	10	425.00	4,250	10	483.00
12.1 Direct operation expenses	year			51,000	10	996.00	9,960	10	340.00	3,400	11	309.09	3,400	10	340.00	3,400	10	340.00	3,400	10	352.00
13 Sub-total (11+12)				1,476,242			51,041 18%			104,614 53%			118,093 53%			108,869 53%			106,061 53%		
14 Price contingency (LC: 10.3%/year, FC: 3.1%/year)				933,584 32%			41,098 15%			67,613 34%			74,851 34%			69,621 34%			67,158 34%		
15 Sub-total (13+14)				2,409,826 82%			92,139 33%			172,227 87%			192,944 87%			178,489 87%			173,218 87%		
16 Physical Contingency (5%)				120,491 4%			4,607 2%			8,611 4%			9,647 4%			8,924 4%			8,661 4%		
17 Consulting Services				160,802 5%			160,802 57%														
17.1 Consulting services w/o contingencies				122,822			122,822														
17.2 Physical and price contigencies				37,980			37,980														
18 Taxes and Duties				258,484 9%			22,882 8%			17,450 9%			19,625 9%			18,107 9%			17,554 9%		
19 GRAND TOTAL (15+16+17+18)				2,949,603 100%			280,430 100%			198,288 100%			222,216 100%			205,521 100%			199,433 100%		

Table 4.2 Estimated Project Cost by Province

Project components	Unit	g Tri		T.T. Hue			Quang Nam			Quang Ngai			Binh Dinh			Phu Yen			Ninh Thuan			Binh Thuan		
		Amount (mil. VND)		Q'ty	Unit Cost (mil. VND)	Amount (mil. VND)	Q'ty	Unit Cost (mil. VND)	Amount (mil. VND)	Q'ty	Unit Cost (mil. VND)	Amount (mil. VND)	Q'ty	Unit Cost (mil. VND)	Amount (mil. VND)	Q'ty	Unit Cost (mil. VND)	Amount (mil. VND)	Q'ty	Unit Cost (mil. VND)	Amount (mil. VND)	Q'ty	Unit Cost (mil. VND)	Amount (mil. VND)	
1 Preparatory Work		1,265	0%			1,308	0%		1,165	1%		1,154	0%		1,154	0%		1,214	1%		1,199	1%		1,154	1%
1.1 Procurement of equipment		1,265				1,308			1,165			1,154			1,154			1,214			1,199			1,154	
2 Survey and Planning		1,309	1%			1,169	0%		1,035	0%		1,294	0%		1,023	0%		537	0%		775	0%		815	0%
2.1 Forest Inventory (including purchase of satellite images)																									
2.2 Participatory Land Use Planning		457		8	26.90	215	19	26.90	511	9	26.90	242	10	26.90	269	4	26.90	108	7	26.90	188	9	26.90	242	
2.3 Detailed Designing (1 % of sum of 4, 5 and 6)		852				954			524			1,052			754			429			586			573	
2.4 Socio-economic Baseline Survey																									
3 Capacity Development and Phase-in/-out Works		4,564				4,511	2%		4,459	2%		4,129	1%		3,954	2%		3,360	2%		3,861	2%		3,831	2%
3.1 Capacity building of staff/local gov.		2,574				2,164			2,471			2,267			2,369			2,164			2,267			2,164	
3.2 Capacity building of local communities		1,871				2,198			1,878			1,763			1,506			1,146			1,510			1,592	
3.3 Phase-in/-out works		119				149			109			100			80			50			85			75	
4 Development of Watershed Protection Forest		91,506	36%			92,465	35%		62,137	29%		105,719	38%		88,650	35%		48,387	26%		64,175	33%		29,168	15%
4.1 Afforestation	ha	60,974		3,000	21.03	63,077	970	21.03	20,395	3,500	21.03	73,590	2,480	21.03	52,144	1,500	21.03	31,539	1,610	21.03	33,851				
4.2 Improvement of existing plantations	ha																								
4.3 Forest Protection (5years)	ha	4,320		8,000	1.08	8,640	7,000	1.08	7,560	3,200	1.08	3,456	3,710	1.08	4,007	4,350	1.08	4,698	7,900	1.08	8,532	3,600	1.08	3,888	
4.4 ANR + Enrichment	ha	2,168		500	7.23	3,613	2,100	7.23	15,174	600	7.23	4,335							1,200	7.23	8,671				
4.5 ANR	ha	10,545		2,000	4.30	8,609	1,100	4.30	4,735	2,700	4.30	11,622	4,700	4.09	19,215	900	4.30	3,874	1,500	4.30	6,456	4,200	4.30	18,078	
4.6 Silviculture Infrastructure		13,498	*(17%)*			8,526	*(10%)*		14,273	*(30%)*		12,716	*(14%)*		13,284	*(18%)*		8,276	*(21%)*		6,664	*(12%)*		7,202	*(33%)*
> Forestry roads	km	8,814		23	220.34	5,068	44	230.36	10,136	40	230.36	9,214	40	230.36	9,214	30	230.36	6,911	20	220.55	4,411	27	220.55	5,955	
> Fire beakline (FBL)	km	3,429		38	24.49	931	20	24.49	490	40	24.49	980	50	24.49	1,225	30	24.49	735	34	24.49	833				
> Fire watch towers	no.	485		8	121.22	970	8	121.53	972	9	121.53	1,094	9	121.53	1,094				4	115.35	461				
> Forest protection stations	no.	625		6	208.40	1,250	9	210.24	1,892	4	210.24	841	5	210.24	1,051	3	210.24	631	4	207.82	831	6	207.82	1,247	
> Information boards	no.	146		19	16.19	308				4	16.21	65	11	16.21	178										
> Nursery	no.						6	130.55	783	4	130.55	522	4	130.55	522				1	127.81	128				
5 Improvement of SPL-3 forests		7,415	3%			11,448	4%		4,702	2%		12,255	4%					3,106	2%						
5.1 Forest Protection	ha	1,043		700	0.65	454	120	0.65	78							2,020	0.65	1,309							
5.2 Enrichment planting	ha	1,198														600	3.00	1,797							
5.3 Vegetation clearing & thinning	ha	5,174		3,400	3.23	10,994	1,430	3.23	4,624	3,790	3.23	12,255													
6 Development of Coastal Protection Forest																					1,195	1%		38,431	20%
6.1 Afforestation in sandy area	ha																		50	23.89	1,195	1,100	23.89	26,281	
6.2 Improvement of existing plantations	ha																								
6.3 Forest Protection (5years)	ha																								
6.4 ANR/ Enrichment Planting in sandy area	ha																					1,600	5.71	9,130	
6.5 Silviculture Infrastructure																								3,019	
> Forestry roads	km																					11.0	197.32	2,171	
> Fire beakline (FBL)	km																					22.0	21.35	470	
> Fire watch towers	no.																								
> Forest protection stations	no.																					2.0	189.60	379	
> Information boards	no.																								
> Nursery	no.																								
7 Livelihood Development Assistance		8,416	3%			9,829	4%		7,865	4%		6,960	2%		6,228	2%		3,972	2%		6,431	3%		5,618	3%
7.1 Livelihood Development Support		8,416				9,829			7,865			6,960			6,228			3,972			6,431			5,618	
8 Infrastructure for Livelihood Development		15,459	6%			14,623	5%		26,086	12%		11,489	4%		25,851	10%		28,782	16%		18,635	9%		14,554	8%
8.1 Rural roads (Watershed)	km	15,459		12.0	1,030.60	12,367	22.0	1,148.92	25,276	10.0	1,148.92	11,489	22.5	1,148.92	25,851	18.0	1,148.92	20,681	9.0	1,063.57	9,572	7.5	1,063.57	7,977	
8.2 Rural roads (Coastal)	km																					6	962.00	5,772	
8.3 Irrigation system	ha			13.00	50.66	659	15.00	54.01	810							150.00	54.01	8,101	160.00	51.61	8,258				
8.4 Water supply system	no.			4	399.28	1,597													2	402.46	805	2	402.46	805	
9 Forest Fire Control		386	0%			407	0%		548	0%		427	0%		461	0%		286	0%		340	0%		556	0%
9.1 Purchase of equipment & tools		162				216			324			270			270			162			216			432	
9.2 Training		224				191			224			157			191			124			124			124	
10 Monitoring and Evaluation																									
10.1 Mide-term evaluation																									
10.2 Terminal Evaluation																									
11 Sub-total of Direct Costs (1~10)		130,320				135,760			107,998			143,427			127,320			89,644			96,611			94,126	
12 Project Management		8,350	3%			8,350	3%		7,610	4%		7,610	3%		7,610	3%		7,610	4%		7,610	4%		7,610	4%
12.1 Staff salary and allowance	year	4,830		10	483.00	4,830	10	421.00	4,210	10	421.00	4,210	10	421.00	4,210	10	421.00	4,210	10	421.00	4,210	10	421.00	4,210	
12.1 Direct operation expenses	year	3,520		10	352.00	3,520	10	340.00	3,400	10	340.00	3,400	10	340.00	3,400	10	340.00	3,400	10	340.00	3,400	10	340.00	3,400	
13 Sub-total (11+12)		138,670	54%			144,110	54%		115,608	53%		151,037	54%		134,930	53%		97,254	53%		104,221	53%		101,736	54%
14 Price contingency (LC: 10.3%/year, FC: 3.1%/year)		85,051	33%			88,501	33%		72,607	33%		91,840	33%		84,599	33%		61,902	34%		66,494	34%		62,249	33%
15 Sub-total (13+14)		223,721	87%			232,611	87%		188,215	87%		242,877	87%		219,529	87%		159,156	87%		170,715	87%		163,985	87%
16 Physical Contingency (5%)		11,186	4%			11,631	4%		9,411	4%		12,144	4%		10,976	4%		7,958	4%		8,536	4%		8,199	4%
17 Consulting Services																									
17.1 Consulting services w/o contingencies																									
17.2 Physical and price contigencies																									
18 Taxes and Duties		22,753	9%			23,689	9%		19,138	9%		24,875	9%		22,424	9%		16,088	9%		17,309	9%		16,592	9%
19 GRAND TOTAL (15+16+17+18)		257,660	100%			267,930	100%		216,764	100%		279,896	100%		252,929	100%		183,202	100%		196,559	100%		188,776	100%

Table 4.3 Financial Plan of the Project

Project components	Unit	Q'ty	Unit Cost (mil. VND)	Project Cost (mil. VND) Total		JICA	GOV	Annual Cost Estimation (mil. VND) 1st (2010) JICA	GOV	2nd (2011) JICA	GOV	3rd (2012) JICA	GOV	4th (2013) JICA	GOV	5th (2014) JICA	GOV	6th (2015) JICA	GOV	7th (2016) JICA	GOV	8th (2017) JICA	GOV	9th (2018) JICA	GOV	10th (2019) JICA	GOV	11th (2020) JICA	GOV
1 Preparatory Work				15,432	1%	15,432				13,810								1,621											
1.1 Procurement of equipment		-	-	15,432		15,432				13,810								1,621											
2 Survey and Planning				20,750	1%	20,750						8,506		5,163		4,622		2,458											
2.1 Forest Inventory (including purchase of satellite images)				6,503		6,503						6,503																	
2.2 Participatory Land Use Planning		167	26.90	4,492		4,492						1,184		1,964		1,345													
2.3 Detailed Designing		1		8,196		8,196						820		1,640		3,277		2,458											
2.4 Socio-economic Baseline Survey				1,559		1,559								1,559															
3 Capacity Development and Phase-in/-out Works				53,160	2%	53,160				1,536		13,621		8,433		7,444		5,831		5,967		4,935		3,449		1,944			
3.1 Capacity building of staff/local gov.				32,477		32,477				1,536		8,742		4,850		5,569		3,337		3,337		2,492		1,664		949			
3.2 Capacity building of local communities				19,156		19,156						4,879		3,583		1,875		2,368		2,154		1,980		1,323		994			
3.3 Phase-in/-out works				1,527		1,527												126		476		463		463					
4 Development of Watershed Protection Forest				845,441	29%	845,441								129,746		234,902		244,467		139,490		67,117		29,415		305			
4.1 Afforestation	ha	23,090	21.03	485,483		485,483								79,381		136,649		138,186		72,173		41,365		17,728					
4.2 Improvement of existing plantations	ha	3,300	13.82	45,590		45,590								6,210		11,186		12,365		8,227		5,321		2,280					
4.3 Forest Protection (5years)	ha	63,970	1.08	69,088		69,088								6,909		13,818		13,818		13,818		13,818		6,909					
4.4 ANR + Enrichment	ha	4,700	7.23	33,960		33,960								5,402		9,560		10,365		5,088		2,531		711		305			
4.5 ANR	ha	21,250	4.26	90,450		90,450								13,714		27,429		27,429		16,009		4,082		1,787					
4.6 Silviculture Infrastructure				120,869		120,869								18,130		36,261		42,304		24,174									
> Forestry roads	km	387	224.35	86,825		86,825								13,024		26,047		30,389		17,365									
> Fire beakline (FBL)	km	412	24.49	10,090		10,090								1,513		3,027		3,531		2,018									
> Fire watch towers	no.	62	120.97	7,500		7,500								1,125		2,250		2,625		1,500									
> Forest protection stations	no.	60	208.95	12,537		12,537								1,881		3,761		4,388		2,507									
> Information boards	no.	67	16.19	1,085		1,085								163		326		380		217									
> Nursery	no.	22	128.77	2,833		2,833								425		850		992		567									
5 Improvement of SPL-3 forests				38,927	1%	38,927						678		14,653		16,142		3,447		2,839		1,169							
5.1 Forest Protection	ha	4,450	0.65	2,884		2,884								481		961		961		481									
5.2 Enrichment planting	ha	1,000	3.00	2,996		2,996						678		995		864		243		151		65							
5.3 Vegetation clearing & thinning	ha	10,220	3.23	33,047		33,047								13,177		14,316		2,243		2,208		1,104							
6 Development of Coastal Protection Forest				61,732	2%	61,732								11,385		18,839		18,278		7,835		3,716		1,576		104			
6.1 Afforestation in sandy area	ha	1,550	23.89	37,032		37,032								7,840		12,335		11,043		3,501		1,619		694					
6.2 Improvement of existing plantations	ha	800	13.49	10,794		10,794								1,202		2,359		2,851		2,249		1,493		640					
6.3 Forest Protection (5years)	ha																												
6.4 ANR/ Enrichment Planting in sandy area	ha	1,600	5.71	9,130		9,130								1,627		2,712		2,713		1,129		603		242		104			
6.5 Silviculture Infrastructure				4,775		4,775								716		1,433		1,671		955									
> Forestry roads	km	16	197.25	3,156		3,156								473		947		1,105		631									
> Fire beakline (FBL)	km	28	21.35	598		598								90		179		209		120									
> Fire watch towers	no.	2	108.80	218		218								33		65		76		44									
> Forest protection stations	no.	4	189.89	760		760								114		228		266		152									
> Information boards	no.	3	14.74	44		44								7		13		15		9									
> Nursery	no.	1	107.79	108		108								16		32		38		22									
7 Livelihood Development Assistance				75,127		75,127						533		15,691		12,888		17,291		17,975		4,740		4,342		1,667			
7.1 Livelihood Development Support		-	-	75,127		75,127						533		15,691		12,888		17,291		17,975		4,740		4,342		1,667			
8 Infrastructure for Livelihood Development				231,158	8%	231,158										46,232		92,463		69,348		23,116							
8.1 Rural roads (Watershed)	km	170		183,912		183,912										36,782		73,565		55,174		18,391							
8.2 Rural roads (Coastal)	km	16		15,066		15,066										3,013		6,026		4,520		1,507							
8.3 Irrigation system	ha	558		28,973		28,973										5,795		11,589		8,692		2,897							
8.4 Water supply system	no.	8		3,207		3,207										641		1,283		962		321							
9 Forest Fire Control				5,274	0%	5,274								3,186		1,091		997											
9.1 Purchase of equipment & tools				3,186		3,186								3,186															
9.2 Training				2,088		2,088										1,091		997											
10 Monitoring and Evaluation				15,661	1%	15,661												1,621								14,039			
10.1 Mide-term evaluation	no.			1,621		1,621												1,621											
10.2 Terminal Evaluation	no.			14,039		14,039																				14,039			
11 Sub-total of Direct Costs (1~10)				1,362,662	46%	1,362,662				15,346		23,338		188,257		342,161		388,474		243,453		104,792		38,782		18,059			
12 Project Management				113,580	4%		113,580		2,840		11,358		11,358		11,358		11,358		11,358		11,358		11,358		11,358		11,358		8,519
12.1 Staff salary and allowance	year	10		62,580			62,580		1,565		6,258		6,258		6,258		6,258		6,258		6,258		6,258		6,258		6,258		4,694
12.2 Direct operation expenses	year	10		51,000			51,000		1,275		5,100		5,100		5,100		5,100		5,100		5,100		5,100		5,100		5,100		3,825
13 Sub-total (11+12)				1,476,242	50%	1,362,662	105,062		2,840	15,346	11,358	23,338	11,358	188,257	11,358	342,161	11,358	388,474	11,358	243,453	11,358	104,792	11,358	38,782	11,358	18,059	11,358		8,519
14 Price contingency (LC: 10.3%/year, FC: 3.1%/year)				933,584	32%	849,336	84,248			586	1,170	5,055	2,460	64,369	3,884	164,284	5,453	244,987	7,185	194,945	9,095	103,348	11,202	46,182	13,525	25,579	16,088		14,186
15 Sub-total (13+14)				2,409,826	82%	2,211,998	189,310		2,840	15,933	12,528	28,394	13,818	252,626	15,242	506,445	16,811	633,461	18,543	438,398	20,453	208,140	22,560	84,965	24,883	43,638	27,446		22,705
16 Physical Contingency (5% of items 15)			5%	120,491	4%	110,600	9,891		142	797	626	1,420	691	12,631	762	25,322	841	31,673	927	21,920	1,023	10,407	1,128	4,248	1,244	2,182	1,372		1,135
17 Consulting Services				160,802	5%	160,802				9,955		23,619		23,562		24,994		21,364		17,083		14,193		11,618		14,414			
17.1 Consulting services w/o contingencies				122,822		122,822				9,063		20,612		19,597		19,792		16,035		12,122		9,574		7,320		8,708			
17.2 Physical and price contigencies				37,980		37,980				892		3,007		3,966		5,202		5,328		4,962		4,619		4,299		5,706			
18 Taxes and Duties				258,484	9%		258,484				12,724		5,343		28,882		55,676		68,738		47,740		23,274		10,083		6,023		
19 GRAND TOTAL (15+16+17+18)				2,949,603	100%	2,483,400	457,685		2,981	26,684	25,878	53,432	19,852	288,819	44,886	556,761	73,328	686,497	88,208	477,402	69,216	232,739	46,961	100,831	36,210	60,233	34,842		23,840

Table 5-1 Breakdown of Economic Costs of the Project Components

Project Components		Total	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1. Preparatory Survey		**14,968**	**0**	**13,396**	**0**	**0**	**0**	**1,572**	**0**	**0**	**0**	**0**	**0**
1.1 Procurement of equipment			0	13,396	0	0	0	1,572	0	0	0	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	0	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	13,396	0	0	0	1,572	0	0	0	0	0
2. Survey and Planning		**19,880**	**0**	**0**	**8,250**	**4,763**	**4,483**	**2,384**	**0**	**0**	**0**	**0**	**0**
2.1 Forest Inventory			0	0	6,307	0	0	0	0	0	0	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	0	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	6,307	0	0	0	0	0	0	0	0
2.2 Participatory Land Use Planning			0	0	1,148	1,905	1,304	0	0	0	0	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	0	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	1,148	1,905	1,304	0	0	0	0	0	0
2.3 Detailed Designing			0	0	795	1,591	3,178	2,384	0	0	0	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	0	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	795	1,591	3,178	2,384	0	0	0	0	0
2.4 Socio-economi Baseline Survey			0	0	0	1,268	0	0	0	0	0	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	396	0	0	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	872	0	0	0	0	0	0	0
3. Capacity Development and Information Dissemination		**51,556**	**0**	**1,490**	**13,210**	**8,179**	**7,219**	**5,655**	**5,787**	**4,786**	**3,345**	**1,885**	**0**
3.1 Capacity Buidling			0	1,490	8,478	4,704	5,401	3,236	3,236	2,417	1,614	921	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	0	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	1,490	8,478	4,704	5,401	3,236	3,236	2,417	1,614	921	0
3.2 Information Dissemination			0	0	4,732	3,475	1,818	2,296	2,089	1,920	1,283	964	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	0	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	4,732	3,475	1,818	2,296	2,089	1,920	1,283	964	0
3.3 Information Dissemination			0	0	0	0	0	122	462	449	449	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	0	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	0	0	122	462	449	449	0	0
4. Development of Watershed Protection Forest		**565,464**	**0**	**0**	**0**	**86,910**	**157,674**	**164,926**	**93,787**	**43,118**	**18,849**	**200**	**0**
4.1 Afforestation of watershed protection forest			0	0	0	52,032	89,570	90,577	47,308	27,114	11,620	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	40,484	69,691	70,475	36,808	21,096	9,041	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	11,548	19,879	20,102	10,499	6,018	2,579	0	0
4.2 Improvement of existing plantation			0	0	0	4,208	7,580	8,379	5,575	3,606	1,545	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	2,944	5,302	5,861	3,900	2,522	1,081	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	1,265	2,278	2,518	1,676	1,084	464	0	0
4.3 Forest protection			0	0	0	4,145	8,291	8,291	8,291	8,291	4,145	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	4,145	8,291	8,291	8,291	8,291	4,145	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	0	0	0	0	0	0	0	0
4.4 ANR with enrichment			0	0	0	3,541	6,266	6,794	3,335	1,659	466	200	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	2,755	4,875	5,286	2,595	1,291	362	155	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	786	1,391	1,508	740	368	103	44	0
4.5 ANR			0	0	0	8,229	16,457	16,457	9,606	2,449	1,072	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	8,229	16,457	16,457	9,606	2,449	1,072	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	0	0	0	0	0	0	0	0
4.6 Silvicultural Infrastructure			0	0	0	14,755	29,510	34,428	19,673	0	0	0	0
(1) Silviculture Infra (Foresty Road)													
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	3,985	7,970	9,299	5,314	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	6,189	12,378	14,441	8,252	0	0	0	0
(2) Silviculture Infra (Fire Breakline)													
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	0	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	1,468	2,936	3,425	1,957	0	0	0	0
(3) Silviculture Infra (Watch tower)													
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	182	365	425	243	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	796	1,593	1,858	1,062	0	0	0	0
(4) Silviculture Infra (Protection station)													
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	327	654	763	436	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	1,295	2,590	3,021	1,727	0	0	0	0
(5) Silviculture Infra (Information board)													
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	38	76	89	51	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	96	193	225	128	0	0	0	0
(6) Silviculture Infra (Nursery)													
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	56	112	131	75	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	321	643	750	429	0	0	0	0
5. Improvement of SPL III Forests		**23,933**	**0**	**0**	**482**	**9,000**	**9,887**	**2,111**	**1,737**	**716**	**0**	**0**	**0**
5.1 Forest Protection			0	0	0	288	577	577	288	0	0	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	288	577	577	288	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	0	0	0	0	0	0	0	0

Table 5-1 Breakdown of Economic Costs of the Project Components

Project Components		Total	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
5.2 Enrichment planting			0	0	482	707	615	173	107	46	0	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	285	418	363	102	64	27	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	197	289	252	71	44	19	0	0	0
5.3 Vegetation clearing and thninning			0	0	0	8,004	8,696	1,362	1,341	670	0	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	7,748	8,418	1,319	1,298	649	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	256	278	43	43	21	0	0	0
6. Development of Coastal Protection Forest		**40,715**	**0**	**0**	**0**	**7,982**	**13,011**	**12,337**	**4,612**	**1,864**	**778**	**132**	**0**
6.1 Afforestation			0	0	0	5,313	8,359	7,483	2,373	1,097	470	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	3,716	5,847	5,234	1,660	768	329	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	1,597	2,512	2,249	713	330	141	0	0
6.2 Improvement of existing plantation			0	0	0	976	1,627	1,628	678	362	145	62	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	976	1,627	1,628	678	362	145	62	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	0	0	0	0	0	0	0	0
6.3 Forest protection			0	0	0	0	0	0	0	0	0	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	0	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	0	0	0	0	0	0	0	0
6.4 ANR with enrichment			0	0	0	1,090	1,818	1,818	757	404	162	69	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	791	1,318	1,318	549	293	118	50	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	300	500	500	208	111	45	19	0
6.5 Silviculture Infrastructure			0	0	0	603	1,207	1,408	804	0	0	0	0
(1) Silviculture Infra (Foresty Road)													
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	145	290	338	193	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	225	450	525	300	0	0	0	0
(2) Silviculture Infra (Fire Breakline)													
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	0	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	87	174	203	116	0	0	0	0
(3) Silviculture Infra (Watch tower)													
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	5	11	12	7	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	23	46	54	31	0	0	0	0
(4) Silviculture Infra (Protection station)													
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	20	40	46	26	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	78	157	183	105	0	0	0	0
(5) Silviculture Infra (Information board)													
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	2	3	4	2	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	4	8	9	5	0	0	0	0
(6) Silviculture Infra (Nursery)													
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	2	4	5	3	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	12	24	29	16	0	0	0	0
7. Livelihood Development Support		**72,859**	**0**	**0**	**517**	**15,217**	**12,499**	**16,769**	**17,432**	**4,597**	**4,211**	**1,617**	**0**
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	0	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	517	15,217	12,499	16,769	17,432	4,597	4,211	1,617	0
8. Infrastructure for Livelihood Development		**207,205**	**0**	**0**	**0**	**0**	**41,441**	**82,882**	**62,161**	**20,720**	**0**	**0**	**0**
8.1 Rural road (watershed)		100,895	0	0	0	0	33,632	67,264	50,448	16,816	0	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	3,310	6,621	4,966	1,655	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	0	30,321	60,643	45,482	15,161	0	0	0
8.2 Rural road (coastal)			0	0	0	0	2,755	5,510	4,133	1,378	0	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	271	542	407	136	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	0	2,484	4,968	3,726	1,242	0	0	0
8.3 Irrigation			0	0	0	0	4,527	9,054	6,790	2,263	0	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	1,773	3,546	2,660	887	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	0	2,754	5,507	4,131	1,377	0	0	0
8.4 Water supply			0	0	0	0	527	1,054	791	264	0	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	154	308	231	77	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	0	373	746	560	187	0	0	0
9. Forest Fire Control		**5,115**	**0**	**0**	**0**	**3,090**	**1,058**	**967**	**0**	**0**	**0**	**0**	**0**
9.1 Purchase of equipment			0	0	0	3,090	0	0	0	0	0	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	0	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	3,090	0	0	0	0	0	0	0
9.2 Training			0	0	0	0	1,058	967	0	0	0	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	0	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	0	1,058	967	0	0	0	0	0
10. Monitoring and Evaluation		**14,890**	**0**	**0**	**0**	**0**	**0**	**1,519**	**0**	**0**	**0**	**13,371**	**0**
10.1 Mid-term evaluation			0	0	0	0	0	1,519	0	0	0	0	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	86	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	0	0	1,432	0	0	0	0	0
10.2 Terminal evaluation (Physical)			0	0	0	0	0	0	0	0	0	12,104	0

Table 5-1 Breakdown of Economic Costs of the Project Components

Project Components		Total	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	0	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	0	0	0	0	0	0	12,104	0
10.3 Terminal evaluation (Social)			0	0	0	0	0	0	0	0	0	1,268	0
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	0	0	0	0	396	0
Skilled labor / Material / equipment	SCF 0.97		0	0	0	0	0	0	0	0	0	872	0
11. Project Management		**101,891**	**2,754**	**11,015**	**11,015**	**11,015**	**11,015**	**11,015**	**11,015**	**11,015**	**11,015**	**11,015**	**8,261**
Unskilled / Semi-skilledLabour	conversion factor 0.60		0	0	0	0	0	0	0	0	0	0	0
Skilled labor / Material / equipment	SCF 0.97		2,754	11,015	11,015	11,015	11,015	11,015	11,015	11,015	11,015	11,015	8,261
12. Sub total (1-10)		1,118,476	**2,754**	**25,900**	**33,474**	**146,156**	**258,287**	**302,138**	**196,532**	**86,817**	**38,198**	**28,220**	**8,261**
13. Physical Contingency	0.05	55,924	138	1,295	1,674	7,308	12,914	15,107	9,827	4,341	1,910	1,411	413
14. Consulting Services		**128,129**	**0**	**9,455**	**21,522**	**20,452**	**20,651**	**16,724**	**12,637**	**9,982**	**7,626**	**9,078**	**0**
15. GRAND TOTAL		1,302,528	**2,891**	**36,651**	**56,670**	**173,916**	**291,853**	**333,969**	**218,995**	**101,140**	**47,734**	**38,709**	**8,674**

Table 5-2 Results of Economic Evaluation of the Project

Yr	Investment Cost (1)													O&M Cost (2)			Replacement Cost (3)		Benefit (4)					Balance
	P. Works	S&P	CD & ID	Dev. of WPF	SPL3 Improve.	Dev. of CPF	Live Dev.	Small Infra	FFC	M&E	PM	P.C.	CS/ES	Small Infra	Silvi Infra	P. Forest	Small Infra	Silvi Infra	Wood/Timber	AR-CDM	REDD	VOC	Crop	(4-1-2-3)
1	0	0	0	0	0	0	0	0	0	0	2,754	138	0	0	0	0	0	0	0	0	(3,054)	0	0	-5,946
2	13,396	0	1,490	0	0	0	0	0	0	0	11,015	1,295	9,455	0	0	0	0	0	0	0	4,120	0	0	-32,531
3	0	8,250	13,210	0	482	0	517	0	0	0	11,015	1,674	21,522	0	0	0	0	0	0	(13,128)	4,539	0	0	-65,260
4	0	4,763	8,179	86,910	9,000	7,982	15,217	3,090	3,090	0	11,015	7,308	20,452	0	0	0	0	0	0	0	5,000	0	0	-172,006
5	0	4,483	7,219	157,674	9,887	13,011	12,499	1,058	1,058	0	11,015	12,914	20,651	15	77	0	0	0	0	0	5,506	0	0	-246,056
6	1,572	2,384	5,655	164,926	2,111	12,337	16,769	967	967	1,519	11,015	15,107	16,724	21	230	0	0	0	0	0	6,064	7	0	-246,235
7	0	0	5,787	93,787	1,737	4,612	17,432	0	0	0	11,015	9,827	12,637	26	410	0	0	0	0	0	6,677	14	2,918	-147,660
8	0	0	4,786	43,118	716	1,864	4,597	0	0	0	11,015	4,341	9,982	26	512	1,399	0	0	28,816	0	7,352	20	5,836	-40,332
9	0	0	3,345	18,849	0	778	4,211	0	0	0	11,015	1,910	7,626	26	512	11,228	0	0	29,165	0	8,094	20	8,754	-13,466
10	0	0	1,885	200	0	132	1,617	0	0	13,371	11,015	1,411	9,078	26	512	20,641	0	0	17,347	0	8,910	20	8,754	-24,855
11	0	0	0	0	0	0	0	0	0	0	8,261	413	0	26	512	21,134	0	0	48,213	(4,508)	9,808	20	8,754	31,942
12														26	512	21,162	0	0	84,294	0	10,796	20	8,754	82,165
13														26	512	22,960	0	0	144,154	0	11,883	20	8,754	141,314
14														26	512	22,582	0	0	163,597	0	13,078	20	8,754	162,330
15														26	512	20,558	0	0	134,542	0	14,393	20	8,754	136,614
16														26	512	20,508	0	0	127,059	45,802	15,839	20	8,754	176,429
17														26	512	20,211	0	0	128,330	0	17,430	20	8,754	133,786
18														26	512	20,422	0	0	397,604	0	19,179	20	8,754	404,599
19														26	512	20,529	0	1,007	421,327	0	21,104	20	8,754	429,132
20														26	512	20,305	0	2,014	182,174	0	23,222	20	8,754	191,313
21														26	512	20,529	0	2,350	190,220	78,511	25,551	20	8,754	279,641
22														26	512	20,422	0	1,343	132,728	0	28,113	20	8,754	147,314
23														26	512	22,344	0	0	414,790	0	30,931	20	8,754	431,615
24														26	512	23,016	0	1,720	447,251	0	34,031	20	8,754	464,783
25														26	512	20,751	5,054	3,441	144,288	0	37,441	20	8,754	160,721
26														26	512	20,082	10,108	4,014	127,026	109,401	41,192	20	8,754	251,652
27														26	512	20,790	7,581	2,294	251,102	0	45,318	20	8,754	273,993
28														26	512	20,701	2,527	0	790,376	0	49,857	20	8,754	825,241
29														26	512	20,016	0	0	756,174	0	54,850	20	8,754	799,245
30														26	512	21,088	0	0	332,856	0	60,341	20	8,754	380,346
31														26	512	21,069	0	0	279,868	107,338	66,382	20	8,754	440,756
32														26	512	20,082	0	0	236,544	0	73,028	20	8,754	297,727
33														26	512	23,186	0	0	1,046,595	0	80,337	20	8,754	1,111,984
34														26	512	23,194	0	1,007	979,653	0	88,378	20	8,754	1,052,067
35														26	512	20,162	0	2,014	273,617	0	97,223	20	8,754	356,901
36														26	512	21,119	0	2,350	506,445	0	106,952	20	8,754	598,165
37														26	512	20,995	0	1,343	424,176	0	117,654	20	8,754	527,730
38														26	512	22,159	0	0	936,249	0	129,426	20	8,754	1,051,753
39														26	512	23,273	0	0	1,208,157	0	142,376	20	8,754	1,335,497
40														26	512	21,089	0	0	462,712	0	156,620	20	8,754	606,480
41														26	512	20,133	0	0	304,547	323,416	172,289	20	8,754	788,357
42														26	512	20,245	0	0	371,772	0	189,525	20	8,754	549,290
43														26	512	23,153	0	0	1,759,886	0	208,485	20	8,754	1,953,455
44														26	512	24,332	0	1,720	1,490,298	0	229,340	20	8,754	1,701,822
45														26	512	24,434	5,054	3,441	25,204	0	252,281	20	8,754	252,793
46														26	512	24,434	10,108	4,014	0	0	277,516	20	8,754	247,197
47														26	512	24,434	7,581	2,294	0	0	305,274	20	8,754	279,203
48														26	512	24,434	2,527	0	0	0	335,809	20	8,754	317,085
49														26	512	24,434	0	1,007	0	0	369,397	20	8,754	352,192
50														26	512	24,434	0	2,014	0	0	406,343	20	8,754	388,132
Results:																			989,606	30,401	166,240	114	44,314	
NPV @10%		478	billion		EIRR		13.3%												15,799,156	646,833	4,422,199	899	376,433	21,245,520

Notes:

1 Operation and maintenance costs for small scale infrastructure, silvicultural infrastructure, and protection forests were calcuated as follows:
- O&M Cost for small scale infrastructure: 0.5 % of the total investment cost for the component
- O&M Cost for protection forest: Labor cost for tending, cleaning, and protection activities

2 Replacement cost
- Rplacement cost for silviculture infrastructure was estimated based on the assumption that watch towers and forest protection stations would be replaced every 15 and 20 years, respectively.
- Rplacement cost for small scale rural infrastructure was estimated assuming that the irrigation systems and water supply systems would be replaced every 20 years.

Table 5-3 Analysis of Household Economy under With-Project Condition

Case 1: Afforestation/Reforestation **Area: 2 ha**

Items	Unit	Year																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1. Basic Income <1		**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**
2. Income from the project <2		**17.9**	**8.5**	**4.8**	**4.8**	**0.0**	**0.0**	**5.2**	**7.8**	**10.3**	**12.7**	**12.5**	**11.2**	**10.9**	**13.3**	**14.8**	**17.3**	**17.0**	**17.4**	**0.0**	**20.3**	**0.0**	**0.0**	**31.3**	**0.0**	**0.0**
2.1 Wage from the project	VND Mil.	17.9	8.5	4.8	4.8																					
2.2 Gross Benefit from harvest		0.0	0.0	0.0	0.0	0.0	0.0	5.2	7.8	10.3	12.7	12.5	11.2	10.9	13.3	14.8	17.3	17.0	17.4	0.0	20.3	0.0	0.0	31.3	0.0	0.0
3. Cash expenditures <2		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.9**	**1.2**	**1.6**	**1.9**	**1.9**	**1.7**	**1.6**	**1.9**	**2.2**	**2.5**	**2.4**	**2.5**	**0.0**	**2.3**	**0.0**	**0.0**	**3.5**	**0.0**	**0.0**
3.1 Cost for harvesting and transportation	VND Mil.	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.6	0.7	0.7	0.6	0.6	0.7	0.8	0.9	0.8	0.8	0.0	0.3	0.0	0.0	0.4	0.0	0.0
3.2 Sharing benefit with the Government	10% of N.I.	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.7	1.0	1.2	1.2	1.1	1.0	1.3	1.4	1.6	1.6	1.7	0.0	2.0	0.0	0.0	3.1	0.0	0.0
4. Labor Requirement after the project support<3																										
4.1 Site development	MD	273.7	16.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.2 Tending, weeding, thinning and pruning	MD	9.4	110.1	64.4	64.4	6.0	6.0	8.0	6.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0	2.0	4.0	2.0	2.0
4.3 Forest protection	MD	14.6	14.6	14.6	14.6	7.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6
4.4 Clearing for fire break line	MD	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Total	**MD**	**298.7**	**142.2**	**80.0**	**80.0**	**14.6**	**21.6**	**23.6**	**21.6**	**21.6**	**19.6**	**19.6**	**19.6**	**19.6**	**19.6**	**19.6**	**19.6**	**19.6**	**19.6**	**19.6**	**19.6**	**17.6**	**17.6**	**19.6**	**17.6**	**17.6**
(Equivallent to VND based on the prevailing labor	VND Mil.	(17.9)	(8.5)	(4.8)	(4.8)	(0.9)	(1.3)	(1.4)	(1.3)	(1.3)	(1.2)	(1.2)	(1.2)	(1.2)	(1.2)	(1.2)	(1.2)	(1.2)	(1.2)	(1.2)	(1.2)	(1.1)	(1.1)	(1.2)	(1.1)	(1.1)
5. Net Cash Benefit																										
5.1 Total Net Cash Income	VND Mil.	**22.1**	**12.7**	**9.0**	**9.0**	**4.2**	**4.2**	**8.6**	**10.8**	**12.9**	**15.0**	**14.9**	**13.7**	**13.5**	**15.6**	**16.9**	**19.0**	**18.8**	**19.1**	**4.2**	**22.2**	**4.2**	**4.2**	**32.0**	**4.2**	**4.2**
5.2 Additional Income	VND Mil.	**17.9**	**8.5**	**4.8**	**4.8**	**0.0**	**0.0**	**4.4**	**6.6**	**8.7**	**10.8**	**10.7**	**9.5**	**9.3**	**11.4**	**12.7**	**14.8**	**14.6**	**14.9**	**0.0**	**18.0**	**0.0**	**0.0**	**27.8**	**0.0**	**0.0**
(Additional income per required labor force)	VND Th. /MD	(60.0)	(60.0)	(60.0)	(60.0)	(0.0)	(0.0)	(185.8)	(305.0)	(404.3)	(550.4)	(545.6)	(488.2)	(474.7)	(580.5)	(646.9)	(757.6)	(746.0)	(760.9)	(0.0)	(921.9)	(0.0)	(0.0)	(1421.0)	(0.0)	(0.0)
5.3 Average cash income for a certain period																										
(1) Average C.I for 5 year from 1st to 5th	VND Mil./yr	7.2																								
(2) Average C.I. for 10 years from 6th to 15th	VND Mil./yr	7.6																								
(3) Average C.I. for 10 years from 16th to 25th	VND Mil./yr	9.0																								

Case2: ANR with Enrichment **Area: 5 ha**

Items	Unit	Year																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1. Basic Income <1		**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**
2. Income from the project <2		**12.3**	**8.7**	**7.2**	**2.8**	**2.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**10.0**	**0.0**	**0.0**	**30.3**	**0.0**
2.1 Wage from the project	VND Mil.	12.3	8.7	7.2	2.8	2.8																				
2.2 Gross Benefit from harvest		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	30.3	0.0
3. Cash expenditures <2		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.1**	**0.0**	**0.0**	**3.4**	**0.0**
3.1 Cost for harvesting and transportation	VND Mil.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.4	0.0
3.2 Sharing benefit with the Government	10% of N.I.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	3.0	0.0
4. Labor Requirement after the project support <2																										
4.1 Clearing climers and insect affedted trees	MD	61.5	61.5	61.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.2 Spots weeding for the regenerating trees	MD	21.5	21.5	21.5	10.0	10.0	5.0	5.0	5.0	5.0	5.0	0.0	5.0	0.0	5.0	0.0	5.0	0.0	5.0	0.0	5.0	0.0	5.0	0.0	5.0	0.0
4.3 Hole digging & back filling for indigenous spec	MD	56.2	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.4 Application of fertilizer	MD	19.1	19.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.5 Transport & planting of tree seedlings	MD	10.5	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.6 Thinning of Hopea	MD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	10.0	0.0
4.7 Protection	MD	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4	36.4
Total	**MD**	**205.1**	**144.5**	**119.4**	**46.4**	**46.4**	**41.4**	**41.4**	**41.4**	**41.4**	**41.4**	**36.4**	**41.4**	**36.4**	**41.4**	**36.4**	**41.4**	**36.4**	**41.4**	**36.4**	**41.4**	**46.4**	**41.4**	**36.4**	**51.4**	**36.4**
(Equivallent to VND based on the prevailing labor	VND Mil.	(12.3)	(8.7)	(7.2)	(2.8)	(2.8)	(2.5)	(2.5)	(2.5)	(2.5)	(2.5)	(2.2)	(2.5)	(2.2)	(2.5)	(2.2)	(2.5)	(2.2)	(2.5)	(2.2)	(2.5)	(2.8)	(2.5)	(2.2)	(3.1)	(2.2)
5. Net Cash Benefit																										
5.1 Total Net Cash Income	VND Mil.	**16.5**	**12.9**	**11.4**	**7.0**	**7.0**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**13.1**	**4.2**	**4.2**	**31.1**	**4.2**
5.2 Additional Income	VND Mil.	**12.3**	**8.7**	**7.2**	**2.8**	**2.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**8.9**	**0.0**	**0.0**	**26.9**	**0.0**
(Additional income per required labor force)	VND Th. /MD	(60.0)	(60.0)	(60.0)	(60.0)	(60.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(192.3)	(0.0)	(0.0)	(523.4)	(0.0)
5.3 Average cash income for a certain period																										
(1) Average C.I for 5 year from 1st to 5th	VND Mil./yr	6.7																								
(2) Average C.I. for 10 years from 6th to 15th	VND Mil./yr	0.3																								
(3) Average C.I. for 10 years from 16th to 25th	VND Mil./yr	3.6																								

Table 5-3 Analysis of Household Economy under With-Project Condition

Case 3: Protection		**20 ha**																								
Items	Unit	Year																								
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1. Basic Income <1		**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**
2. Income from the project <2		**8.7**	**8.7**	**8.7**	**8.7**	**8.7**	**0.0**	**0.0**	**0.0**	**0.0**	**130.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**253.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
2.1 Wage from the project	VND Mil.	8.7	8.7	8.7	8.7	8.7																				
2.2 Gross Benefit from harvest		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	130.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	253.5	0.0	0.0	0.0	0.0	0.0
3. Cash expenditures <2		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**14.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**27.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
3.1 Cost for harvesting and transportation	VND Mil.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0
3.2 Sharing benefit with the Government	10% of N.I.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.1	0.0	0.0	0.0	0.0	0.0
4. Labor Requirement after the project support <2																										
4.1 Protection	MD	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6	145.6
4.2 selective cutting	MD	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0
Total	**MD**	**145.6**	**145.6**	**145.6**	**145.6**	**145.6**	**145.6**	**145.6**	**145.6**	**145.6**	**205.6**	**145.6**	**145.6**	**145.6**	**145.6**	**145.6**	**145.6**	**145.6**	**145.6**	**145.6**	**205.6**	**145.6**	**145.6**	**145.6**	**145.6**	**145.6**
(Equivallent to VND based on the prevailing labor	VND Mil.	(8.7)	(8.7)	(8.7)	(8.7)	(8.7)	(8.7)	(8.7)	(8.7)	(8.7)	(12.3)	(8.7)	(8.7)	(8.7)	(8.7)	(8.7)	(8.7)	(8.7)	(8.7)	(8.7)	(12.3)	(8.7)	(8.7)	(8.7)	(8.7)	(8.7)
5. Net Cash Benefit																										
5.1 Total Net Cash Income	VND Mil.	**12.9**	**12.9**	**12.9**	**12.9**	**12.9**	**4.2**	**4.2**	**4.2**	**4.2**	**120.5**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**	**230.1**	**4.2**	**4.2**	**4.2**	**4.2**	**4.2**
5.2 Additional Income	VND Mil.	**8.7**	**8.7**	**8.7**	**8.7**	**8.7**	**0.0**	**0.0**	**0.0**	**0.0**	**116.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**225.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
(Additional income per required labor force)	VND Th. /MD	(60.0)	(60.0)	(60.0)	(60.0)	(60.0)	(0.0)	(0.0)	(0.0)	(0.0)	(565.8)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(1098.6)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
5.3 Average cash income for a certain period																										
(1) Average C.I for 5 year from 1st to 5th	VND Mil./yr	8.7																								
(2) Average C.I. for 10 years from 6th to 15th	VND Mil./yr	11.4																								
(3) Average C.I. for 10 years from 16th to 25th	VND Mil./yr	22.6																								

Note:

<1 Basic income is based on the results of household interview survey conducted by JICA Survey Team in July 2009.

<2 Data of harvestable volume of wood/timber and labor requirement for forest management and exploitation are based on the cost benefit analysis presented in Appendix xxxx.

<3 Constant price in 2009 is applied for estimation.

Table 5-4. Check List for the Environmental Considerations

Category	Environmental Item	Main Check Items	Present Conditions/Related Project Plans	Possible Impacts/Mitigation Measures	Conclusion
1 Permits and Explanation	(1) EIA and Environmental Permits	EIA requirement under the existing guidelines	EIA is required for forestation projects over 1,000ha under the Law on Environmental Protection (No.52/2005/QH11, Nov 29th, 2005), Decree No.80/2006/ND-CP (August 9th, 2006), Decree No.21/2008/ND-CP (February w8th, 2008), and MONRE Circular No.08/2006/TT-BTNMT (September 8th, 2006) in Vietnam. All the sub-programs proposed in the 12 provinces plan to reforest, improve and protect more than 1,000 ha of protection forest.		Either an EIA report for the entire project or EIA reports for the respective sub-projects in the 12 provinces shall be prepared. In the former case, an EIA report will be prepared by MBFP/CPMU and submitted to the appraisal council headed by Minister of MARD, while each DARD shall prepare and submit an EIA report to the provincial council under PPC in the latter case.
		① Have EIA reports been officially completed?	MARD plans to prepare an EIA report for the entire project upon the approval of the project by the government.	-	An EIA report for the entire project should be completed upon the official approval of the project by the government.
		② Have EIA reports been approved by authorities of the host country's government?	Same as above. (An EIA report may be approved in the middle of 2010.)		The appraisal council of MARD will review and examine an EIA report.
		③ Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied?	ditto	-	As clearly stipulated in the Clause 3.2 of MONRE Circular No.08/2006/YY-BTNMT, an EIA report should be reviewed and re-examined when there are any conditions put for the approval.
		④ In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	None	-	None
	(2) Explanation to the Public	① Are contents of the project and the potential impacts adequately explained to the public based on appropriate procedures, including information disclosure? Is understanding obtained from the public?	According to the government's regulation (Circular No. 08/2006/TT-BTNMT), MBFP should conduct the public consultations to explain to the relevant communes the outlines of the projects, anticipated impacts, and proposed countermeasures in the course of the EIA report preparation.	-	Public consultation should be organized to explain the project to the public prior to the submission of an EIA report.
		② Are proper responses made to comments from the public and regulatory authorities?	ditto		ditto
2 Mitigation Measures	(1) Air Quality	① Do air pollutants, such as dust, soot and dust, sulfur oxides (SOx), nitrogen oxides (NOx), and organic chemical substances emitted from various sources, such as logging operations, forest products manufacturing processes, and incinerators comply with the country's emission standards and ambient air quality standards?	A large scale logging in protection forest is not planned in the project. Selective-cum-small-scale tree cutting may be undertaken by local communities in the post-project period. No incineration or wood processing activities is also planned in the project. Harvest of sub-ordinate species (or fast growing species) will start in the middle of the 2020s.	There may be a need to cut and transport the fast growing species in a mechanical way. However, the operation period will be short and not continuous, and thus, no additional manufacturing or processing factory is expected to be established for the products from the project.	There is no air pollution anticipated in the Project.
	(2) Water Quality	① Is there a possibility that the use of chemicals, such as fertilizers, and agrochemicals will cause water pollution?	A total of 80 kg of compound type fertilizer (16-16-18) will be used for one hectare of reforestation for four years. Such a volume of fertilizer is quite small as compared to those used for agricultural purposes. Furthermore, it is also expected that fertilizer will not flow out into a river since fertilizer is put on the planting holes when seedlings are planted.	In case local households do not follow the technical guidelines and broadcast fertilizer in the surface, some part of applied fertilizer might outflow to rivers. But again, the future impact will be minimal since the volume of fertilizer used for reforestation is quite small.	Prior to the application of fertilizer, PFMB will provide necessary technical guidance to local households who take part in reforestation activities. It would not be difficult for local households to apply fertilizer in a proper manner since it is a simple and easy-to-apply technique. In fact, no adverse impact on water quality has taken place during the SPL-3 project.
		② Where facilities, such as forest products manufacturing facilities are installed, do effluents from the facilities comply with the country's effluent standards and ambient water quality standards?	There is no plan to establish a forest products manufacturing facilities in the plan.	None	This criterion is not applicable to the project. (N/A: Not applicable)
	(3) Wastes	① Are wastes properly treated and disposed of in accordance with the country's standards?	There is no waste emitted in the project.	None	N/A

Table 5-4. Check List for the Environmental Considerations

Category	Environmental Item	Main Check Items	Present Conditions/Related Project Plans	Possible Impacts/Mitigation Measures	Conclusion
	(4) Soil Contamination	① Are adequate measures taken to prevent contamination of soil and groundwater by use of chemicals, such as agrochemicals?	As mentioned above, the volume of fertilizer used for afforestation is not as large as used for farming. No agrochemical will be used in the project.	None	The possibility of soil and water contamination is expected to be quite low in the project.
3 Natural Environment	(1) Protected Areas	① Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	No protected area designated by the government law or international treaties is located in and around the project areas.	None	N/A
	(2) Ecosystem	① Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)?	There may be primary forests or tropical rain forests where valuable ecosystems still exist in the project areas, especially in the areas for the protection of natural forests. But such areas are expected to be quite limited in the project areas.	During the project period, natural forests will be protected and managed by local communities. In the post-project period, forest exploitation might progress in case local communities neglect their tasks under the long-term contract with PFMBs.	As indicated, the areas with primary or tropical rain forest are limited. It is also expected that local communities will tend to protect natural resources in their own areas once they realize that such resources are their own assets. Hence, the possibility of unregulated exploitation is expected to be minimal if adequate guidance and orientation are given to local communities prior to the introduction of the long-term agreement. Furthermore, PFMBs can terminate the long-term contract when it finds any negligence resulting the damage to natural forest. Hence, the possibility of the adverse impact on primary or tropical forests is evaluated as "minimal."
		② Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions?	No protected habitats of endangered species designated by the government law or international treaties is located in and around the project areas.	None	N/A
		③ Is there a possibility that changes in localized micro-meteorological conditions, such as solar radiation, temperature, and humidity due to a large-scale timber harvesting will affect the surrounding vegetation?	Reforestation in bare land and ANR in degraded forests will help in increasing vegetation cover and developing the canopies of forests.	Recovery of vegetation/forest cover will result in the improvement of micro-meteorological conditions in the project areas.	The positive effect might be generated by the project eventually.
		④ Is there a possibility that a large-scale timber harvesting will result in loss of breeding and feeding grounds for wildlife?	No large scale timber harvesting or logging is planned in the project.	No large scale logging is not expected to take place either even in the post-project period.	N/A
		⑤ In the case of reforestation projects, is there a possibility that mono-species plantations will adversely affect wildlife habitats? Is there a possibility that mono-species plantations will cause outbreaks of pests?	Mixed planting of indigenous species (main species) and fast growing species (sub-ordinate species) is the standard design of reforestation in the project. Tree species introduced are those that have been used in the provinces for years and already proved environmentally adaptable/suitable to the site conditions.	In general, tree species for main species are selected with the aim of improving the functions of protection forest. Hence, it is expected that the impact on ecosystems in and around the project areas will be minimal.	Tree species short-listed are proved adaptable and suitable to the respective site conditions in the 12 provinces. Hence, there is least possibility of pest infestation or outbreak of diseases due to the project implementation. In addition, since the main species are indigenous ones, the impact on ecosystems is expected to be minimal, or if anything, effective in improving the current ecosystems.
		⑥ If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem?	No significant impacts on ecosystems in the project areas is anticipated in the project.	None	N/A
	(3) Hydrology	① Is there a possibility that alteration of rainwater runoff and runoff characteristics due to a large-scale timber harvesting and access road construction will cause impacts on the hydrology of the surrounding areas?	No large scale timber harvesting or logging is planned in the project.	There will not be any large scale deforestation taking place in the post-project period.	N/A
		② Is there a possibility that decreased water retention capacity due to deforestation will affect the existing drainage patterns of the forest?	ditto	ditto	N/A

Table 5-4. Check List for the Environmental Considerations

Category	Environmental Item	Main Check Items	Present Conditions/Related Project Plans	Possible Impacts/Mitigation Measures	Conclusion
	(4) Topography and Geology	① Is there a possibility that loss of forest stability due to timber harvesting will cause slope failures or landslides?	No large scale timber harvesting is planned in the project; the possibility of slope failure or landslide will be minimal.	Since the selective cutting is only the practice that local communities is allowed to do under the long-term contract, there would be little possibility of slope failures/landslides as long as PFMBs periodically monitor/supervise local communities' activities. On the other hand, reforestation and ANR will be effective in increasing vegetation cover and protecting sloping areas from slope failure/landslide.	The possibility of slope failures/landslides caused by the project is minimal, while the project will contribute to the slope stabilization.
	(3) Management of Abandoned Sites	① Are adequate restoration and revegetation plans considered for the harvested areas? In particular, are adequate measures taken to prevent soil runoff from the harvested areas?	Harvest of forest products is not planned during the project period. Restoration of bare lands or improvement of degraded forests is the main objective of the project.	In the post-project period, local communities, who will enter into the long-term contract, will be allowed to harvest trees, especially sub-ordinate/fast growing species. But no one is allowed to practice the clear cutting. Only thinning or selective cutting is allowed.	As long as local communities follow the regulations and apply the selective cutting method, forest can regenerate by itself.
		② Is a sustainable management system for the harvested areas established?	There is no plan to harvest trees in the plan.	As mentioned above, local communities will be allowed to harvest trees under the long-term contract with PFMBs. But the long-term contract will specify that local communities shall follow the code of practices when harvesting trees in protection forest. At the same time, they will prepare a forest management plan with the assistance of PFMBs prior to the conclusion of the long-term contracts.	A management system will be prepared and part of the long-term contract between local communities and PFMBs.
		③ Are adequate financial provisions secured to manage the harvested areas?	During the project period, adequate financial support will be made for protection, management, improvement and reforestation of protection forests. In the post project period, some of protection forest will be managed by local communities under the long-term contract with PFMBs, while some will be directly managed by PFMBs.	There may be no financial support give for forest protection after the project.	There is an adequate financial support in the project period, while no financial support is determined in the post-project period. However, it would not be much difficult for local communities to protect the assigned protection forests since the cost for protection is minimal. It is also expected that local communities would protect forests on their own initiative once they realize that they are entitled to harvest forest resources in the assigned areas.
	(1) Resettlement	① Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement?	No involuntary resettlement caused by the project is anticipated.	None	N/A
		② Is adequate explanation on relocation and compensation given to affected persons prior to resettlement?	Ditto	None	N/A
		③ Is the resettlement plan, including proper compensation, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement?	Ditto	None	N/A
		④ Does the resettlement plan pay particular attention to vulnerable groups or persons, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples?	Ditto	None	N/A
		⑤ Are agreements with the affected persons obtained prior to resettlement?	Ditto	None	N/A
		⑥ Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan?	Ditto	None	N/A
		⑦ Is a plan developed to monitor the impacts of resettlement?	Ditto	None	N/A

Table 5-4. Check List for the Environmental Considerations

Category	Environmental Item	Main Check Items	Present Conditions/Related Project Plans	Possible Impacts/Mitigation Measures	Conclusion
4 Social Environment	(2) Living and Livelihood	① Is there a possibility that the project will adversely affect the living conditions of inhabitants? Are adequate measures considered to reduce the impacts, if necessary? Is particular attention paid to the inhabitants whose livelihoods are based on primary industries, such as farming, raising livestock, or hunting and gathering in the forests?	Areas currently used by local communities for farming are not selected as the project areas in the project. Thus, the project will not adversely affect the livelihoods of local communities. On the contrary, the project will directly provide local communities short-term cash income and also allow them to use forest and non-timber forest products in their assigned areas under the long-term contract.	Local communities involved in reforestation / ANR / protection of natural forests can be paid by PFMBs. Moreover, those who enter into the long-term contract with PFMBs will be allowed to harvest 100 % of sub-ordinate species and less than 20 % of indigenous species under the long-term contract. In addition, the livelihood improvement component and small scale rural infrastructure development component will improve the livelihood of local communities.	No adverse impact on the living conditions and livelihoods of local communities is anticipated. On the contrary, the project will directly and indirectly improve the livelihoods of local communities by cash payment of labor cost and provision of technical training on livelihood activities.
		② Are adequate measures taken to prevent illegal entry into the forestry resource areas from the outside through newly constructed access roads?	More than 400 km of forestry roads are planned in the project.	Improvement of accessibility to the project areas may facilitate the illegal entry or cutting in protection forests. The public awareness raising of the importance of protection forest is one of the activities planned in the project. In addition, the project plans to involve local communities in protection and management of protection forests through the long-term forest management contract in order to protect and manage protection forests even after the end of the project. Under the long-term contract, local communities will be responsible for the protection of forests while they will be entitled to harvest forest resources in the assigned areas.	The proposed measures against the illegal entry into protection forests are considered practical as well as cost-effective.
	(3) Heritage	① Is there a possibility that the project will damage the local archeological, historical, cultural, and religious heritage sites? Are adequate measures considered to protect these sites in accordance with the country's laws?	There is no archeological, historical, cultural, and religious heritage site in and around the project areas.	None	N/A
	(4) Landscape	① Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	Lands without vegetation or with less vegetation will be converted to plantations or natural forests. Landscape will be changed but not adversely, if anything, rather positively.	Scenery in the project areas will be diversified or greened by the project.	No adverse impact on the landscape in the project area is anticipated.
		① Does the project comply with the country's laws for rights of ethnic minorities and indigenous peoples?	The Vietnamese constitution clearly states that the ethnic minorities in the country have a right to protect their own customs, traditions, languages, and identities. In addition, the GoV has implemented the programs (135 and 136 programs) to financially support people in ethnic minorities and mountainous areas. The proposed project is also in line with the existing programs and aims to improve their economic conditions.	No activity that would affect the identities of ethnic minorities or discriminate them is planned in the project.	The activities planned in the project are in line with the GoV's laws.

Table 5-4. Check List for the Environmental Considerations

Category	Environmental Item	Main Check Items	Present Conditions/Related Project Plans	Possible Impacts/Mitigation Measures	Conclusion
	(5) Ethnic Minorities and Indigenous Peoples	② Are considerations given to reduce the impacts on culture and lifestyle of ethnic minorities and indigenous peoples?	The project will not target the areas where ethnic minorities are currently using for farming, so that the project will not give any adverse impact on their lifestyle. Ethnic minorities willing to participate in the project may have more income generating opportunities than they usually have. Construction of small-scale infrastructure, such as rural roads, water supply systems, and irrigation facilities, will also give a certain impact on their lifestyle positively.	Increase of cash income might affect their traditional lifestyle or culture. Since ethnic minorities even residing in mountainous areas have been already involved in the money economy, the increased cash income is not expected to cause any drastic change of their cultures. The lifestyle of the minorities might be changed as they have more opportunities to earn cash income, access the social services, secure their food (agricultural production) and/or safe water. There may also be a worry that the project might widen the economic disparity among the ethnic minority groups or only economically advanced households might have more opportunities to gain cash income from the project. In order for all the communities to obtain the opportunities, the project plans to organize several orientation and guidance sessions at the beginnning of the project so that local communities can get a picture of the project when they participate in the project. Moreover, the participatory land use planning, which will be conducted in coordination with the commune/village leaders, will help them fairly allocate the project areas (opportunities) among the communiies.	Due consideration is given to ethnic minorities residing in and around the project areas. The project activities, such as i) small scale infrastructure development, ii) involvement of local communities in the forest development, and iii) introduction of the long-term contract, will positively affect the living conditions and lifestyle of ethnic minorities. The negative impact on culture and lifestyle, such as changes of traditional lifestyle, is expected to be "minor." Furthermore, the expansion of economic disparity among the communities would also not be likely to occur if the project provides the adequate project information to local communities and consult with the village leaders as well as the communities when identifying the project areas and selecting the local households who would take part in the project.
5 Others	(1) Impacts during Construction	① Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)?	Small scale infrastructures will be constructed in the course of the project.	All the proposed infrastructures are small- or micro scale. Therefore, there is no major adverse impact (e.g., noise, vibrations, turbid water, dust, exhaust gasses, and wastes) anticipated in the project. However, there might be possibility of causing soil erosion due to improper slope protection works during the construction.	Although no major adverse impact caused by the infrastructure development is anticipated, PPMUs need to provide necessary guidance to the contractors for rural infrastructure development so that the proper construction methods will be employed and slopes will be treated in a proper manner.
		② If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts?	ditto	ditto	ditto
		③ If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	No land acquisition, involuntary resettlement, or loss of means of livelihoods is expected due to the construction of infrastructures. The construction period ranges from three to six months. Hence, the influx of laborers will be temporary. In addition, local communities will be hired as laborers during the construction.	Local communities could earn cash income engaging in the construction works as casual laborers.	No adverse impact on socio-economic conditions, such as land acquisition, involuntary resettlement, and loss of means of livelihoods, is anticipated. Rather, the construction of infrastructures might positively improve the economic conditions of local communities.
		④ If necessary, is health and safety education (e.g., traffic safety, public health) provided for project personnel, including workers?	Construction works planned in the project are so small and short that the risk of accidents / transmitted diseases is quite limited.	No major adverse impact on health in local communities and laborers is anticipated.	The health and safety education is not necessary required in the implementation of the construction works.
	(2) Monitoring	① Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts?	MARD has yet to develop or implement a monitoring program so far. It should be examined and prepared in the preparation of an EIA report. On the other hand, the project will be monitored by PPMUs on a monthly basis. The monthly monitoring will cover the environmental items.	-	The environmental monitoring plan or program should be examined and specified in the EIA report.
		② Are the items, methods and frequencies included in the monitoring program judged to be appropriate?	Likewise, the items and methods of a environmental monitoring plan will be finalized along with an EIA report. On the other hand, the outlines of the regular monitoring are described in the final report or FS report of the project.	-	Likewise, the detailed procedures for monitoring the environmental items should be clarified in the EIA report.

Table 5-4. Check List for the Environmental Considerations

Category	Environmental Item	Main Check Items	Present Conditions/Related Project Plans	Possible Impacts/Mitigation Measures	Conclusion
		③ Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)?	PPMU in coordination with DARD and DONRE will be responsible for environmental monitoring. PPMU will be established after the official approval of the project by the government.	-	PPMUs should be organized upon the approval of the project by the government. Monitoring of the environmental items should be specified in the tasks of PPMUs when they are organized in the beginning of the project.
		④ Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?	The government's regulation (Circular No. 08/2006/TT-BTNMT) stipulates that a monitoring plan be prepared and implemented by the proponent.	-	An EIA report should be prepared in accordance with the said regulation.
6 Note	Reference to Checklist of Other Sectors	① Where necessary, pertinent items described in the Agriculture and Livestock Projects, and Irrigation Projects checklists should also be checked.	The project plans to improve or rehabilitate the existing small or micro scale irrigation systems. No livestock or agricultural development is proposed in the project.	-	N/A
	Note on Using Environmental Checklist	① If necessary, the impacts to transboundary or global issues should be confirmed (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	No large scale forest cutting, construction or change in land use is planned in the project. Hence, no impact to transboundary or global issues is expected in the project.	-	N/A

1) Regarding the term “Country’s Standards” mentioned in the above table, in the event that environmental standards in the country where the project is located diverge significantly from international standards, appropriate environmental considerations are made, if necessary. In cases where local environmental regulations are yet to be established in some areas, considerations should be made based on comparisons with appropriate standards of other countries (including Japan' experience).

2) Environmental checklist provides general environmental items to be checked. It may be necessary to add or delete an item taking into account the characteristics of the project and the particular circumstances of the country and locality in which it is located.

Table 6.1 Project Logical Framework

Project Logic	Objectively Verifiable Indicators	Means of Verification	Assumptions/ Risks
Overall Goal 1. Enhancement of the functions of watershed and coastal protection forests 2. Restoration and conservation of biodiversity 3. Reduction of poverty in mountainous area	1. Proportion of Group IV Forest in the target watersheds in 2040 will increase by ( ) % from the level in 2010. 2. Income level of local communities in the target communes/villages in 2030 will increase by ( )% from the average in 2010.	Forest classification survey (by FIPI) District statistics Impact assessment (household survey)	1. There is no drastic change in climatic conditions, such as rainfall and temperature. 2. Macro economy of the country is not adversely changed drastically.
Project Purpose 1. To restore and improve watershed and coastal protection forests for both environmental and economic purposes	1. Forest cover in the target watersheds in 2020 will be 135,930 ha in 2022. 2. Quality of vegetation/forest covers in the target protection forests will be improved in 2020. - 26,640 ha of bush/woodlot (1a and 1b) will be changed to recovering forest (III). - 14,320 ha of young plantations / poorly maintained plantations (1c) will become quality plantations. - 68,420 ha of natural forest will be maintained properly. 3. The incidence of forest fire will be halved in 2020.	Terminal evaluation using high resolution satellite images Terminal evaluation using high resolution satellite images PPMU/ FPMB data on fire incidence	1. No drought or cyclone takes place. 2. PPCs do not change the categories of watershed protection forest or forest classification. 3. Climatic conditions are not significantly unfavorable for restoration of forests.
2. To strengthen the capacity of the local governments and the owners of protection forests such as protection forest management boards, organizations, groups of households, and individuals for sustainable management of protection forests	1. More than 80 % of the project areas will be managed by local communities under the long-term agreement/contract on protection and management of protection forests in 2020. 2. More than 80 % of the long-term contracts will be attached to forest management plans of the respective contracts in 2020. 3. Regulations on benefit sharing mechanism will be officially approved and Forest Development and Protection Fund will be developed by PPCs concerned by 2020.	Records of PPMUs and CPMU Completion report of the project Completion report of the project Annual report by PFMBs and DARDs Completion report of the project Annual reports by DARDs	1. The prices of wood chips and timbers do not drop drastically. 2. Employment conditions in rural areas in the regions/target provinces are not changed.
3. To improve the livelihood of communities who would manage protection forests	1. The average annual household income in the target communes/villages will increase by **** % in 2020.	Terminal evaluation (Socio-economic impact survey)	1. Regional economy in the target provinces is not adversely changed.

Project Logic	Objectively Verifiable Indicators	Means of Verification	Assumptions/ Risks
Outputs 1. Institutional arrangements necessary for implementation will be made prior to the actual physical development in the field.	1. Project implementation guidelines will be developed and finalized in 2011. 2. Regulations on benefit sharing mechanism at provincial level will be finalized in 2012. 3. Forest Development and Protection Fund will be established at least in five (5) provinces in 2012. 4. Target villages will be initially selected.,	Project implementation guidelines (Government circular) PPCs' circulars PPCs' circulars Annual report of the project	1. There is no delay in fund disbursement. 2. There is no delay in procurement, approval and any other decision making by CPMU/MARD and DARDs/PPCs. 3. There is no change in forest development strategies and polices. 4. There is no social conflict or dispute taking place in the target communes / villages.
2. Detailed plans and designs for development and improvement of protection forests will be made in a participatory manner.	1. Land use and forest classification maps covering 120,260 ha[1] of protection forest will be updated. 2. A total of 57 detailed plans including land use plan will be prepared in a participatory manner.	Updated land use and forest classification map Detailed plans	
3. Capacities of the stakeholders will be enhanced and local communities in the target villages will be organized as forest management groups so that the project could be implemented as planned.	1. The staff of 1 CPMU, 12 PPMUs, 12 DARDs, 57 PFMBs, 54 DECs, and commune extension workers in 167 communes will be trained[1]. 2. Community groups will be organized in 167 communes[1] in the project areas. 3. Local communities/community groups will be guided on the implementation of the project and trained on livelihood development.	Annual report of the project (Records of PPMUs/CPMU) Annual report of the project (Records of PPMUs/CPMU)	
4. Target Protection forests in both watershed and coastal areas will be developed and improved by PFMBs concerned in a participatory manner.	1. Watershed protection forest - 23,090 ha of afforestation - 3,300 ha of improved existing plantation - 25,950 ha of ANR with and without enrichment - 63,970 ha of protected natural forest 2. Improvement of SPL-III Forest - 4,450 ha of forest protection - 1,000 ha of enrichment planting - 10,220 ha of vegetation clearing and thinning 3. Coastal protection forest - 1,550 ha of afforestation - 800 ha of improved existing plantation - 1,600 ha of enrichment planting	Annual reports of the project (Records of PPMUs/CPMU) Annual reports of the project (Records of PPMUs/CPMU) Annual reports of the project (Records of PPMUs/CPMU)	

[1] The numbers/figures are subject to change based on the results of the preparatory works.

Project Logic	Objectively Verifiable Indicators	Means of Verification	Assumptions/ Risks
5. Livelihood development options will be introduced in the target communes/villages.	1. Development needs of livelihood development options in 167 communes will be identified in a participatory manner. 2. ( ) of livelihood development models will be demonstrated and introduced in 167 communes. 3. ( ) persons in 167 communes will be trained on livelihood development options/models.	Annual reports of the project (Reports from the contractors) Annual reports of the project (Reports from the contractors) Annual reports of the project (Reports from the contractors)	
6. Small scale infrastructure facilities will be developed for improvement of livelihoods of local communities in the target communes / villages.	1. Development needs of small scale infrastructure will be identified in a participatory manner. 2. 170 km of rural road, irrigation schemes covering 558 ha, and 8 units of water supply systems will be developed and handed over to CPCs concerned.	Annual reports of the project (Reports from the contractors) Annual reports of the project (Reports from the contractors)	
7. Capacity of PFMBs and DPCs concerned for forest fire prevention will be enhanced.	1. Forest fire control / extinction equipments will be provided to 57 PFMBs. 2. ( ) staff of PFMBs and ( ) members of the forest management groups were trained on forest fire control.	Annual reports of the project Annual reports of the project	
Activities 1. Preparatory Works a. Establishment of CPMU and PPMUs b. Deployment / employment of the project staff and procurement of equipment b. Review and development of project implementation guidelines c. Identification of potential target villages d. Preparation of detailed benefit sharing regulations e. Facilitation of the establishment of Forest Development and Protection Funds			
2. Survey, Mapping and Planning a. Survey and mapping (Forest inventory and mapping) in the target communes through analysis of high resolution satellites and field surveys b. Site selection and demarcation in a participatory manner c. Detailed planning and designing d. Baseline survey in the project areas			

Project Logic	Objectively Verifiable Indicators	Means of Verification	Assumptions/ Risks
3. Capacity development, information dissemination, and phase-in/-out work a. Capacity development of the government staff - Capacity development of the government staff at the central level - Capacity development of the government staff at the provincial level - Organization of study tours - Organization of review meetings b. Capacity development of local communities/households - Information dissemination to local communities/households - Publication - Guidance and training on forest management c. Phase-in / -out works - Facilitation of hand-over of forest ownerships by PPMUs to PFMBs - Guidance to PPMUs, PFMBs and PAFECs - Guidance to local communities			
4. Development / Improvement of watershed protection forest a. Afforestation of bare land in very critical watersheds b. Protection of natural protection forests c. Improvement of existing plantations d. Assisted natural regeneration (ANR) without enrichment planting e. ANR with enrichment planting f. Construction of silvicultural infrastructure			
5. Improvement of SPL-III forests a. Natural forest protection b. Enrichment planting c. Vegetation clearing and thinning			
6. Improvement of coastal protection forest a. Afforestation in sandy area to minimize sand movement b. Improvement of existing plantations c. Enrichment planting in poor quality coastal protection forests in sandy area d. Construction of silvicultural infrastructure			
7. Livelihood improvement support a. Assessment of livelihood development needs b. Introduction/development of demonstration plots and livelihood development model c. Organization of technical training courses on livelihood development d. Organization of periodical meetings			

Project Logic	Objectively Verifiable Indicators	Means of Verification	Assumptions/ Risks
8. Construction and improvement of small-scale infrastructure for livelihood development a. Identification of development needs and selection of priority b. Planning and detailed designing of the selected projects c. Tender and selection of contractors for construction d. Construction of rural roads, small scale irrigation system and water supply system e. Hand-over of the constructed insfrastructure			
9. Forest fire control a. Procurement of forest fire control equipment and tools b. Implementation of forest fire control drills			
10.Monitoring and evaluation a. Project regular monitoring b. Initial evaluation (Use of the data collected in Survey and Detailed Desining) c. Mid-term evaluation d. Terminal evaluation			
11. Project management a. Project administration and monitoring b. Reporting			
12. Technical assistance a. Assistance to CPMU and PPMUs in implementing, monitoring and managing the project b. Organizing of overseas training for CPMU and PPMU staff			