INTERNATIONAL TROPICAL TIMBER ORGANIZATION

ITTO

PROJECT DOCUMENT

TITLE	ENCOURAGING CUSTOMARY LANDOWNERS IN THE LOWLANDS OF PAPUA NEW GUINEA'S CENTRAL PROVINCE TO REFOREST THEIR GRASSLANDS WITH HIGH VALUE TREES
SERIAL NUMBER	PD 552/09 Rev.1 (F)
COMMITTEE	REFORESTATION AND FOREST MANAGEMENT
SUBMITTED BY	GOVERNMENT OF PAPUA NEW GUINEA
ORIGINAL LANGUAGE	ENGLISH

SUMMARY

This Project Proposal originates from PPD-124-06-R2 which aimed to improve rural livelihoods in Central Province through initiating a landowner-driven approach for establishing high-value plantations on under-utilised grasslands. At present, grassland areas are extensive and increasing in size. Population densities are also rising and incomes levels are generally low. Importantly, these grassland areas are well linked to the national, provincial and district capitals. The Pre-project identified the key factors restraining landowners from growing high value trees as limited access to awareness, training and support services. The Project will create a model reforestation framework that encourages customary landowners in the Central Province lowlands to grow high value trees on their grasslands. Long-term social, environmental and economic benefits are expected. The Project will be managed and sustained by the PNG Forest Authority in collaboration with selected research and development partners in a way that that builds on existing policies, programmes, resources and practices. Teak will be the focal species - promoted through a range of model business arrangements and production systems. There will be four Outputs:

1. A reforestation awareness programme is in operation for landowners and the wider community

2. A business training & support package is in operation for small-scale reforestation enterprises

3. An (agro) forestry training & support package is in operation for small-scale reforestation enterprises

4. A distribution system is in operation providing (agro) forestry stock and materials for model reforestation enterprises

EXECUTING AGENCY	Papua New Guinea Forest Authority
COOPERATING GOVERNMENTS	
DURATION	36 MONTHS
APPROXIMATE STARTING DATE	1 MARCH 2010

BUDGET AND PROPOSED SOURCES OF FINANCE	Source	Contribution in US$	Local Currency Equivalent
	ITTO	644,814	
	Government of PNG	183,762	
	TOTAL	828,576	

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Project Brief

The Project originates from PPD-124-06-R2 which aimed to improve rural livelihoods in Central Province through designing and initiating a landowner-driven approach for establishing high-value plantations on under-utilised grassland areas. This Project Document is the result of a series of project design activities that involved baseline data collection, formation of pilot land groups, selection of pilot sites, and participatory planning exercises. Technical Reports 1 and 2 provide readers with the full set of baseline and strategy selection activities, outputs and findings.

PRESENT SITUATION

At present, the savanna and grassland areas in Central Province are steadily expanding, and rural incomes are increasingly unable to meet community needs. These two issues contribute towards the steadily deteriorating standard of living in Central Province. The Pre-project identified the key factors restraining landowners from growing high value trees as being *limited access to awareness, training and support services*. Fortunately, the present situation is also conducive to a carefully planned intervention, that is:

1. *There is already an acceptable set of financial, human, natural, physical and social resources in place for the Project to build on.*

2. *There is already an adequate policy and institutional framework in place for the Project to work with.*

3. *There is a generally agreeable set of stakeholders in place who have the potential to support and/or promote future reforestation activities.*

4. *Papua New Guinea is well-place to take advantage of the Asian timber markets, and the Central Province lowlands have adequate access to the necessary marketing infrastructure.*

The Pre-project's literature review confirms that a significant opportunity exists to take advantage of the current national reforestation framework, and develop a model approach to grassland reforestation. However - *if nothing is done* - the social, economic and environmental situation is expected to deteriorate.

PROJECT OBJECTIVES

The Project has set the following Development Objective which will be measured with reference to baseline socio-economic and environmental data:

1. *The social, environmental and economic situation in Central Province is steadily improving*

The Project has set the following Specific Objective which will be measured with reference to the successful establishment of the 'model' reforestation enterprises:

1. *A model reforestation framework is created that encourages customary landowners in the Central Province lowlands to grow high value trees on their grassland areas*

PROJECT BENEFITS

Project beneficiaries comprise two types of landowner. The Model Land Groups in the three demonstration Districts will receive reforestation awareness, training and support services (i.e. Outputs 1-4). The Wider Landowning Community will receive reforestation awareness services (i.e. Output 1) though target group representatives. There will be four Outputs:

1. *A reforestation awareness programme is in operation for landowners and the wider community*

2. *A business training & support package is in operation for small-scale reforestation enterprises*

3. *An (agro) forestry training & support package is in operation for small-scale reforestation enterprises*

4. *A distribution system is in operation providing (agro) forestry stock and materials for model reforestation enterprises*

The Model Reforestation Framework is expected to improve the deteriorating socio-economic situation in Central Province through enhancing each Model Land Group's short-term income generation capacity, in addition to their long-term financial security. The Project is also expected to improve the deteriorating environmental situation in Central Province through steadily replacing its lowland grasslands with trees. There is also significant carbon storage potential. The Project will also assist landowners to either deal with / prevent any undesirable social and environmental outcomes through the awareness, training and support services. Project Impact is expected to gradually expand (i.e. scale-up & scale-out) as landowners continue to learn about & adopt reforestation practices through the Reforestation Awareness Programme (Output 1).

PROJECT APPROACH

During the Pre-project, baseline research was followed by a five-day strategy selection program comprising awareness tours and workshop sessions. On day five, sixty-four stakeholder representatives selected the following implementation approach with reference to their findings from the situation assessment, problem analysis and objective setting sessions:

1. *The PNGFA is responsible for managing and sustaining the model reforestation framework in collaboration with appropriate research and development partners.*

2. *The Project will strengthen the capacity of the National Forest Service, Small Business Development Corporation and National Agricultural Research Institute to deliver cost-effective and sustainable awareness, training and support services.*

3. *The Project will develop and promote a range of appropriate business arrangements and production systems that take into account people's short-term income generation needs (e.g. through integrating forestry with agriculture), as well as their long-term financial security.*

4. *The Project will focus on teak - the principle species at the Kuriva Forestry Station and nearby Mount Lawes Clonal Orchard - but not isolate other appropriate, high value, high demand species (e.g. mahogany and sandalwood).*

The implementation methods, activities and tasks were then carefully formulated in consultation with NFS Project Personnel, Technical Partners and Model Land Groups.

ASSUMPTIONS, RISKS AND SUSTAINABILITY

In line with the Project Approach, the PNGFA has accepted responsibility for managing and sustaining the Model Reforestation Framework in collaboration with the selected research and development partners. These Technical Partners (i.e. Australian National University, Department of Education, James Cook University, National Agricultural Research Institute, Small Business Development Corporation) have agreed to take part as specified in the Project Work Plan.

Implementation Methods have been carefully selected to ensure the Project's awareness, training and support services can be operated and maintained by the National Forest Service, National Agricultural Research Institute and Small Business Development Corporation in the future. The Project Exit Strategy focuses on building the capacity of these three institutions to deliver cost-effective and sustainable services through strengthening operational systems, physical resources, and human resources. The future costs of operating, maintaining and enhancing all ITTO Inputs will be sustained by each recipient organization.

Overall, the Project has selected a cost-effective, low-risk approach. The Logframe contains the Key Assumptions necessary for the realization of Project Outputs and Objectives. The corresponding Risk Management Table will form an important part of the Project Monitoring System, and will be updated as necessary during the project implementation phase.

PROJECT BUDGET

The Project Proposal requests USD 644,814 from the ITTO. This figure includes the re-imbursement of USD 79,920 in ITTO Pre-project costs. Around 14% of the ITTO budget is allocated to project personnel, and 14% to capital items.

The PNGFA will contribute around USD 183,762. The NARI and SBDC will also make significant local contributions through the use of their training and extension resources in Laloki and Port Moresby.

List of Abbreviations and Acronyms

ACIAR	Australian Centre for International Agricultural Research
ANU	Australian National University
AusAID	Australian Agency for International Development
CSIRO	Commonwealth Scientific and Industrial Research Organisation
JCU	James Cook University
ILG	Incorporated Land Group
ITTO	International Tropical Timber Organisation
KAB	Know About Business
NARI	National Agricultural Research Institute
NFS	National Forest Service
NGO	Non Governmental Organisation
PDD	Project Document
PNG	Papua New Guinea
PNGFA	Papua New Guinea Forest Authority
PPD	Pre-project Document
SBDC	Small Business Development Corporation
SIYB	Start and Improve Your Business
TMIC	Timber Marketing Information Centre

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Map of Project Area

Figure 1: Map of Central Province showing Pre-project pilot sites, rivers, vegetation types and logged over areas. Map produced by PNGFA Mapping Branch using Forest Inventory Mapping System data and classifications derived from aerial photos taken in 1974.

Part 1: Project Context

1.1 *Origin*

The Project originates from PPD-124-06-R2 which aimed to improve rural livelihoods in Central Province through designing and initiating a landowner-driven approach for establishing high-value plantations on grassland areas. The Pre-project document highlights a variety of related factors which have transformed productive forests and woodlands into under-utilised savanna and grasslands. These include monsoonal climate, soil erosion, uncontrolled fires, unsustainable land-use practices, and population growth.

PRE-PROJECT ACTIVITIES involved:

★ *Collection of baseline data at two pilot areas and the provincial forestry station.*

★ *Formation of 'model' landowner groups and selection of pilot sites within one pilot District.*

★ *Strategy selection activities with landowner representatives, timber buyers, research & development agencies, provincial & district administrations, NFS personnel and project consultants*

This document represents the elaboration of the selected model approach for encouraging customary landowners to grow high value trees on grasslands areas in Central Province, as well as to look after their remaining natural forests and woodlands. Technical Reports 1 and 2 (PPD-124-06-R2) contain the complete baseline, strategy selection, and joint venture findings.

1.2 *Relevance*

1.2.1 Conformity with ITTO's Objectives and Priorities

The Project will make an effective contribution towards the ITTA Objectives (Table 1, below) and the ITTO Action Plan (Table 2, page 6).

Table 1: ITTA Objectives (2006) towards which the Project will contribute.

ITTA Objective	Project Contribution
(c) Contributing to sustainable development and to poverty alleviation;	The Project contributes towards sustainable forest management and socio-economic development in the Central Province of PNG.
(d) Enhancing the capacity of members to implement strategies for achieving exports of tropical timber and timber products from sustainably managed sources;	The Project enhances the capacity of the PNGFA to manage a model approach for increasing and sustaining the export of high value timbers through the reforestation of degraded grasslands.
(f) Promoting and supporting research and development with a view to improving forest management and efficiency of wood utilization and the competitiveness of wood products relative to other materials, as well as increasing the capacity to conserve and enhance other forest values in timber producing tropical forests;	The Project promotes and supports targeted research and development inputs during the creation of the model reforestation framework.
(j) Encouraging members to support and develop tropical timber reforestation, as well as rehabilitation and restoration of degraded forest land, with due regard for the interests of local communities dependent on forest resources;	The Project encourages landowners in Central Province to rehabilitate their degraded grasslands for long-term social, environmental and economic benefits.

Table 2: ITTO Action Plan (2008-2011) Outcomes and Actions towards which the Project will contribute

ITTO Outcome and Action	Project Contribution
Expected outcome 1: *Increased production and further processing of tropical timber and other forest products from sustainably managed and legally harvested sources.*	
1 A Promote private investment by facilitating information exchange on investment opportunities	The Project will develop a cost-effective and sustainable business training and support package, that leads to the establishment of model business arrangements for Central Province
1 F Undertake studies on and support the establishment of small-scale or community based forest enterprises	The Project will create a model reforestation framework that encourages landowners to establish reforestation enterprises in a way that takes into account people's short-term income generation needs, as well as their long-term financial security.
Expected outcome 2: *Increased efficiency in harvesting, processing and utilization of tropical timber from sustainably managed and legally harvested sources*	
2 D Promote the development of marketing, production, commercial and community-level skills in forest industry	The Project will develop cost-effective and sustainable (agro) forestry and business training and support packages, that strengthen existing skills and practices,
Expected outcome 5: *Tropical forest resource better secured*	
5 D In cooperation with relevant organizations, support studies and activities related to reducing deforestation and degradation and enhancing carbon sinks	The Project will develop a cost-effective and sustainable awareness programme that strengthens stakeholder understanding of reforestation issues, options and processes.
5 C Contribute to national and international efforts in the prevention and management of forest fire	The Project will develop and promote mechanisms that assist reforestation enterprises to control fire through the (ago) forestry training and support package, and the model reforestation enterprises
Expected outcome 6: *Tropical forest resource sustainably managed*	
6 C Review progress on and new opportunities (e.g. REDD) for the management of secondary tropical forests, the restoration of degraded tropical forests and the rehabilitation of degraded tropical forest land	The Project will create a model reforestation framework that encourages landowners to establish reforestation enterprises on their grassland areas. The Project will research and develop a model distribution system that provides (agro) forestry stock and materials for reforestation enterprises.
6 G Promote the development of silvicultural, forest management planning and related skills in public institutions, commercial companies and communities by, *inter alia*, regional training needs analysis and the provision of support to regional centres of expertise	The Project will strengthen the capacity of the NFS and its partner institutions (NARI and SBDC) to deliver cost effective and sustainable (agro) forestry and business development training and support services to landowners.

1.2.2 Relevance to the Submitting Country's Policies

The Project is well-aligned with national government priorities and strategies[1]. Table 3 shows how the Project overall is guided by the National Forest Policy.

Table 3: Relevant national forest policy guidelines

Policy Document	Relevant Guidelines
National Forest Policy (1991)	Forest Management: ★ *Reforestation will be promoted as a means to maintain a permanent forest estate to supply existing and new forest industries.* ★ *A program of afforestation of non-forested and severely deforested land shall be pursued.* ★ *Woodlot establishment, agroforestry and tree planting... will be promoted and supported by active forestry extension.* Forest Research: ★ *Development of silvicultural, forest management and logging techniques for enhancing the continuity of forest resources.* ★ *Development of agroforestry and community forestry.* Forestry Training and Education: ★ *Information on forestry techniques and extension programs will be disseminated to the public through training institutions, schools, other agencies and the media to generate awareness.*

The following extract from the ITTO sponsored Report of the Diagnostic Mission to PNG (Lakani *et al.*, 2006) shows clearly how a **SIGNIFICANT OPPORTUNITY EXISTS** to take advantage of the current national reforestation framework in order to develop a model approach to reforestation:

"To date, relatively little attention has been given to the promotion of reforestation and afforestation activities in PNG. It is reported that of the 64,408 hectares of forest plantations established in the country, only a meagre 2,131 hectares were developed after the National Forest Policy (1991) came into force. With the oldest plantation established in 1950, and the emphasis to promote more forest plantations using high value species as a priority, either through woodlot establishment, agroforestry or private sector industrial tree plantation, careful scrutiny is needed.

While supporting customary landowner participation, plantation forests is needed for a number of reasons; (1) creation of employment opportunities for the rural people, (2) development of competitive export production, (3) encouragement of economically viable downstream processing of forest products, and (4) ensuring opportunities for the entire community to participate in the development process. It was noted that minimal monitoring is done for plantation sector which does not have a governing policy on reforestation at the national level. Sharing of experiences, lessons learnt, training, dissemination of information and knowledge among the 17 existing forest plantations from the different provinces is significantly absent.

Large areas of degraded land and grassland areas are available for establishing commercial forest plantations. However, this option is subject to availability of investment funds, willingness of the landowners to participate, ownership rights of the landowners being respected, availability of planting materials and appropriate seed sources. The role of the government agencies, private sector together with the customary landowners is the prime catalyst to stimulate the growth and further the plantation development."

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[1] For example, the Mid Term Development Strategy (2005-2010), the National Forest Policy (1991), the Draft Reforestation Policy (2005) and the PNGFA Corporate Plan's (2007-2012).

Table i (below) presents the important lessons learned from the implementation of the National Forest Policy (1991) with regards to the establishment of forest plantations.

Table i: Relevant lessons learned from implementation of the National Forest Policy (1991)

Issue	Lessons Learned
Land Tenure	★ Government run plantations are easier to manage on state land than on customary land. Plantations on customary land need to be carefully planned and negotiated with landowner representatives. ★ IIGs provide an appropriate mechanism for assisting landowners to be well organized and make decisions regarding the use of their land. ★ The ILG application process needs to be carefully followed and landowners need to fully understand the ILG mechanism.
Extension	★ Extension services (e.g. awareness, information, training, seedlings) provide a cost effective means of assisting landowners to be well-organized, and to develop their natural resources. ★ Extension requires careful planning and ongoing financial support. The PNGFA is currently trying to address this area (which has received limited government support since 1993) through its Corporate Plan (2007-2012) and staff restructure. ★ Training and skilling of extension officers is necessary. ★ Networking with a broad range of related agencies (e.g. education, media, NGOs) is necessary.
Research	★ Research is an essential part of plantation forest management. ★ Careful planning and ongoing financial support is needed to transform research results into practical outcomes. The PNGFA is currently trying to address this area through its Corporate Plan (2007-2012) and staff restructure. ★ Training and skilling of reasearch officers is necessary. ★ Networking with a broad range of research and development agencies is necessary.

1.3   *Target Area*

1.3.1   Geographical Location

PNG is located in the Pacific Islands Region. Central Province lies along the south coast of PNG and covers an area of 30,730 km^2. The Province comprises large areas of unoccupied land, a good road network, and **four** administrative Districts (Figure 2, page **50**). Many areas have access to electricity and telephones (i.e. landline and/or mobile). The topography comprises coastal lowlands and hills that rise up to the rugged Owen Stanley Ranges.

Being located close to the major timber markets of Asia, PNG is **WELL-PLACED** to expand, diversify and sustain its timber industry in a way that brings significant economic returns to both local and national economies. Being **WELL-LINKED** to the National Capital (Port Moresby), Central Province has good access to the necessary marketing infrastructure for targeting both domestic and overseas markets. AusAID (2006) highlights the prospects that exist for landowners in the Pacific as follows:

"While there is obvious potential in the land-abundant Pacific countries for large plantations, land tenure constraints mean that the greatest potential for plantations may be at the community or household level... New plantations would need to focus on a few species in which the Pacific has some comparative advantage in meeting the demands of specialty markets unlikely to be supplied by other countries producing plantation woods. Likely candidates are teak and mahogany because the supply of high-quality furniture timbers from natural forests is in decline, and export markets are increasingly prepared to pay a premium for quality timber from sustainably managed sources."

Table ii (below) provides some background information on the four Districts within Central Province, and shows how the three target Districts (i.e. Rigo, Kairuku Hiri and Abau) were selected.

Table ii: District selection criteria and findings

SELECTION CRITERIA	Findings			
	Goilala	Rigo	Kairuku	Abau
Adequate district government support for community reforestation	Yes	Yes	Yes	Yes
Adequate areas of under-utilised, community owned grasslands	Yes	Yes	Yes	Yes
Adequate topography	No	Yes	Yes	Yes
Adequate access to marketing infrastructure	Yes	Yes	Yes	Yes
Adequate rainfall	No	Yes	Yes	Yes
Adequate soil pH, depth, structure, drainage and moisture holding capacity	Yes	Yes	Yes	Yes
Adequate minimum and maximum temperatures	No	Yes	Yes	Yes

1.3.2 Social, Cultural, Economic and Environmental Aspects

(a) Socio-Economic Context

Central Province has a population of 167,000 and a growth rate of 2% (2000 census). Population densities range from low to very high (Figure 3, page **51**). The Project's target beneficiaries live along the lowland coastal areas, which have low-moderate population densities, very low-moderate income levels, low-moderate subsistence farming pressures, and very low-low agricultural potential (Hanson et al., 2000). Table 4 (below) outlines the present situation within the Gomore demonstration area (Rigo District).

Table 4: Baseline employment data for the Gomore demonstration area

AGE GROUP	0-9	10-19	20-49	50+	Total
Population	110	110	170	60	450
Employed locally	-	5	15	5	25
Employed in Port Moresby	-	10	25	8	43
Employed elsewhere	-	8	12	2	22
Self-employed locally	-	86	114	43	243
Self-employed elsewhere	-	2	4	2	8

(b)   Cultural Context

Central Province has a land area of 30,731 km^2, the majority of which is held under customary ownership. Kanowski et al. (2008) summarise the land tenure aspects of growing commercial trees in PNG as follows:

> "Customary land tenure does not preclude growing of tree crops on a commercial scale. Gender differences in terms of inheritance and use rights have some implications for investment strategies, but are not generally a constraint."

During the Pre-project, the three demonstration areas showed that community decision-making was centred at the clan level. For example, the three landowner clans of the Gomore demonstration area decided that reforestation enterprises should be managed through incorporated sub-clan groups, leading to the formation of three Incorporated Land Groups representing 336 landowners in total. Kanowski et al. (2008) summarise the situation in PNG as follows:

> "A wide range of rights (viz. inheritance, use, access, control) is vested in customary groups and individuals within them. These groups are based on kinship; while final decisions regarding land and other natural resources can be made at different levels of the group, most are made at the clan level;"

During the Pre-project, customary land issues were found to create uncertainty at the village level which further discouraged people from planting trees. Table iii explains the land tenure issues portrayed in the Problem Tree (Figure 4, page 20), and presents the mechanisms selected for addressing these constraints to community reforestation.

Table iii: Land tenure issues and mechanisms selected for organising landowners

Issue	Mechanism
LAND-OWNERSHIP needs to be clearly defined and agreed upon - *prior to undertaking a reforestation venture* - in order to avoid disputes that may arise from other landowners.	Incorporated Land Groups (ILG) provide a recognized mechanism that enables customary landowners to take part in the formal economy with support from the legal system. An ILG should provide landowners with a solid platform to make final decisions regarding the use of their land and its resources, as well as the sharing of benefits derived from these assets. The ILG application process comprises a number of distinct steps that assists landowners to organize themselves into the most appropriate decision-making body for a given area of land (usually a clan or sub-clan grouping). ILGs are governed by their:
LAND-USE systems need to be clearly defined and agreed upon - *prior to undertaking a reforestation venture* - in order to assess different options and settle differences of opinion.	★ *Constitution* ★ *Management Committee* ★ *Dispute Settlement Authority* During the Pre-project, three ILGs were formed to manage the model reforestation enterprise for Rigo District. The Community Involvement Specialists assisted the NFS Acquisition Branch staff to implement their ILG Extension Services, particularly in the areas of
BENEFIT SHARING arrangements need to be clearly defined and agreed upon - *prior to undertaking a reforestation venture* - in order to assess different options and settle differences of opinion.	ILG awareness, ILG training, priority setting, land-use planning and participatory clan-land boundary mapping. This led to the formation of the three ILGs for Rigo District. The selected demonstration area was not being used by other individuals/groups. During the Project, the Community Involvement Specialist will assist the NFS Acquisition Branch to upgrade their ILG Tools, Techniques and Procedures, prior to establishing the model ILGs at the selected demonstration areas for Kairuku-Hiri and Abau Districts. The Project will next assist each ILG to develop their: ★ *Land Use Plan* - demonstration areas will not include land being used by other individuals/groups ★ Business Plan - *including agreed benefit sharing arrangements*

(c)   Environmental Context

Today, log exports from PNG's primary forests continue to make a significant contribution to the national economy. Since accessible forests are becoming increasingly depleted, the PNGFA is focusing on reforestation as a means of maintaining a permanent forest estate that supplies existing and new forest industries.

Central Province contains a variety of vegetation types (Figure 1, page 4). There are extensive areas of savanna (162,945 ha²) and grasslands (535,161 ha.[11]) along the lowland coastal areas and the northern ranges of Goilala District representing 23% of the total land area. This vegetation is strongly influenced by the monsoonal climate[3], weathered soils, and land-use practices (particularly fire). In their description of lowland vegetation around Kwikila (Rigo District), Allen et al. (2002) write:

> "Eden (1974) estimated that 22 per cent of such forested land which was cleared for cultivation did not revert to forest, but was converted to savanna. Approximately 2 per cent of forest was being converted to savanna every year by gardening and subsequent burning."

During the Pre-project, baseline surveys and landowner consultations at Gomore (Rigo District) and Papa (Kairuku-Hiri District) areas indicated a variety of land-use options are available with regards to tree species (e.g. teak, sandalwood, mahogany) and production systems (e.g. plantation, woodlot, farm forestry, agro-forestry).

1.4 *Expected Outcomes at Project Completion*

The Project will create a **MODEL REFORESTATION FRAMEWORK** that encourages customary landowners in the Central Province lowlands to grow high value trees on their grasslands areas. Project beneficiaries comprise:

★ *The 'model' land groups in three demonstration areas[4]. During the Project, these groups will receive reforestation awareness, training and support services (i.e. Outputs 1-4).*

★ *The 'wider' landowning community. During the Project, target representatives will receive reforestation awareness services (i.e. Output 1).*

Selection criteria will be developed to ensure each of the three demonstration areas contains an appropriate model reforestation enterprises at a strategic location for others to see, visit and experience. Table iv (below) presents the three components of a model reforestation enterprise. Table 5 (page 12) presents the expected outcomes at project completion.

Table iv: The three components of a model reforestation enterprise

Component	Description
Model land group	Each reforestation area will be controlled by the most appropriate decision-making body of landowners - in the form of a well-organised and properly formed Incorporated Land Group (ILG).
Model business arrangement	Each model land group will identify the most appropriate business arrangement (e.g. independent landowner company) for their particular situation, leading to the preparation of a Model Business Plan (ILGs may collaborate under a common business plan) that will assist each ILG to realize their reforestation objectives (i.e. short, medium and long-term). Medium / large-scale businesses will be expected to select a partner (private or public sector) with the required expertise and access to finance.

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[2] Using Forest Inventory Mapping System data and classifications derived from aerial photos taken in 1974
[3] Rainfall is around 1,000-1,500mm/year.
[4] The three demonstration areas are Rigo, Kairuku-Hiri and Abau Districts (Figure 2, page 50)

<u>Table iv: The three components of a model reforestation enterprise (continued)</u>

Component	Description
Model production system	Each model ILG will identify the most appropriate production system for their particular situation, leading to the preparation of a Model Land-Use Plan (ILGs may collaborate under a common land-use plan) that will assist each ILG to realize their reforestation objectives (i.e. short, medium and long-term). Medium / large-scale businesses will be expected to select a partner (private or public sector) with the required (agro) forestry expertise.

Table 5: Expected outcomes of the Model Reforestation Framework at project completion

Project Output	Outcome at Project Completion
1. A reforestation awareness programme is in operation for landowners and the wider community	After project completion, the model landowner groups will continue to operate and show-case their model reforestation enterprises. After project completion, NFS will continue to deliver and improve the awareness material - using the mechanisms developed during the Project.
2. A business training and support package is in operation for small-scale reforestation enterprises	After project completion, NFS and SBDC will continue to provide business development services to landowners on demand, using the mechanisms developed during the Project.
3. **<u>An (agro) forestry</u>** training and support package is in operation for small-scale reforestation enterprises	After project completion, NFS and NARI will continue to provide agro-forestry services to target landowners on demand, using the mechanisms developed during the Project.
4. A distribution system is in operation providing (agro) forestry stock and materials for model reforestation enterprises	After project completion, NFS and NARI will continue to supply planting stock and materials to reforestation enterprises through the Kuriva and Laloki Stations. After project completion, NFS will continue to implement the vegetative propagation programme initiated during the Project - in order to meet present and future grower demand and buyer requirements.

The Model Reforestation Framework is expected to improve the deteriorating **SOCIO-ECONOMIC SITUATION** in Central Province through raising rural incomes. The model business arrangements and production systems are expected to enhance the short-term income generation capacity of the model land groups, in addition to their long-term financial security. Whilst income generation provides a widely accepted means of improving access to basic services such as health and education, it may also lead to undesirable social outcomes (e.g. domestic problems caused by increased alcohol consumption). The Project will help landowners to deal with these issues through the awareness activities and material (Output 1).

The Model Reforestation Framework is also expected to improve the deteriorating **ENVIRONMENTAL SITUATION** in Central Province through steadily replacing its lowland grasslands with trees. The model production systems will gradually bring about significant environmental outcomes (e.g. sequester carbon, reduce burning, increase bio-diversity, mitigate against climate change). The Project will help landowners to prevent any undesirable environmental outcomes (e.g. soil erosion and pressure on natural forests through shifting cultivation & fuel-wood collection) from occurring through the (agro) forestry training and support package (Output 2).

Part 2: Project Rationale and Objectives

2.1 *Rationale*

2.1.1   Institutional Set-Up and Organisational Issues

In line with the Project Approach (section 3.2, page 2 __8__), the **PNG FOREST AUTHORITY** has accepted responsibility for managing and sustaining the Model Reforestation Framework in collaboration with appropriate **RESEARCH AND DEVELOPMENT PARTNERS**.   Four Technical Partners have been selected, who - *together* - provide the required mix of research and development expertise and resources.   Each partner has adequate internal (e.g. organisational) and external (e.g. collaborative) capacity to carry out their project duties and responsibilities.   Table 6 (below) provides some background information on the roles, resources and capabilities of each partner.   Table 7 (pages 13-16) includes an analysis of the strengths and weaknesses of both NFS and their selected partners.

Table 6: The roles, resources and capabilities of the selected Technical Partners

Organisation	Relevant Resources and Capabilities
The SMALL BUSINESS DEVELOPMENT CORPORATION is the Project's Business Development Partner	SBDC leads the implementation of PNG's Small and Medium Enterprises Policy. The Start & Improve Your Business Programme[5] - comprising training material, training courses, and a network of accredited trainers and trainer-of-trainers – has become a well-established part of their work. Business support services are provided by their Business Development Programme.
The NATIONAL AGRICULTURAL RESEARCH INSTITUTE (Laloki Agricultural Station) is the Project's Agricultural Partner	NARI leads the implementation of the research component of the National Agricultural Policy through applied & development oriented research. NARI also provides technical, analytical and diagnostic services, and up-to date information to PNG's agricultural sector. In Central Province, NARI operates the LALOKI AGRICULTURAL STATION, together with 10 Community Based Resource Centres which provide a local venue for resources, meetings, demonstration, information, trainings and workshops. Current interventions for grassland areas include agro forestry (e.g. intercropping) and simple irrigation systems.
The AUSTRALIAN NATIONAL UNIVERSITY (Fenner School of Environment & Society) is the Project's Research Partner (Agroforestry Systems)	ANU manages the ACIAR Project FST-2004-050: *Value Adding to PNG Agroforestry Systems (2007-2011)* The Project operates in Western, Morobe and Madang Provinces. Expected outputs are: ★ *Identification of appropriate tree species, production systems, business models and institutional frameworks to achieve project objectives in each pilot region;* ★ *Implementation activities within each pilot region, with investment and implementation partners and willing landowners, to establish first-stage plantings of high-value species;* ★ *Development and implementation of a communications strategy to that ensure that project knowledge is widely disseminated to relevant parties in PNG;* ★ *Identification of any further research, development and policy interventions necessary to foster adoption of commercial tree growing by landowners, in the pilot study regions and elsewhere in PNG.*

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[5] The SIYB program operates in 86 countries - licensed and assisted by the International Labour Organisation which is based in Geneva, Switzerland.

Table 6: The Project Partners' roles and resources (continued)

Organisation	Project Resources
The JAMES COOK UNIVERSITY (Agroforestry & Novel Crops Unit) is the Project's Research Partner (Germplasm Delivery)	JCU manages ACIAR Project FST-2007-078: *Development of a PNG timber industry based on planted forests: design & implementation of national germplasm delivery system (2019-14)* The Project operates in East New Britain, Western, Morobe and Madang Provinces, and will address five specific research areas: ★ *Identification of suitable interim seed sources.* ★ *Adaptation of vegetative propagation techniques.* ★ *Demonstration plantations of vegetatively-propagated material will be designed as clonal tests.* ★ *The feasibility of commercial nursery micro-enterprises as sustainable germplasm supply mechanisms will be examined.* ★ *Environmental and socio-economic factors determining performance of the community-located teak plantations established by project collaborators will be identified.*

2.1.2 Stakeholder Analysis

Table 7 (pages 1**5**-1**8**) provides an analysis of primary and secondary stakeholders, together with a brief outline of their involvement in the Project. During the Pre-project, the following **METHODS** were used to encourage interested stakeholders to participate in the various project design activities:

★ *The PRE-PROJECT BROCHURE and E-BULLETIN was regularly distributed to inform, up-date and involve stakeholders at local, district, provincial, national and international levels.*

★ *Baseline social, cultural, economic and bio-physical data was collected at Gomore, Papa and Boera Villages (Figure 1, page 4) using PARTICIPATORY TECHNIQUES and FIELD SURVEYS.*

★ *Baseline economic and bio-physical data was collected at the NFS Kuriva Forestry Station and nearby Mount Lawes Clonal Orchard (Figure 1, page 4) through FIELD SURVEYS and ON-SITE CONSULTATIONS with NFS staff.*

★ *Baseline research was followed by a five-day strategy selection program - comprising AWARENESS TOURS[6] and WORKSHOP SESSIONS[7]. On day five, sixty-four workshop participants were asked to identify the best approach for encouraging landowners to grow high value trees on grasslands - with reference to their findings from the situation assessment, problem analysis (Figure 4, page 20) and objective setting (Figure 5, page 21) sessions.*

★ *Strategy selection was followed by DIRECT DISCUSSIONS with model land groups at Gomore leading to the preparation and signing of the three PNGFA / ILG Joint Venture Understandings. This involved the identification of project roles and responsibilities.*

★ *Strategy selection was followed by DIRECT DISCUSSIONS with the selected project partners, leading to the signing of individual Letters of Support. This involved an assessment of organizational strengths & weaknesses, and selection of implementation methods and inputs.*

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[6] Participants visited target villages & grassland areas, Kuriva Forestry Station & Mount Lawes Clonal Orchard, and Yumicom (buyer / processor of high-value timbers in Port Moresby)

[7] Comprising situation assessment, problem solving, objective setting and strategy selection sessions

Table 7: Analysis of primary and secondary stakeholders

Stakeholder Group	Characteristics	Problems, Needs, Interests	Potentials	Project Involvement
Primary Stakeholders				
Landowners of grasslands in the lowlands of Central Province comprising 'model' land groups and the 'wider' community	Extensive grasslands and savanna areas provide landowners with a limited source of food and cash income through shifting cultivation of fruit and vegetables, and hunting of animals for meat. Remaining woodland areas provide landowners with a limited supply of timber and fuel wood.	Low-moderate income levels, leading to limited ability to meet basic family needs (i.e. food security, education, health, shelter). Limited employment opportunities, leading to most men, women and youth being dependant upon village-based resources. Grassland areas and population densities increasing. Men, women & youths are keen to develop strategies that will improve the deteriorating social, economic and environmental situation	Extensive areas of community owned grassland which are generally suitable for high value trees such as teak and sandalwood[8]. Significant District development funds are available for priority projects from the national government.	The selected model land groups will play an active role throughout the project (Output 1) The 'wider' landowning will also be encouraged to reforest their degraded grasslands
	Reforestation is a new concept for most people.	Limited access to reforestation awareness, training and support (e.g. production systems). Landowners are particularly interested to integrate agriculture with forestry.	Innovative, experienced, agroforesters.	
	Mostly well-organised through their respective local level governments, clan groups, and church / youth / women's groups.	Limited access to community development awareness, training and support (e.g. land group incorporation) services.	Land tenure systems can accommodate reforestation with commercial trees. Community decision making practices & procedures in place.	
	Possess self-reliant cultures and values	Limited access to community development awareness, training and support (e.g. business arrangements) services.	Self-reliant, pragmatic approach.	

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[8] Trial plots would need to be established for other high value species (e.g. Swietenia mahogoni and macrophylla; Khaya spp; Terminalia spp; Canarium indicum).

Table 7: Analysis of primary and secondary stakeholders (continued)

Stakeholder Group	Characteristics	Problems, Needs, Interests	Potential	Project Involvement
Secondary Stakeholders				
National Forest Service (Kuriva Forestry Station)	Operates 800 hectare teak plantation with high quality clonal orchard, seed trees, nursery beds and administrative facilities. Offers limited reforestation training and support services	Limited supplies of seeds and planting stumps (teak). Limited training resources. Limited distribution network. Need to relocate the Mount Lawes Clonal Orchard from customary to state land to ensure the long-term security of this highly regarded genetic resource. NFS management is keen to establish a model reforestation centre at the Kuriva Forestry Station.	NFS has an appropriate set of resources at Kuriva and Mount Lawes to develop a model reforestation centre. Under the recent restructure, the Kuriva Forestry Station will receive 3 new officers to extend its training, nursery & extension operations within Central Province.	Will be responsible for operating, maintaining and developing the reforestation framework for Central Province. Expects to be able to replicate the model approach in other provinces with adequate infrastructure and similar constraints.
Small Business Development Corporation	Provides business training and support service with technical assistance from the International Labour Organisation.	Training material needs to be updated. Business information service needs to be updated. No active SIYB trainers operating in Central Province	Experienced provider of business training and support services. Five accredited master trainers based in Port Moresby. Training of KAB trainers for Central Province currently underway with AusAID support	Will provide business training and support services throughout the Project (Output 2)
National Agricultural Research Institute (Laloki Agricultural Centre)	Provides technical, analytical and diagnostic services, and up-to date information to PNG's agricultural sector.	Limited nursery facilities at Laloki to supply model reforestation enterprises and the wider community.	Experienced provider of agricultural training and support services. Established network in Central Province including 10 Community Resource Centres.	Will provide: ★ *Agroforestry Training and Support Services (Output 3)* ★ *Distribution of agroforestry stock and materials (Output 4)*

Table 7: Analysis of primary and secondary stakeholders (continued)

Stakeholder Group	Characteristics	Problems, Needs, Interests	Potentials	Project Involvement
Secondary Stakeholders (continued)				
PNG Department of Education (Curriculum Development Division)	Implements the national curriculum reform.	Limited funds to realize Curriculum Management Plan targets Keen to collaborate with organizations to develop local education materials that support the national framework (e.g. environmental studies).	Experienced in developing education materials that meet both national and local requirements.	Will be: ★ *Kept informed and updated throughout project* ★ *Involved in the development of school material, and project decision-making activities as appropriate*
Australian National University (Fenner School of Environment & Society)	Provide research and development services to PNG	Keen to develop adoption pathways that can be sustained	Currently managing the ACIAR financed research project FST-2004-050: *Value Adding to PNG Agroforestry Systems (2007-2011)*	Will provide: ★ *Research material* ★ *Advisory services*
James Cook University (Agroforestry & Novel Crops Unit)	Provide research and development services to PNG	Keen to develop adoption pathways that can be sustained	Currently managing the ACIAR financed research project FST-2007-078: *Development of a PNG timber industry based on planted forests: design & implementation of national germplasm delivery system (2019-14)*	Will provide: ★ *Research material* ★ *Advisory services*
Provincial and District Governments	Offer limited training and support services	Limited financial support from government	Significant District development funds are available for priority projects from the national government through Provincial and District Planning Committees	Will be: ★ *Kept informed and updated throughout the project* ★ *Involved in project decision-making activities as appropriate*

Table 7: Analysis of primary and secondary stakeholders (continued)

Stakeholder Group	Characteristics	Problems, Needs, Interests	Potentials	Project Involvement
Secondary Stakeholders (continued)				
Hope Worldwide PNG	Provides some agricultural training and support services to target groups in Central Province.	Limited (agro) forestry know-how.	Experienced in working with communities groups in Central Province. Experienced in securing donor funds for community development projects.	Will be: ★ *Kept informed and up-dated throughout the project* ★ *Involved in project awareness, training and support activities as appropriate*
Buyers of high value timbers	Purchase high-value timbers.	Declining supplies of timber.	Experienced in market specifications and quality control.	Selected buyers will be kept informed and up-dated throughout the project.
Finance institutions	Assist businesses that meet their finance criteria	Rural loan applications do not often meet finance criteria	Experienced in providing development loans	Selected finance institutions will be: ★ *Kept informed and up-dated throughout the project* ★ *Involved in the upgrading of business development materials as appropriate*
Investment partners	Partner landowner operations that meet their investment criteria.	Landowner operations do not often meet investment criteria.	Experienced in providing technical / financial support.	PNG Investment Promotion Authority will be ★ *Kept informed and up-dated throughout the project* ★ *Involved in the upgrading of business development materials as appropriate*

2.1.3 Problem Analysis

Baseline research was followed by a five-day strategy selection program. On day three - after introductory presentations by the project team, landowner representatives, and potential research & development partners[9] - sixty four workshop participants[10] identified the different problems affecting the establishment of plantations on grassland areas in Central Province using problem cards and brainstorm sessions.

A Problem Tree (Figure 4, page 20) was then assembled with the following **KEY PROBLEM**:

* *Landowners are not sufficiently motivated to grow trees on their degraded grasslands*

The core problem was found to be the result of **FIVE TYPES OF PROBLEM**:

* *Community issues create uncertainties*

* *Limited management skills and understanding*

* *Limited access to equipment and materials*

* *Limited reforestation skills and understanding*

* *Limited supplies of quality planting material*

Participants next created an Objective Tree (Figure 5, page 21) to set the Project Objectives and assist the selection of the Project Approach (section 3.2, page 28).

WHAT WILL HAPPEN IF NOTHING IS DONE? The Problem Tree highlights the social, economic and environmental consequences of the Core Problem. Pre-project research has confirmed that savanna and grassland areas are expanding, rural livelihood opportunities are diminishing, and social, economic and environmental stresses are on the rise. A carefully planned intervention is required to address this situation.

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[9] ACIAR-James Cook University (Australia), Small Business Development Corporation, National Agricultural Research Institute, Hope Worldwide-PNG
[10] NFS project personnel, project consultants, research & development agencies, provincial & district administrations, and landowner representatives from Rigo & Kairuku-Hiri Districts.

Figure 4: The Project Problem Tree

The standard of living is steadily deteriorating in Central Province

Rural incomes are increasingly unable to meet community needs

Degraded grassland areas are steadily increasing in size

Landowners are not sufficiently motivated to grow trees on their degraded grasslands

1. Community issues create uncertainties at the village level

2. Limited management skills and understanding at village level

3. Limited access to equipment and materials for village projects / businesses

4. Limited reforestation know-how & under-standing at village level

5. Limited supplies of quality planting material for Central Province

Differences of opinion on land-ownership, land-use & benefit sharing

Different commitments and priorities within rural communities

Limited access to finance

Limited reforestation training, awareness & support services

Kuriva Forestry Station has limited capacity to produce & deliver germplasm

Limited training & awareness on current environmental issues and community organizing processes at district / local level

Limited project / business management training, awareness & support at district level

Limited project / business management experience

Limited start-up funds / incentives available for village projects / businesses at district level

No examples of reforestation operations at district level

Limited information on reforestation available at district level

Kuriva Forestry Station has poor links with district level

Kuriva Forestry Station has limited supplies of germplasm

Figure 5: The Project Objective Tree

The social, environmental and economic situation in Central Province is steadily improving

Rural incomes are steadily increasing

Grassland areas are steadily reducing in size

A model reforestation framework is created that encourages customary landowners in the Central Province lowlands to grow high value trees on their grassland areas

1. A reforestation awareness programme is in operation for landowners, and the wider community

2. A business training and support package is in operation for small-scale reforestation enterprises

3. An (agro) forestry training and support package is in operation for small-scale reforestation enterprises

4. A distribution system is in operation providing stock and materials for model reforestation enterprises

Establish reforestation awareness programme

Establish and promote model reforestation enterprises at strategic locations

Establish business training service

Establish business information service

Establish (agro) forestry training service

Establish (agro) forestry information service

Secure, increase and diversify the production of planting stock

Establish distribution network for model reforestation enterprises
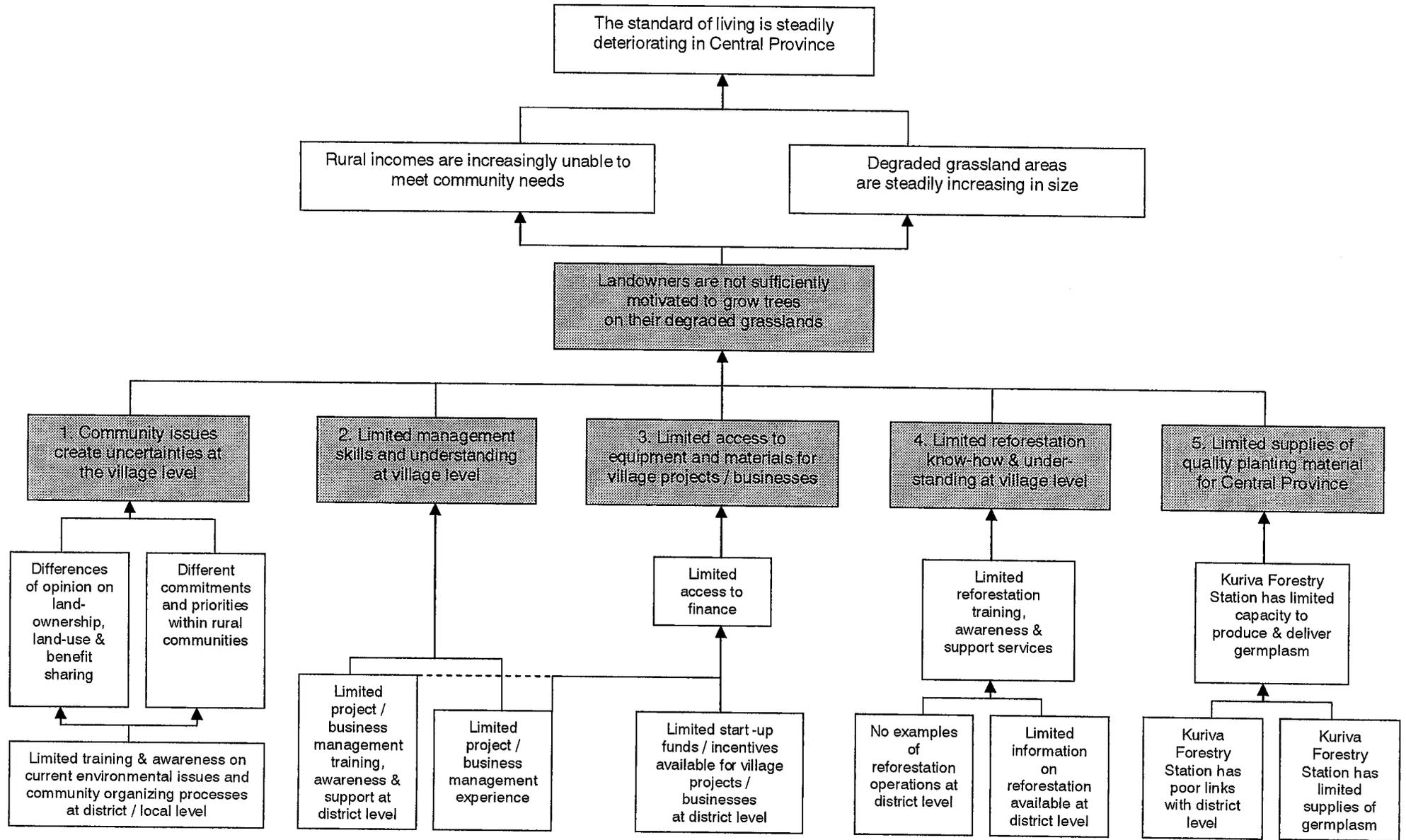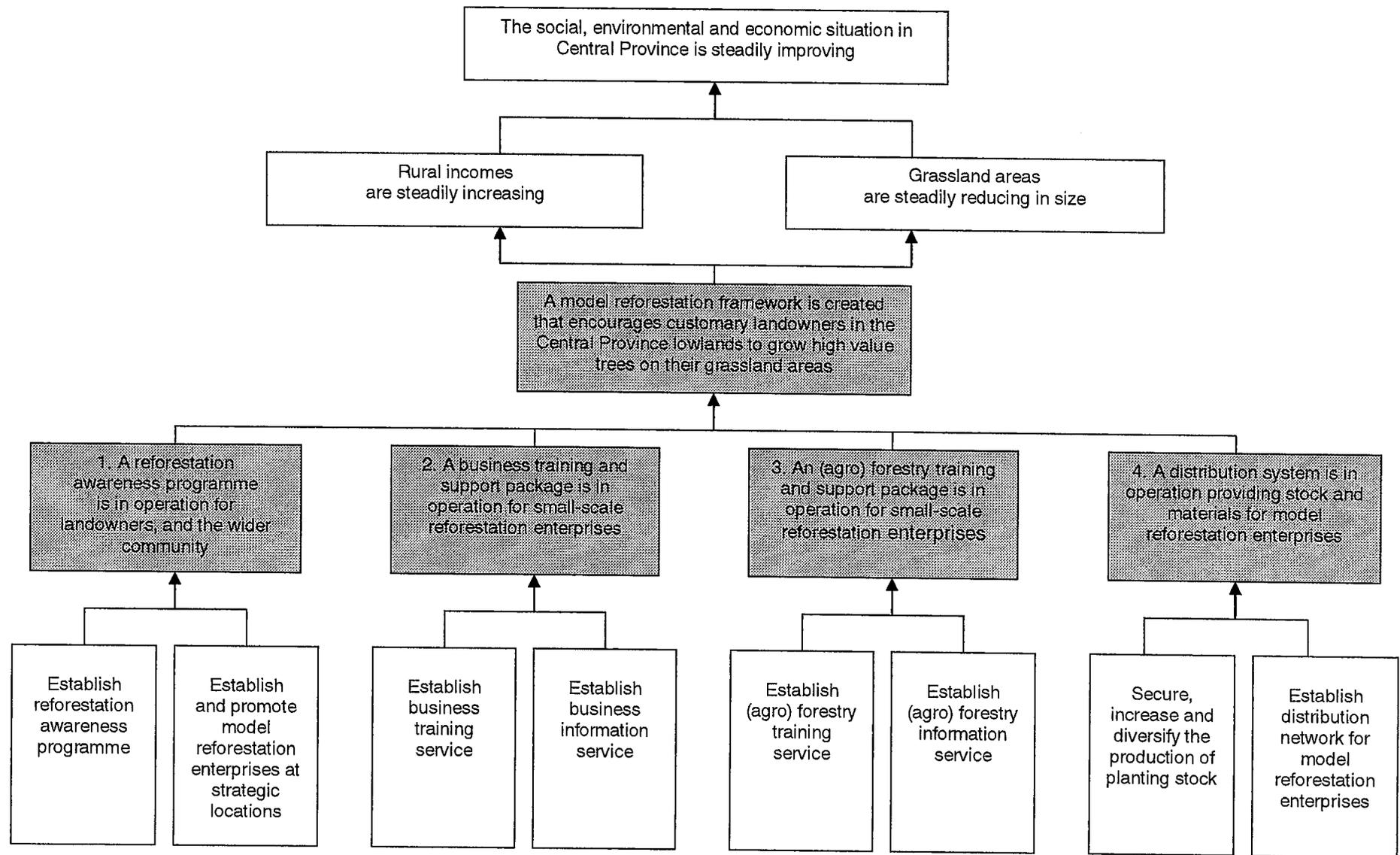
2.1.4 Logical Framework Matrix

Intervention Strategy	Measurable Indicators	Means of Verification	Key Assumptions
Development Objective: *Sustainable forest management practices are steadily improving the social, environmental and economic situation in Central Province*	Grassland areas under reforestation are doubling each year leading to 30% of total area planted by year 10. Landowners involved in grassland reforestation are increasingly able to meet their livelihood objectives.	NFS Reforestation Branch reports comparing baseline social, economic and environmental data with present situation Site visits	There is adequate marketing infrastructure in place There are adequate markets for (agro) forestry products
Specific Objective: *A model reforestation framework is created that encourages customary landowners in Central Province to grow high value trees on their grassland areas.*	By the end of year 2, a cost-effective and sustainable reforestation awareness programme that reaches out to target groups at local, district and provincial levels is in operation By the end of year 3, a cost-effective and sustainable reforestation training and support service that reaches out to landowners in Rigo, Kairuku-Hiri and Abau Districts is in operation	Stakeholder survey reports Site visits	There is adequate political and government support for reforestation at both Provincial and District levels
Output 1: *A reforestation awareness programme is in operation for landowners and the wider community*	By the end of year 2, representatives from each target group have access to practical and attractive information about reforestation issues, options and processes. By the end of year 3, one model reforestation enterprise is established at a strategic location in Rigo, Kairuku-Hiri and Abau Districts. Each enterprise is effectively promoting an appropriate ILG mechanism, business arrangement and production system to the wider community).	Awareness materials Awareness activity reports ILG certificates, joint venture agreements, land-use plans, business plans. Reforestation enterprise reports Site visits	Model land groups are willing to establish their reforestation enterprise The model production systems are free from vandalism The climatic conditions in the model areas are normal

Intervention Strategy	Measurable Indicators	Means of Verification	Key Assumptions
Output 2: *A business training and support package is in operation for small-scale reforestation enterprises*	By the end of year 1, a practical business training programme is developed comprising training material, courses and coaching By the end of year 2, five representatives from each model ILG in Rigo, Kairuku-Hiri and Abau Districts have been trained to select and establish an appropriate business arrangement for their situation. By the end of year 2, landowners have access to practical and reliable business information.	Training programme materials and reports Course and coaching reports Model business plans Business information materials and reports	Model land groups are willing to utilize the business training and support package The necessary business research findings from the ACIAR-ANU project are available
Output 3: *An (agro) forestry training and support package is in operation for small-scale reforestation enterprises*	By the end of year 1, a practical (agro) forestry training programme is developed comprising training material, courses and coaching By the end of year 2, five representatives from each model ILG in Rigo, Kairuku-Hiri and Abau Districts have been trained to select and establish an appropriate production system for their situation. By the end of year 3, landowners have access to practical and reliable (agro) forestry information.	Training programme materials and reports Course and coaching reports Model land-use plans (Agro) forestry information materials and reports	Model land groups are willing to utilize the (agro) forestry training and support package The necessary (agro) forestry research findings from the ACIAR-ANU and ACIAR-JCU projects are available
Output 4: *A distribution system is in operation providing (agro) forestry stock and materials for model reforestation enterprises*	By the end of year 2, a secure, high-quality clonal orchard is established at Kuriva Forestry Station. By the end of year 3, adequate supplies of (agro) forestry stock and materials are in place at each model reforestation enterprise. By the end of year 3, an appropriate plant propagation programme for the Central Province lowlands is underway at Kuriva Forestry Station.	Kuriva Forestry Station reports Site visits Kuriva Forestry Station reports Laloki Agricultural Station reports Site visits Kuriva Forestry Station reports Site visits	Model land groups are willing to utilize the distribution system The necessary germplasm delivery findings from the ACIAR-JCU project are available
Activities	For detailed activity costs and timeframes, see master budget.	Project financial reports, audit reports	

2.2 *Objectives*

2.2.1 Development Objective and Impact Indicators

Objective:	Sustainable forest management practices are steadily improving the social, environmental and economic situation in Central Province

Indicators:

★ Grassland areas under reforestation are doubling each year leading to 30% of total area planted by year 10.

★ Landowners involved in grassland reforestation are increasingly able to meet their livelihood objectives.

2.2.2 Specific objective and Outcome Indicators

Objective:	A model reforestation framework is created that encourages customary landowners in the Central Province lowlands to grow high value trees on their grassland areas

Indicators:

★ By the end of year 2, a cost-effective and sustainable reforestation awareness programme that reaches out to target groups at local, district and provincial levels is in operation

★ By the end of year 3, a cost-effective and sustainable reforestation training and support service that reaches out to landowners in Rigo, Kairuku-Hiri and Abau Districts is in operation

Part 3: Description of Project Interventions

3.1 *Outputs and Activities*

3.1.1 Outputs

Output 1:	A reforestation awareness programme is in operation for landowners and the wider community

Indicators:

★ By the end of year 2, representatives from each target group have access to practical and attractive information about reforestation issues, options and processes.

★ By the end of year 3, one model reforestation enterprise is established at a strategic location in Rigo, Kairuku-Hiri and Abau Districts. Each enterprise is effectively promoting an appropriate ILG mechanism, business arrangement and production system to the wider community.

Output 2:	A business training and support package is in operation for small-scale reforestation enterprises

Indicators:

★ By the end of year 1, a practical business training programme is developed comprising training material, courses and coaching

★ By the end of year 2, five representatives from each model ILG in Rigo, Kairuku-Hiri and Abau Districts have been trained to select and establish an appropriate business arrangement for their situation.

★ By the end of year 2, landowners have access to practical and reliable business information.

Output 3:	An (agro) forestry training and support package is in operation for small-scale reforestation enterprises

Indicators:

★ By the end of year 1, a practical (agro) forestry training programme is developed comprising training material, courses and coaching

★ By the end of year 2, five representatives from each model ILG in Rigo, Kairuku-Hiri and Abau Districts have been trained to select and establish an *appropriate* production system for their situation.

★ By the end of year 3, landowners have access to practical and reliable (agro) forestry information.

Output 4:	A distribution system is in operation providing (agro) forestry stock & materials for model reforestation enterprises

Indicators:

★ By the end of year 2, a secure, high-quality clonal orchard is established at Kuriva Forestry Station.

★ By the end of year 3, adequate supplies of (agro) forestry stock and materials are in place at each model reforestation enterprise in Rigo, Kairuku-Hiri and Abau Districts.

★ By the end of year 3, an appropriate plant propagation programme for the Central Province lowlands is underway at Kuriva Forestry Station.

3.1.2   Activities

Project Activities have been broken down into **SPECIFIC TASKS** to assist project budgeting, implementation and monitoring.

Annex 5 (pages **52**-5**8**) provides a **DETAILED DESCRIPTION** of the way in which each task will be implemented.

Output 1:	A reforestation awareness programme is in operation for landowners and the wider community

Activity 1.1:   **Establish forestry education service for primary and secondary schools**

> **Task 1.1.1:** Assess present understanding, and awareness gaps
>
> **Task 1.1.2:** Produce and distribute educational material for target schools
>
> **Task 1.1.3:** Support educational activities at target schools
>
> **Task 1.1.4:** Monitor and develop forestry education service

Activity 1.2:   **Establish reforestation awareness service for landowners and the wider community**

> **Task 1.2.1:** Assess present understanding, and awareness gaps
>
> **Task 1.2.2:** Produce and distribute awareness materials for target groups
>
> **Task 1.2.3:** Support awareness activities of target groups
>
> **Task 1.2.4:** Monitor and develop reforestation awareness service

Activity 1.3:   **Establish model community reforestation arrangements at strategic locations**

> **Task 1.3.1:** Produce site selection, land group incorporation and joint venture guidelines
>
> **Task 1.3.2:** Produce site selection, land group incorporation and joint venture database and materials
>
> **Task 1.3.3:** Establish model sites and land groups.
>
> **Task 1.3.4:** Establish model reforestation agreements
>
> **Task 1.3.5:** Monitor and develop community reforestation arrangements

Activity 1.4:   **Establish and promote model community reforestation enterprises at selected locations**

> **Task 1.4.1:** Produce community reforestation guidelines
>
> **Task 1.4.2:** Upgrade reforestation database and maps
>
> **Task 1.4.3:** Select business models (start with 3 ILGs at Kwikila)
>
> **Task 1.4.4:** Select production systems (start with 3 ILGs at Kwikila)
>
> **Task 1.4.5:** Establish and develop model businesses (start with 3 ILGs at Kwikila)
>
> **Task 1.4.6:** Establish and maintain trial plots and planting sites (start with 3 ILGs at Kwikila)
>
> **Task 1.4.7:** Promote model reforestation enterprises (start with 3 ILGs at Kwikila)
>
> **Task 1.4.8:** Monitor and develop community reforestation process

Output 2:	A business training and support package is in operation for small-scale reforestation enterprises

Activity 2.1: Establish business training service for high school students & entrepreneurs

Task 2.1.1: Assess present know-how, and training needs of target groups

Task 2.1.2: Upgrade business training guidelines and database

Task 2.1.3: Upgrade business training materials for KAB and SIYB courses

Task 2.1.4: Select and train KAB and SIYB trainers

Task 2.1.5: Conduct KAB and SIYB training courses (start with 3 ILGs at Kwikila)

Task 2.1.6: Provide follow-up coaching (start with 3 ILGs at Kwikila)

Task 2.1.7: Monitor and develop business training service

Activity 2.2: Establish business information service for reforestation entrepreneurs

Task 2.2.1: Assess present business know-how, and information needs of target groups

Task 2.2.2: Upgrade business information guidelines and database

Task 2.2.3: Upgrade and distribute up to-date business information materials

Task 2.2.4: Monitor and develop business information service

Output 3:	An (agro) forestry training and support package is in operation for small-scale reforestation enterprises

Activity 3.1: Establish (agro) forestry training service for reforestation entrepreneurs

Task 3.1.1: Assess present know-how, and training needs of target groups

Task 3.1.2: Produce (agro) forestry training guidelines and database

Task 3.1.3: Produce (agro) forestry training materials

Task 3.1.4: Conduct (agro) forestry training courses

Task 3.1.5: Provide follow-up coaching

Task 3.1.6: Monitor and develop business training service

Activity 3.2: Establish (agro) forestry information service for reforestation entrepreneurs

Task 3.2.1: Assess present (agro) forestry know-how, and information needs of target groups

Task 3.2.2: Produce (agro) forestry information guidelines and database

Task 3.2.3: Produce and distribute up to-date (agro) forestry information materials

Task 3.2.4: Monitor and develop (agro) forestry information service

Output 4:	A distribution system is in operation providing (agro) forestry stock & materials for model reforestation enterprises

Activity 4.1:   **Establish clonal orchard and seed production units**

      Task 4.1.1: Assess present seed supplies, and future seed demands

      Task 4.1.2: Produce seed production guidelines and database

      Task 4.1.3: Establish and maintain clonal orchard and seed trees at Kuriva

      Task 4.1.4: Monitor and develop seed production processes

Activity 4.2:   **Establish model distribution network for reforestation enterprises**

      Task 4.3.1: Assess planting stock and material requirements at model enterprises

      Task 4.3.2: Produce distribution guidelines and database

      Task 4.3.3: Establish local distribution centres (start at Kwikila)

      Task 4.3.4: Monitor and develop distribution processes

Activity 4.3:   **Increase and diversify the production of planting stock**

      Task 4.2.1: Assess present planting stock supplies, and future demands

      Task 4.2.2: Produce stock production guidelines and database

      Task 4.2.3: Initiate an appropriate plant propagation programme for Central Province

      Task 4.2.4: Upgrade nurseries at Kuriva Forestry Station

      Task 4.2.5: Upgrade nurseries at Laloki Agricultural Station

      Task 4.2.6: Monitor and develop stock production processes

3.2   Implementation Approaches and Methods

During the Pre-project, baseline research was followed by a five-day strategy selection program - comprising awareness tours and workshop sessions. On day five, sixty-four stakeholder representatives were asked to choose the best approach for encouraging landowners to grow high value trees on grasslands with reference to their findings from the situation assessment, problem analysis (Figure 4, page **20**) and objective setting (Figure 5, page **21**) sessions.

The **SELECTED PROJECT APPROACH** can be summarized as follows:

- *The PNGFA is responsible for managing and sustaining the model reforestation framework in collaboration with appropriate research and development partners.*

- *The Project will strengthen the capacity of NFS, SBDC and NARI to deliver cost-effective and sustainable awareness, training and support services.*

- *The Project will develop and promote a range of appropriate business arrangements and production systems that take into account people's short-term income generation needs (e.g. through integrating forestry with agriculture), as well as their long-term financial security.*

- *The Project will focus on teak - the principle species at the Kuriva Forestry Station and nearby Mount Lawes Clonal Orchard - but not isolate other appropriate, high value, high demand species (e.g. mahogany and sandalwood).*

Table 8 (pages **29-32**) details the selected **IMPLEMENTATION METHODS** for realizing each Project Output.

Table 8: Selected implementation methods and responsibilities for realizing each Output

Project Output	Responsibility	Technical Partner	Selected Implementation Methods
1. A reforestation awareness programme is in operation for landowners and the wider community	NFS Planted Forest Branch (NFS Acquisition Branch)	Australian National University (Canberra, Australia) James Cook University (Cairns, Australia)	The NFS Planted Forest Branch will design and deliver a cost-effective and sustainable awareness programme that targets key organizations and personnel using a range of communication methods. This will include developing the reforestation culture in the minds of the "next generation" of landowners through target primary & secondary schools. The PNG Department of Education (Curriculum Development Division) will assist NFS to prepare the required educational material in consultation with provincial / district education authorities, and target school boards, teachers and children. The NFS Acquisition Branch will enhance its present land group incorporation techniques and procedures with reference to the community involvement and decision-making processes used during the Pre-project. The NFS Planted Forest and Business Development Branches will assist target land groups to establish a variety of business models and production systems in collaboration with SBDC and NARI. The NFS will assist target land groups within Rigo, Kairuku-Hiri and Abau Districts to establish first rotation plantings at strategic locations that promote a range of reforestation options for Central Province. The model landowner groups will pilot-test the various business, agro-forestry and planting material services developed during the Project (i.e. Outputs 2-4), and also provide local awareness services.
			The Australian National University (Fenner School of Environment & Society) will use its research findings from ACIAR / FST-2004-050[11] to assist the NFS communicate the following reforestation issues, options and processes: ★ *Policy, institutional and market environment.* ★ *Landowner attitudes, behaviour and adoption.* ★ *Land tenure, gender and resource management*
			The James Cook University (Agroforestry & Novel Crops Unit) will use its research findings from ACIAR / FST-2007-078[8] to assist NFS communicate the environmental and socio-economic factors which determine the performance of community-based plantations.

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[11] Table 6 (pages 11-12) contains background information on this project.

Table 8: Selected implementation methods and responsibilities for realizing each Output(continued)

Project Output	Responsibility	Technical Partner	Selected Implementation Methods
2. A business training and support package is in operation for small-scale reforestation enterprises	NFS Business Development Branch	Small Business Development Corporation (Port Moresby, PNG) Australian National University (Canberra, Australia)	The NFS Business Development Branch will assist the Small Business Development Corporation (Port Moresby) to design and deliver a cost-effective and sustainable business development package that builds on existing resources and techniques, and assists landowners to: ★ *Develop entrepreneurial culture in the minds of the "next generation"* ★ *Choose the best business option for their situation (e.g. independent landowner company, joint-venture partnership).* ★ *Start-up small-scale[12] reforestation enterprises (e.g. prepare business plan, secure start-up capital and business incentives).* ★ *Improve small-scale reforestation enterprises (e.g. keeping business records, managing people, business responsibilities).*
			The NFS Business Development Branch will provide an ongoing source of marketing information for small scale reforestation enterprises through its Timber Marketing Information Centre.
			The Australian National University (Fenner School of Envt. & Society) will use its research findings from ACIAR / FST-2004-050 to assist NFS and SBDC to: ★ *Identify and implement business models relevant to landowners and commercial tree growing in PNG.* ★ *Address principal financial constraints to landowner adoption (e.g. lead time to income generation, financial information about tree growing options, access to investment finance)*

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[12] Medium to large scale enterprises should have a business partner with the required business management expertise.

Table 8: Selected implementation methods and responsibilities for realizing each Output (continued)

Project Output	Responsibility	Technical Partner	Selected Implementation Methods
3. An (agro) forestry training and support package is in operation for small-scale reforestation enterprises	NFS Planted Forest Branch (NFS Forest Research Institute)	National Agricultural Research Institute (Laloki, Central Province) Australian National University (Canberra, Australia)	The National Agricultural Research Institute (Laloki) will assist NFS to design and deliver a cost-effective and sustainable (agro) forestry training and support package that builds on existing resources and techniques, bridges the technical gap between agriculture and forestry, and assists landowners to: ★ *Choose the best reforestation options for their situation (e.g. production system, species selection, silvicultural /agricultural techniques).* ★ *Manage small-scale[13] (agro) forestry operations (e.g. site-species selection, site-preparation, fire control, planting, thinning, harvesting, grading, sales).*
			The Australian National University (Fenner School of Environment. & Society) and the James Cook University (Agroforestry & Novel Crops Unit) will use their research findings from ACIAR / FST-2007-078 and ACIAR / FST-2004-050 to assist NFS and NARI articulate land-use options relevant to project beneficiaries and their environment, including: ★ *Site-species selection (bio-physical constraints include poor soils, extended dry periods, fire and coastal winds).* ★ *Production systems (target beneficiaries are most familiar with agro-forestry systems)*

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[13] Medium to large scale enterprises should have a business partner with the required technical expertise.

Table 8: Selected implementation methods and responsibilities for realizing each Output (continued)

Project Output	Responsibility	Technical Partner	Selected Implementation Methods
4. A distribution system is in operation providing (agro) forestry stock and materials for model reforestation enterprises	NFS Planted Forest Branch (NFS Forest Research Institute)	James Cook University (Cairns, Australia)	The NFS Planted Forest Branch and Forest Research Institute will design and deliver a cost-effective germplasm delivery service through the Kuriva Forestry Station and Mount Lawes Clonal Orchard[14]. The NFS Planted Forest Branch and Forest Research Institute will consider the lesson learned over the years operating plantations, nurseries and orchards on both state and community land. The NFS and NARI will collaborate to upgrade the delivery of planting stock and materials from the Kuriva Forestry Station, the Laloki Agricultural Station and any feasible local outlets. Incentives should be provided to encourage the model land groups (e.g. free start-up planting stock, materials and equipment).
			The James Cook University (Agroforestry & Novel Crops Unit) will use its research findings from ACIAR / FST-2007-078 to assist NFS implement a gradual transition from seed to vegetative propagation, including: ★ *Identification of suitable interim seed sources.* ★ *Adaptation of appropriate vegetative propagation techniques and protocols for local nurseries.*
			The James Cook University (Agroforestry & Novel Crops Unit) will use its research findings from ACIAR / FST-2007-078 to assist NFS / NARI to establish 'core' nurseries at the Kuriva / Laloki Stations, together with a network of strategically located 'satellite' nurseries, through: ★ *Identification of feasible options for sustaining germplasm supply through local, commercial nurseries (these may also provide local training and support services).* ★ *Adaptation of appropriate vegetative propagation techniques and protocols for local nurseries*

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[14] Gunn (2007) considers the Mount Lawes Clonal Orchard as *"the most complete and best collection of genetically selected teak in the country"*.

3.3 Work Plan

Outputs and Activities	Responsible Party	Schedule (in months) 1-12	Schedule (in months) 1-12	Schedule (in months) 1-12
Outputs 1:A reforestation awareness programme is in operation for landowners and the wider community				
1.1. Establish forestry education service for primary and secondary schools	Capacity Building & Communication Specialist			
1.2. Establish reforestation awareness service for landowners and the wider community	Capacity Building & Communication Specialist			
1.3. Establish model community reforestation arrangements at strategic locations	Acquisition Branch Manager (NFS)			
1.4. Establish and promote model community reforestation enterprises at selected locations	Kuriva Forestry Station Manager (NFS)			
Outputs 2:A business training and support package is in operation for small-scale reforestation enterprises				
2.1. Establish business training service for high school students & entrepreneurs	Business Development Branch Manager (NFS)			
2.2. Establish business information service for reforestation entrepreneurs	Business Development Branch Manager (NFS)			
Outputs 3: An (agro) forestry training and support package is in operation for small-scale reforestation enterprises				
3.1. Establish (agro) forestry training service for reforestation entrepreneurs	Kuriva Forestry Station Manager			
3.2. Establish (agro) forestry information service for reforestation entrepreneurs	Kuriva Forestry Station Manager			
Outputs 4:A distribution system is in operation providing (agro) forestry stock and materials for reforestation enterprises				
4.1. Establish clonal orchard and seed production units	Kuriva Forestry Station Manager (NFS)			
4.2. Establish model distribution network for reforestation enterprises	Kuriva Forestry Station Manager (NFS)			
4.3. Increase and diversify the production of planting stock				

3.4 Budget

3.4.1 Consolidated Budget by Component

Consolidated Yearly Project Budget

Budget Components	Input	Unit Costs	TOTAL	YEAR 1	YEAR 2	YEAR 3
10 Project Personnel						
11. National Experts (Long term)		$ -	$ -	$ -	$ -	$ -
11.1. NFS staff (full-time)	9	$ 8,333.33	$ 75,000.00	$ 25,000.00	$ 25,000.00	$ 25,000.00
11.2. Capacity building specialist	12	$ 8,000.00	$ 96,000.00	$ 40,000.00	$ 32,000.00	$ 24,000.00
13. National Consultants (Short term)		$ -	$ -	$ -	$ -	$ -
13.1. Community involvement specialist	13	$ 400.00	$ 5,200.00	$ 1,200.00	$ 4,000.00	$ -
13.2. Graphic designer	11	$ 400.00	$ 4,400.00	$ 3,600.00	$ 400.00	$ 400.00
14. International Consultants		$ -	$ -	$ -	$ -	$ -
14.1. Research Partner (germplasm delivery)	19	$ 400.00	$ 7,600.00	$ 3,600.00	$ 2,400.00	$ 1,600.00
14.2. Research Partner (agroforestry systems)	17	$ 400.00	$ 6,800.00	$ 3,200.00	$ 2,000.00	$ 1,600.00
19. Component Total	81	$ 17,933.33	$ 195,000.00	$ 76,600.00	$ 65,800.00	$ 52,600.00
20 Sub-contracts						
29. Component Total	-	$ -	$ -	$ -	$ -	$ -
30 Travel						
31.1. Town DSA	24	$ 150.00	$ 3,600.00	$ 1,200.00	$ 1,200.00	$ 1,200.00
31.2. Field DSA	463	$ 61.45	$ 27,250.00	$ 11,150.00	$ 11,100.00	$ 5,000.00
33. Local Transport Costs		$ -	$ -	$ -	$ -	$ -
33.1. Air Fares	30	$ 500.00	$ 15,000.00	$ 5,000.00	$ 5,000.00	$ 5,000.00
33.2. Bus Fares	45	$ 20.00	$ 900.00	$ 180.00	$ 360.00	$ 360.00
39. Component Total	582	$ 806.45	$ 46,750.00	$ 17,530.00	$ 17,660.00	$ 11,560.00
40 Capital Items						
43. Vehicles (4WD utility)	1	$ 35,000.00	$ 35,000.00	$ 35,000.00	$ -	$ -
44. Capital Equipment	-	$ -	$ -	$ -	$ -	$ -
44.1. Computer Equipment (desk-top, monitor, b/w laser printer)	4	$ 1,500.00	$ 6,000.00	$ 6,000.00	$ -	$ -
44.2. Nursery equipment (irrigation system upgrade)	2	$ 8,000.00	$ 16,000.00	$ 16,000.00	$ -	$ -
44.3. Nursery hand tools	5	$ 950.00	$ 4,750.00	$ 750.00	$ 2,500.00	$ 1,500.00
44.4. Village equipment (hand-pumps)	3	$ 1,500.00	$ 4,500.00	$ -	$ 3,000.00	$ 1,500.00
44.5. Field equipment (chainsaw, knapsacks, safety gear)	1	$ 5,500.00	$ 5,500.00	$ -	$ 5,500.00	$ -
44.6. Distribution equipment (tractor and tools)	3	$ 16,000.00	$ 48,000.00	$ -	$ 32,000.00	$ 16,000.00
49. Component Total	19	$ 68,450.00	$ 119,750.00	$ 57,750.00	$ 43,000.00	$ 19,000.00
50 Consumable Items						
51. Raw materials	-	$ -	$ -	$ -	$ -	$ -
51.1. Training and awareness materials	6,100	$ 5.61	$ 34,200.00	$ 3,200.00	$ 21,000.00	$ 10,000.00
51.2. Training and awareness activities	33	$ 2,143.94	$ 70,750.00	$ 29,750.00	$ 33,500.00	$ 7,500.00
51.3. Planting stock and materials	18	$ 2,625.00	$ 43,250.00	$ 22,000.00	$ 11,750.00	$ 9,500.00
51.4. Construction materials	6	$ 2,625.00	$ 15,750.00	$ -	$ 5,250.00	$ 10,500.00
52. Spares	-	$ -	$ -	$ -	$ -	$ -
53. Utilities	36	$ 600.00	$ 21,600.00	$ 7,200.00	$ 7,200.00	$ 7,200.00
54. Office Supplies	36	$ 500.00	$ 18,000.00	$ 6,000.00	$ 6,000.00	$ 6,000.00
59. Component Total	6,229	$ 8,499.55	$ 203,550.00	$ 68,150.00	$ 84,700.00	$ 50,700.00
60 Miscellaneous						
61. Sundry	3	$ 6,666.67	$ 20,000.00	$ 10,000.00	$ 5,000.00	$ 5,000.00
62. Auditing	3	$ 2,666.67	$ 8,000.00	$ 2,000.00	$ 2,000.00	$ 4,000.00
63. Contingencies	-	$ -	$ -	$ -	$ -	$ -
69. Component Total	3	$ 9,333.34	$ 28,000.00	$ 12,000.00	$ 7,000.00	$ 9,000.00
70 National Managment Costs						
71. Executing Agency Management Costs			$ 88,762.50	$ 35,104.50	$ 32,424.00	$ 21,234.00
72. Focal Point Monitoring			$ -			
79. Component Total			$ 88,762.50	$ 35,104.50	$ 32,424.00	$ 21,234.00
SUBTOTAL			$ 681,812.50	$ 267,134.50	$ 250,584.00	$ 164,094.00
80 Project Monitoring and Administration						
81. ITTO Monitoring and Review			$ 15,000.00		$ 7,500.00	$ 7,500.00
82. ITTO midterm, final, ex-post Evaluation Costs			$ 10,000.00			$ 10,000.00
83. ITTO Programme Support Costs			$ 41,844.00	$ 15,762.40	$ 15,652.80	$ 10,428.80
84. Donor Monitoring Costs			$ -			
89. Component Total			$ 66,844.00	$ 15,762.40	$ 23,152.80	$ 27,928.80
90 Refund of Pre-Project Costs (Pre-project budget)			79,920			
100 GRAND TOTAL			$ 828,576.50			

Table v (below) presents the detailed budget for the NFS personnel, capacity building and communication specialist and distribution centre equipment, together with a justification for their unit costs.

Table v: Detailed budget for budget lines 11.1, 11.2 and 44.6 with unit cost justifications.

Budget Line	Description	Justification	Unit	No. Units	Unit Cost	Source	Year	Budget #
11.1	Project coordinator	These full-time positions will be funded by NFS throughout the Project. The unit costs represent each position's average annual salary including benefits.	Annual salary	1	15000	(E)	Y1	11.1
11.1	Nursery and extension officers (Kuriva)		Annual salary	2	5000	(E)	Y1	11.1
11.1	Project coordinator		Annual salary	1	15000	(E)	Y2	11.1
11.1	Nursery and extension officers (Kuriva)		Annual salary	2	5000	(E)	Y2	11.1
11.1	Project coordinator / annual salary		Annual salary	1	15000	(E)	Y3	11.1
11.1	Nursery and extension officers (Kuriva)		Annual salary	2	5000	(E)	Y3	11.1
11.2	Capacity building specialist	The unit costs are calculated using a daily rate of 400 USD/day for 20 days/month. This is an appropriate rate for PNG, and matches the rate used for the other consultancy positions (i.e. budget lines 13.1 to 14.2).	Monthly fee	5	8000	(I)	Y1	11.2
11.2	Capacity building specialist		Monthly fee	4	8000	(I)	Y2	11.2
11.2	Capacity building specialist		Monthly fee	3	8000	(I)	Y3	11.2
44.6	Distribution centre equipment	One set of appropriate equipment will be purchased for each District Distribution Centre (e.g. tractor and tools). The unit costs may be topped-up by with a financial contribution from the District Support Services Annual Grants.	Set	2	16000	(I)	Y2	44.6
44.6	Distribution centre equipment		Set	1	16000	(I)	Y3	44.6

3.4.2   ITTO Budget by Component

Budget Components	Total	Year 1	Year 2	Year 3
10. Project Personnel				
11. *National experts (long-term)*	96,000	40,000	32,000	24,000
13. *National consultants (short-term)*	9,600	4,800	4,400	400
14. *International consultants*	14,400	6,800	4,400	3,200
30. Duty Travel				
31. *Daily Subsistence Allowances*	30,850	12,350	12,300	6,200
33. *Local transport costs*	15,900	5,180	5,360	5,360
40. Capital Items				
43. *Vehicles*	35,000	35,000	0	0
44. *Capital equipment*	84,750	22,750	43,000	19,000
50. Consumable Items				
51. *Raw materials*	163,950	54,950	71,500	37,500
53. *Utilities*	21,600	7,200	7,200	7,200
54. *Office supplies*	18,000	6,000	6,000	6,000
60. Miscellaneous				
61. *Auditing*	**8,000**	**2,000**	**2,000**	**4,000**
Subtotal 1	**498,050**	**197,030**	**188,160**	**112,860**
80. ITTO Monitoring, Evaluation & Administration:				
81. *Monitoring and Review Costs (effective estimation)*	15,000			
82. *Evaluation Costs (effective estimation)*	10,000			
Subtotal 2	**523,050**			
83. *Programme Support Costs (8% of subtotal 2)*	**41,844**			
90. Refund of Pre-project Costs	79,920			
ITTO TOTAL (USD)	**644,814**			

3.4.3   Executing Agency Budget by Component

Budget Components	Total	Year 1	Year 2	Year 3
10. Project Personnel	**75,000**	25,000	25,000	25,000
20. Sub-contracts	**0**	0	0	0
30. Duty Travel	**0**	0	0	0
40. Capital Items	**0**	0	0	0
50. Consumable Items	**0**	0	0	0
60. Miscellaneous	**20,000**	10,000	5,000	5,000
70. Executing Agency Management Costs	**88,762**	35,104	32,424	21,234
EXECUTING AGENCY / HOST GOVT. TOTAL (USD)	**183,762**	**70,104**	**62,424**	**51,234**

SUMMARY PROJECT BUDGET TOTAL (USD)	**828,576**

3.4.4 Activity and Component

Overall Project Budget By Activity and Component (in U.S. Dollars)

OUTPUTS / ACTIVITIES + Non-Activity Based Expenses	BUDGET COMPONENTS						
	10. Project Personnel	20. Sub-Contracts	30. Duty Travel	40. Capital Items	50. Consumable Items	60. Miscella-neous	Year
Output 1: A reforestation awareness programme is in operation for landowners and the wider community							
Activity 1.1: Establish forestry education service for primary and secondary schools	2,800.00 I	-	1,500.00 I	-	13,000.00 I	-	Y1, Y2, Y3
Activity 1.2: Establish reforestation awareness service for landowners and the wider community	5,200.00 I	-	2,100.00 I	-	16,750.00 I	-	Y1, Y2, Y3
Activity 1.3: Establish model community reforestation arrangements at strategic locations	5,200.00 I	-	4,650.00 I	-	1,200.00 I	-	Y1, Y2
Activity 1.4: Establish and promote model community reforestation enterprises at selected locations	4,800.00 I	-	2,250.00 I	10,000.00 I	18,500.00 I	-	Y1, Y2, Y3
Subtotal 1	**18,000.00 I**	**-**	**10,500.00 I**	**10,000.00 I**	**49,450.00 I**	**-**	
Output 2: A business training and support package is in operation for small-scale reforestation enterprises							
Activity 2.1: Establish business training service for high school students & entrepreneurs	-	-	8,450.00 I	-	38,000.00 I	-	Y1, Y2, Y3
Activity 2.2: Establish business information service for reforestation entrepreneurs	2,000.00 I	-	-	-	5,500.00 I	-	Y1, Y2, Y3
Subtotal 2	**2,000.00 I**	**-**	**8,450.00 I**	**-**	**43,500.00 I**	**-**	
Output 3: An (agro) forestry training and support package is in operation for small-scale reforestation enterprises							
Activity 3.1: Establish (agro) forestry training service for reforestation entrepreneurs	400.00 I	-	6,200.00 I	-	25,000.00 I	-	Y1, Y2, Y3
Activity 3.2: Establish (agro) forestry information service for reforestation entrepreneurs	3,600.00 I	-	-	-	5,500.00 I	-	Y1, Y2, Y3
Subtotal 3	**4,000.00 I**	**-**	**6,200.00 I**	**-**	**30,500.00 I**	**-**	
Output 4: A distribution system is in operation providing (agro) forestry stock and materials for reforestation enterprises							
Activity 4.1: Establish clonal orchard and seed production	-	-	-	-	-	20,000.00 E	Y1, Y2, Y3
Activity 4.2: Establish model distribution network for reforestation enterprises stock	-	-	-	50,250.00 I	16,500.00 I	-	Y2, Y3
	-	-	-	18,500.00 I	24,000.00 I	-	Y1, Y2
Subtotal 4	**-**	**-**	**-**	**68,750.00 I**	**40,500.00 I**	**20,000.00 E**	
Output 5: Non-activity Based Expenses							
Personnel Costs	96,000.00 I	-	-	-	-	-	Y1, Y2, Y3
	75,000.00 E						Y1, Y2, Y4
Capital Costs	-	-	-	41,000.00 I	-	-	Y1
Utility Costs	-	-	-	-	39,600.00 I	-	Y1, Y2, Y3
Travel Costs	-	-	21,600.00 I	-	-	-	Y1, Y2, Y3
Auditing Costs	-	-	-	-	-	8,000.00	Y1, Y2, Y4
Subtotal 5	**171,000.00 IE**	**-**	**21,600.00 I**	**41,000.00 I**	**39,600.00 I**	**8,000.00**	
Subtotal (ITTO)	**120,000.00**	**-**	**46,750.00**	**119,750.00**	**203,550.00**	**8,000.00**	
Subtotal (E. Agency)	**75,000.00**	**-**	**-**	**-**	**-**	**20,000.00**	
Subtotal (Others)	**-**	**-**	**-**	**-**	**-**	**-**	
TOTAL	**195,000.00**	**-**	**46,750.00**	**119,750.00**	**203,550.00**	**28,000.00**	

(I) - Contribution of the ITTO
(E) - Contribution of the Executing Agency / Host Government

3.5 *Assumptions, Risks and Sustainability*

3.5.1 Assumptions and Risks

The Project has selected a cost-effective, low risk approach for realizing the four Outputs. Table 9 (below) provides the Project's **RISK MANAGEMENT TABLE**.

Table 9: Project risk assessment (low / medium / high) and mitigation measures.

Risk	Mitigation Measure
There is inadequate political and government support for reforestation at both Provincial and District levels	★ At Project start-up, key stakeholder representatives will be identified and recorded in the project databases ★ The reforestation awareness programme will enable key stakeholders to understand reforestation issues, options and processes, and encourage their support for reforestation activities. ★ The situation will be monitored throughout the Project
The necessary research findings from the ACIAR-ANU and ACIAR-JCU projects are not available	★ The Project timeframe matches the ACIAR project timeframes ★ The situation will be monitored throughout the Project
Model land groups are unwilling to utilize the reforestation services	★ The model land groups will be encouraged to play an active role in the design, development and implementation of the Model Reforestation Framework. ★ The situation will be monitored throughout the Project
Factors related to climate (e.g. fires, drought, flooding) and social issues (e.g. vandalism) badly affect nurseries and planting sites	★ The (agro) forestry training package will provide practical measures for safe-guarding reforestation assets. ★ The Project will ensure adequate mitigation measures are in place and promoted at nurseries and planting sites. ★ The situation will be monitored throughout the Project

3.5.2 Sustainability

In line with the Project Approach, the PNGFA has accepted responsibility for managing and sustaining the Model Reforestation Framework in collaboration with appropriate research and development partners.

Implementation Methods (Table 8, pages 29-32) have been carefully selected to ensure the Project's awareness, training and support services can be operated and maintained by NFS, SBDC and NARI in the future. The **PROJECT EXIT STRATEGY** focuses on building the capacity of these three institutions to deliver cost-effective and sustainable services through strengthening operational systems (e.g. operational guidelines, databases and procedures), physical resources (e.g. nursery facilities), and human resources (e.g. exposure trips, on the job training).

The **FUTURE COSTS** associated with operating, maintaining and enhancing all ITTO Inputs will be sustained by each recipient organization.

Table vi shows how the Model Reforestation Framework is expected to expand over time both within and beyond Central Province, leading to the gradual rehabilitation of under-utilized grasslands within Central and other Provinces with access to adequate resources.

Table vi: Future responsibilities and expected impacts of the Model Reforestation Framework
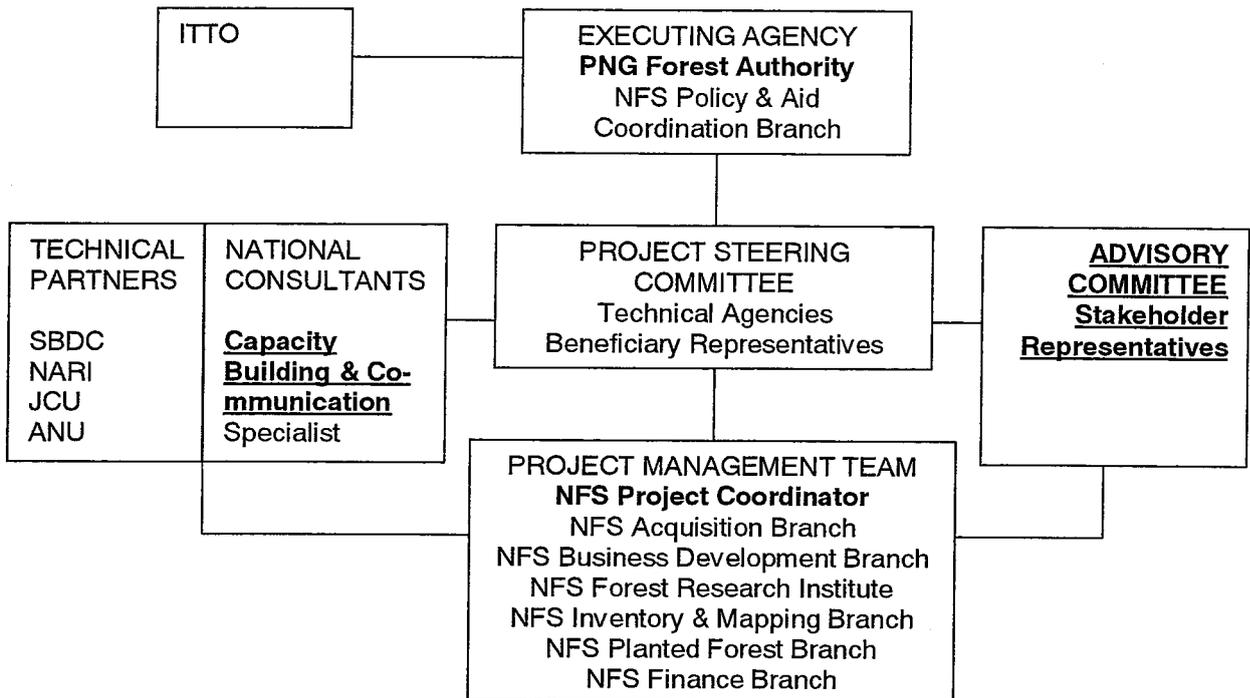
Project Output	Future Responsibilities and Expected Impacts
1. A reforestation awareness programme is in operation for landowners and the wider community	The impact of the Model Reforestation Framework is expected to gradually expand (i.e. scale-up and scale-out) as landowners in the three target Districts continue to learn about and adopt reforestation practices through the Reforestation Awareness Programme. The PNGFA is responsible for operating, maintaining and developing the reforestation awareness programme. The PNGFA expects to be able to replicate the model approach in other provinces with adequate resources using the tools and procedures produced by the Project through the NFS network of regional and provincial forest offices and forestry stations.
2. A business training and support package is in operation for small-scale reforestation enterprises	The PNGFA is responsible for operating, maintaining and developing the business training and support package in partnership with SBDC. The PNGFA expects to be able to replicate the model approach in other provinces through NFS and SBDC's existing network of facilities, staff and partners using the tools and procedures produced by the Project.
3. An (agro) forestry training and support package is in operation for small-scale reforestation enterprises	The PNGFA is responsible for operating, maintaining and developing the (agro) forestry training and support package in partnership with NARI. The PNGFA expects to be able to replicate the model approach in other provinces through NFS and NARI's existing network of facilities, staff and partners using the tools and procedures produced by the Project.
4. A distribution system is in operation providing (agro) forestry stock and materials for model reforestation enterprises	The PNGFA is responsible for operating, maintaining and developing the distribution system for (agro) forestry stock and materials. The PNGFA expects to be able to replicate the model approach in other provinces through NFS and NARI's existing network of facilities and staff using the tools and procedures produced by the Project.

Part 4: Implementation Arrangements

4.1 *Organisational Structure and Stakeholder Involvement Mechanisms*

Figure 6 (below) outlines the Project's organizational structure.

Figure 6: Project Structure

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┌──────────────┐              ┌─────────────────────────┐
│     ITTO     │──────────────│    EXECUTING AGENCY     │
│              │              │   PNG Forest Authority  │
│              │              │     NFS Policy & Aid     │
│              │              │   Coordination Branch    │
└──────────────┘              └─────────────────────────┘
                                          │
┌──────────┬───────────────┐   ┌─────────────────────────┐   ┌──────────────┐
│TECHNICAL │NATIONAL       │   │   PROJECT STEERING      │   │  ADVISORY    │
│PARTNERS  │CONSULTANTS    │   │      COMMITTEE          │   │  COMMITTEE   │
│          │               │───│   Technical Agencies     │───│ Stakeholder  │
│SBDC      │Capacity       │   │ Beneficiary Representatives│  │Representatives│
│NARI      │Building & Co- │   └─────────────────────────┘   └──────────────┘
│JCU       │mmunication    │              │
│ANU       │Specialist     │   ┌─────────────────────────┐
└──────────┴───────────────┘   │ PROJECT MANAGEMENT TEAM │
                               │  NFS Project Coordinator │
                               │  NFS Acquisition Branch  │
                               │NFS Business Development Branch│
                               │NFS Forest Research Institute│
                               │NFS Inventory & Mapping Branch│
                               │  NFS Planted Forest Branch│
                               │     NFS Finance Branch   │
                               └─────────────────────────┘
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4.1.1   Executing Agency and Partners

The PNGFA is the Project's Executing Agency (refer Annex 1, pages <u>45</u>-<u>46</u>).

The Project office will be located within the **NFS PLANTED FOREST BRANCH** at the PNGFA's headquarters in Hohola, Port Moresby. Field operations will be undertaken through the Kuriva Forestry Station in Kairuku-Hiri District (Figure 3, page 51). The Manager of the Planted Forest Branch will:

★ *Appoint a full-time PROJECT COORDINATOR from within the current NFS ranks. This position will be financed by the PNGFA.*

★ *Recruit an external CAPACITY BUILDING AND COMMUNICATION SPECIALIST to provide the Project Coordinator with the necessary capacity building, technical and administrative support. This position will be financed by the ITTO.*

In line with the Project Approach, **FOUR PROJECT PARTNERS** have been selected with the required mix of research and development expertise and resources (Table 6, pages 13-14). Table vi (below) summarises the capacity assessment findings that led to the selection of the four Technical Partners. Table vii supplements Table 6 (pages 13-14).

Table vii: Assessment of the collaborative capacity of the four Technical Partners

Organisation	Capacity Assessment
The SMALL BUSINESS DEVELOPMENT CORPORATION is the Project's Business Development Partner	★ Relationship with PNGFA: *SBDC has assisted the PNGFA implement the small business development component of the EU financed PNG Eco Forestry Programme (2001-2005). 17 trainers are now certified to implement the Start Your Timber Business Programme. This working relationship is on-going and will be enhanced by the Project.* ★ Key personnel: *Mr. Peter Piawu (SIYB Programme Manager), Mr. Henry Marasembi (KAB Project Manager), Mr. Nathan Timo (Business Development Services Manager and Financial Incentive Scheme Coordinator), Mr. Geowa Tomala (Training Officer), Mr. Peter Miria (Training Coordinator), and Mr. Ricky Vele (Information and Research Coordinator).* ★ Facilities: *SBDC has training facilities and a qualified network of 21 Master Trainers and 138 SIYB Trainers from the private and public sectors.* ★ Track record: *Constructive collaboration with donor partners including EU, ILO and AusAID.*
The NATIONAL AGRICULTURAL RESEARCH INSTITUTE (Laloki Agricultural Station) is the Project's Agricultural Partner	★ Relationship with PNGFA: *NARI interacts with PNGFA on matters of common concern. The Project provides an excellent opportunity to strengthen this relationship.* ★ Key personnel: *Professor Udai Pal (Ph. D; Research Programme Leader); Clifton Gwabu (M.Sc; Senior. Agricultural Economist); Tony Ovia (Diploma; Programme Manager); James Ernest (B.Sc; Senior Agricultural Agronomist) are qualified scientists who offer expertise in the fields of crop production, soil fertility, transfer of technology/training, socio-economic studies/analysis, project monitoring and evaluation.* ★ Facilities: *NARI Laloki comprises 50 hectares of research and extension facilities, together with a team of full-time staff (5 Scientists, 5 Research Associates, and 5 Adminstration Personnel) who focus on the supply of improved varieties of food crops and appropriate technologies.* ★ Track record: *NARI Laloki continues to undertake successful research and development projects funded by NARI, national donors (e.g. PNGSDP, Pinbio) and international donors (e.g. ACIAR, UNEP, SPC and EU)*
The AUSTRALIAN NATIONAL UNIVERSITY (Fenner School of Environment & Society) is the Project's Research Partner (Agroforestry Systems)	★ Relationship with PNGFA: *Many NFS officers undertake graduate degrees at ANU. ANU and PNGFA are partners in a number of research projects supported by Australian Government agencies, including ACIAR's "Value-adding to PNG agroforestry systems" and the Department of Climate Change's "Development of a forest carbon accounting system for PNG".* ★ Key personnel: *Professor Peter Kanowski, Professor of Forestry (forest policy; ACIAR project manager); Dr Hartmut Holzknecht, Research Fellow (PNG community processes; ACIAR project researcher); Dr Michael Blyth, Research Associate (rural land use economics; ACIAR project researcher); Mr Braden Jenkin,*

Table vii: Assessment of the collaborative capacity of the four Technical Partners (continued)

Organisation	Capacity Assessment
The AUSTRALIAN NATIONAL UNIVERSITY (continued)	*Research Associate (business analysis & development; ACIAR project researcher); Mr Kulala Mulung, PhD Scholar (landowner attitudes; ACIAR project researcher).* ★ Facilities: *ANU has excellent research infrastructure, and is consistently ranked as Australia's leading research university.* ★ Track record: *Satisfactory progress in / successful completion of significant forestry research projects in PNG.*
The JAMES COOK UNIVERSITY (Agroforestry & Novel Crops Unit) is the Project's Research Partner (Germplasm Delivery)	★ Relationship with PNGFA: *JCU and PNGFA staff have collaborated in the preparation of the project proposal "Development of a PNG timber industry based on community-based planted forests: design and implementation of a national germplasm delivery system", funding for which ($1 million) has been approved by the Australian government (through ACIAR). Currently, JCU Agroforestry & Novel Crops Unit is also involved in the supervision of the Master's research of an FRI scientist.* ★ Key personnel: *Dr. Jonathan Cornelius, Director of the Agroforestry and Novel Crops Unit. Dr. Cornelius is a smallholder agroforestry, tree domestication, and forest genetics specialist, with wide experience in Latin American and the Pacific. Previously national leader of the World Agroforestry Centre's (ICRAF's) program in Peru, he has also worked in research, education and training in Honduras, Costa Rica, and Mexico. His work has involved him in a number of areas of direct relevance to the present project, including participatory training curriculum development, agroforestry micro-enterprise development, participatory tree domestication, smallholder agroforestry in general, and forest conservation genetics.* ★ Facilities: *James Cook University is Australia's foremost tropical university, and is recognized as one of the top 5% of universities worldwide. The Agroforestry and Novel Crops Unit's facilities include state-of-the-art laboratories for molecular biology and tree domestication research.* ★ Track record: *ANCU has a successful track record of research for development throughout the tropics, with an emphasis on the Pacific region (PNG, Vanuatu, Solomon Islands), but also including West Africa, southern Africa, Latin America and Australia itself. Currently, ANCU's portfolio includes three major ACIAR-financed projects: Domestication and Commercialization of galip-nut (with NARI, PNG); Sandalwood domestication (Vanuatu), and Development of a PNG timber industry based on community-based planted forests: design and implementation of a national project which is particularly relevant to the Project, and involvement of PNGFA and JCU will result in important research and logistical synergies.*

4.1.2   Project Management Team

The Project Management Team will comprise:

★ *NFS Project Coordinator*

★ *NFS Branch Managers involved in project implementation*

★ *Capacity Building and Communication Specialist*

4.1.3 Project Steering Committee

The Project Steering Committee will comprise representatives from:

★ *National Forest Service*

★ *National Department for Education*

★ *National Agricultural Research Institute*

★ *Small Business Development Corporation*

★ *Australian Centre for International Agricultural Research (Port Moresby office)*

4.1.4 Stakeholder Involvement Mechanisms

At Project start-up, the NFS Policy & Aid Coordination Branch and Capacity Building and Communication Specialist will establish the following mechanisms for informing and involving stakeholder representatives at all levels during the project implementation phase:

★ *PROJECT BROCHURE which will be regularly updated and distributed*

★ *PROJECT BULLETIN which will be regularly updated and distributed to those without e-mail*

★ *PROJECT E-BULLETIN which will be regularly updated and distributed to those with e-mail.*

★ *ADVISORY COMMITTEE (Figure 6, page 40) which will provide stakeholders with a platform for receiving information and giving advice to project management through the project steering committee. The Advisory Committee will comprise both primary (e.g. landowner representatives) and secondary (e.g. representatives from provincial / district government, Hope Worldwide, timber buyers and finance institutions). There will be regular meetings to maintain stakeholder involvement and support.*

4.2 Reporting, Review, Monitoring and Evaluation

At Project start-up, the Project Coordinator and Capacity Building and Communication Specialist will establish the **PROJECT MONITORING SYSTEM**, comprising:

★ *PROJECT DATABASE containing stakeholder data; baseline social, economic and environmental data; project indicators, means of verification etc.*

★ *PROJECT MONITORING SCHEDULE containing internal and external monitoring, review and evaluation dates.*

★ *PROJECT MONITORING FORMS for field and office use.*

★ *PROJECT MONITORING GUIDELINES for field and office use*

Table 11 **(page 44)** presents the proposed **PROJECT REPORTING AND DISBURSEMENT SCHEDULE.**

Table 11: Proposed reporting and disbursement schedule

Description	Date
Steering committee meetings	Quarterly
1st disbursement request	1 March 2010
1st project progress report	1 September 2010
1st technical report:	1 March 2011
1st monitoring mission	1 March 2011
2nd project progress report	1 March 2011
2nd project progress report	1 September 2011
2nd technical report	1 September 2011
2nd monitoring mission	1 March 2012
3rd project progress report	1 March 2012
4th project progress report	1 September 2012
3rd technical report	1 September 2012
Project completion report	28 February 2013

4.3 Dissemination and Mainstreaming of Project Learning

4.3.1 Dissemination of Project Results

At Project start-up, the NFS Policy & Aid Coordination Branch and Capacity Building and Communication Specialist will establish the project communication strategy and mechanisms, including:

★ PROJECT WEB SITE within the PNGFA web site

★ PROJECT ARTICLES within newspapers and technical publications

★ PROJECT AWARENESS ACTIVITIES listed under Output 1

4.3.2 Mainstreaming of Project Learning

After project completion, the impact of the Model Reforestation Framework is expected to gradually expand (i.e. scale-up and scale-out) as landowners continue to learn about and adopt reforestation practices through the Reforestation Awareness Programme (Output 1).

The PNGFA is responsible for operating, maintaining and developing the reforestation framework for Central Province, and expects to be able to replicate the model approach in other provinces with adequate infrastructure and similar constraints. The NFS will be responsible for mainstreaming project results into national policies and plans, and the:
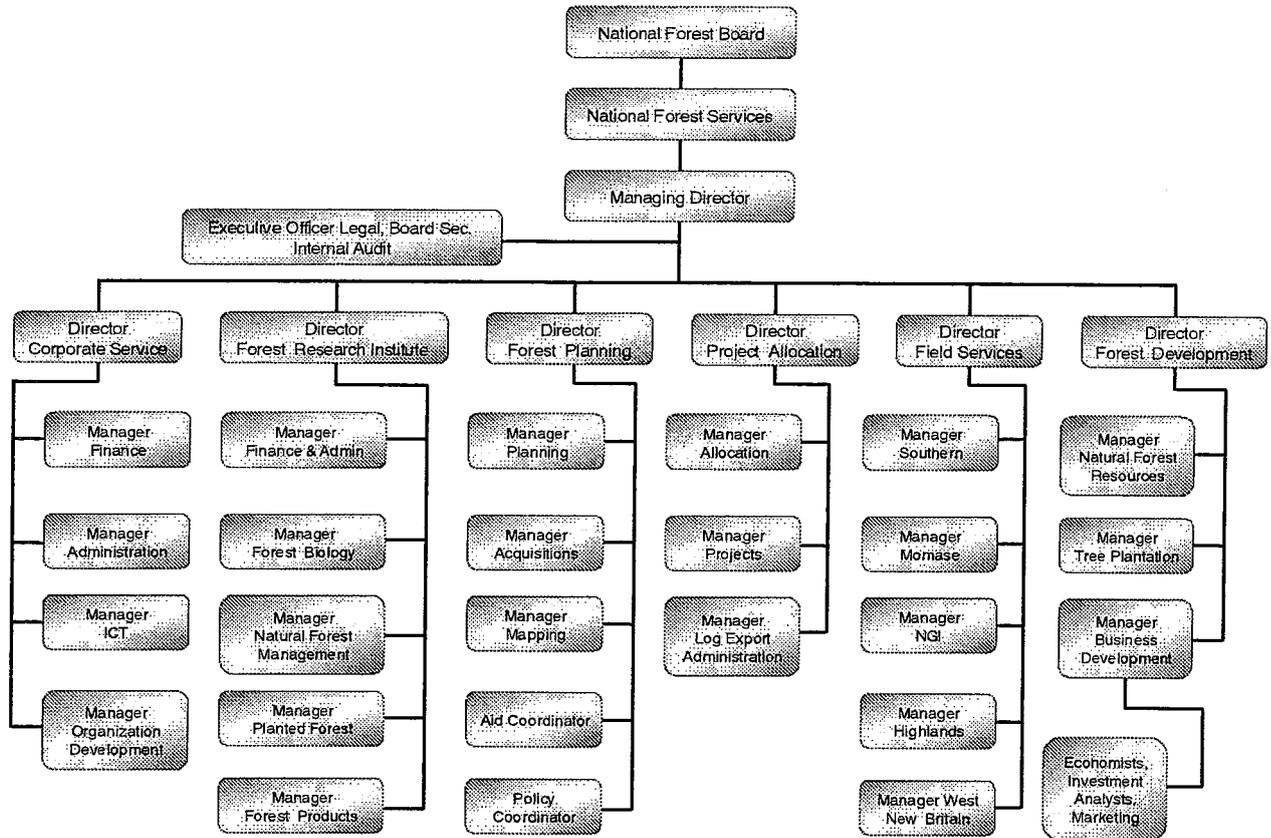
★ NFS Policy & Aid Coordination Branch will update the National Reforestation Policy as required

★ NFS Planted Forest Branch will update the National Reforestation Programme as required.

ANNEX 1: Profiles of the Executing Agency and Collaborating Agencies

(a)   Background

The PNGFA has been established under Section 5 of the Forestry Act 1993 and its powers and functions are also defined under the said Act. The over-arching objective is to facilitate the management, conservation and wise use of the forest resources of PNG in a sustainable manner. The organizational structure of the National Forest Service is shown below:

ANNEX A   Organization Chart of the PNGFA

(b)   Recent Projects

Table 12: Summary of main projects implemented by the PNGFA during the last three years.

Project	Donor	Status
PD324/04 Rev.3: Sustainable Management of TFR through Stakeholder Agreements in Traditional Areas of PNG.	ITTO	Implementation phase
PPD 124/06 Rev.2: Reforestation of Tropical Savannah Grassland with High value Trees.	ITTO	PPD phase coming to completion phase.
PPD 125/06 Rev.2: National Training Program to Promote the Adoption of Reduced Impact Logging.	ITTO	PPD phase coming to completion phase.

(c)   Infrastructure

The PNGFA has a network of **FOREST MANAGEMENT FACILITIES** across Papua New Guinea, comprising:

★   *National Headquarters in Port Moresby, National Capital District*

★   *Forest Research Institute in Lae, Morobe Province*

★   *4 regional offices*

★   *18 provincial offices*

The Kuriva Forestry Station has the following **REFORESTATION FACILITIES**:

★   *1 - Office*

★   *4 - Staff houses*

★   *1 - Toyota Land Cruiser*

★   *1 - Tractor*

★   *2 - Nurseries*

★   *Access to permanent water*

(d)   Budget

The PNGFA has an annual budget of PGK 39.2 million (2009).

(e)   Personnel

Table 13: Relevant NFS staff positions, qualifications and numbers.

National Forest Service Branch	Number of Positions			
	Post graduate	Graduate	Technician	Administration
Acquisition	0	2	0	1
Business Development	1	1	0	1
Finance Branch	1	1	0	0
Inventory & Mapping	0	2	1	1
Planted Forest	0	4	0	1
Planted Forest Research	1	1	2	0
Total	3	11	3	4

ANNEX 2: Tasks and Responsibilities of Key Experts Provided by the Executive Agency

(a)   Project Coordinator (full-time)

Responsibilities:

The Project Coordinator will be responsible for managing the Project with assistance from the **Capacity Building and Communication** Specialist.

Tasks:

The Project Coordinator will:

1.   *Prepare detailed annual work plans and budgets*

2.   *Coordinate project tasks and activities with the project team and technical partners*

3.   *Organise effective project steering committee meetings*

4.   *Organize monitoring and evaluation missions*

5.   *Organise financial expenditures, accounts and replenishments*

6.   *Implement project tasks*

7.   *Monitor progress and implement corrective actions as required*

8.   *Provide project reports as required*

Reporting:

The Project Coordinator will report to the Planted Forest Branch Manager and will at all times maintain close consultation with the **Capacity Building and Communication** Specialist.

ANNEX 3: Terms of Reference of Personnel and Consultants and Sub-contracts Funded by ITTO

(a) **Capacity Building and Communication Specialist (part-time)**

The PNG Forest Authority will recruit a **Capacity Building and Communication** Specialist with the following Terms-of-Reference:

Purpose:

The **Capacity Building and Communication** Specialist will ensure the Project achieves its planned targets on time, and can be operated and maintained by NFS in the future.

Duties:

The **Capacity Building and Communication** Specialist will use a capacity building approach to assist the NFS Project Coordinator to:

1. *Prepare detailed annual work plans and budgets*

2. *Coordinate project tasks and activities with the project team and technical partners*

3. *Organise effective project steering committee meetings*

4. *Organize monitoring and evaluation missions*

5. *Organise financial expenditures, accounts and replenishments*

6. *Implement project tasks*

7. *Monitor progress and implement corrective actions as required*

8. *Provide project reports as required*

Reporting:

The **Capacity Building and Communication** Specialist will report to the Planted Forest Branch Manager and will at all times maintain close consultation with the Project Coordinator.

Qualifications and Experience:

The **Capacity Building and Communication** Specialist will possess the following minimum qualifications and experience:

1. *Relevant university degree (e.g. forestry, natural resource management)*

2. *Extensive skills and experience **assisting** complex, donor funded projects*

3. *Extensive skills and experience delivering training, awareness and support services in rural areas*

(b)   Community Involvement Specialist (short-term)

The PNG Forest Authority will recruit a Community Involvement Specialist with the following Terms-of-Reference:

Purpose:

The Community Involvement Specialist will assist the NFS Project Coordinator to:

1.   *Produce site selection, land group incorporation and joint venture guidelines*

2.   *Produce site selection, land group incorporation and joint venture database and materials*

3.   *Establish model sites and land groups.*

4.   *Establish model reforestation agreements*

Reporting:

The Community Involvement Specialist will report to the Planted Forest Branch Manager and will at all times maintain close consultation with the Project Coordinator.

Qualifications and Experience:

The Community Involvement Specialist will possess the following minimum qualifications and experience:

1.   *Relevant university degree*

2.   *Extensive skills and experience using participatory appraisal tools, techniques and processes*

3.   *Extensive skills and experience delivering community development support services in rural areas*

(c)   Graphic Design Specialist (part-time)

The PNG Forest Authority will recruit a Graphic Design Specialist with the following Terms-of-Reference:

Purpose:

The Graphic Design Specialist will:

1.   *Produce graphics, artwork and layout for school educational publications*

2.   *Produce graphics, artwork and layout for reforestation awareness publications*

3.   *Produce graphics, artwork and layout for training and extension publications*

Reporting:

The Graphic Design Specialist will report to the Planted Forest Branch Manager and will at all times maintain close consultation with the Project Coordinator.

Qualifications and Experience:

The Graphic Design Specialist will possess the following minimum qualifications and experience:

1.   *Relevant university degree*

2.   *Extensive skills and experience creating attractive publications that communicate information and ideas with reference to text and pictures.*

ANNEX 4: Additional Maps of Central Province

Figure 2: Map of Central Province showing occupied land, roads and district boundaries. Map sourced from Hanson et al. (2000).
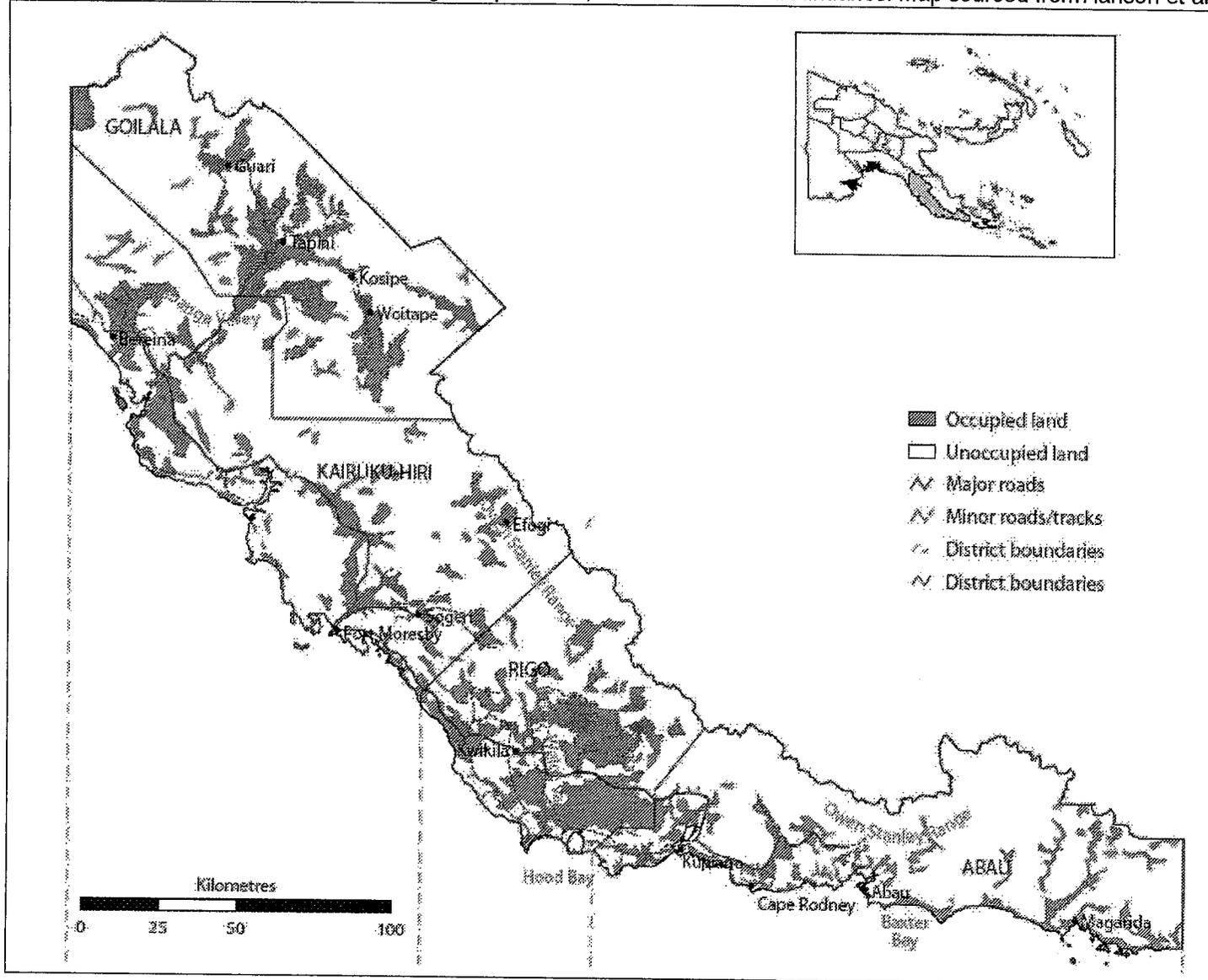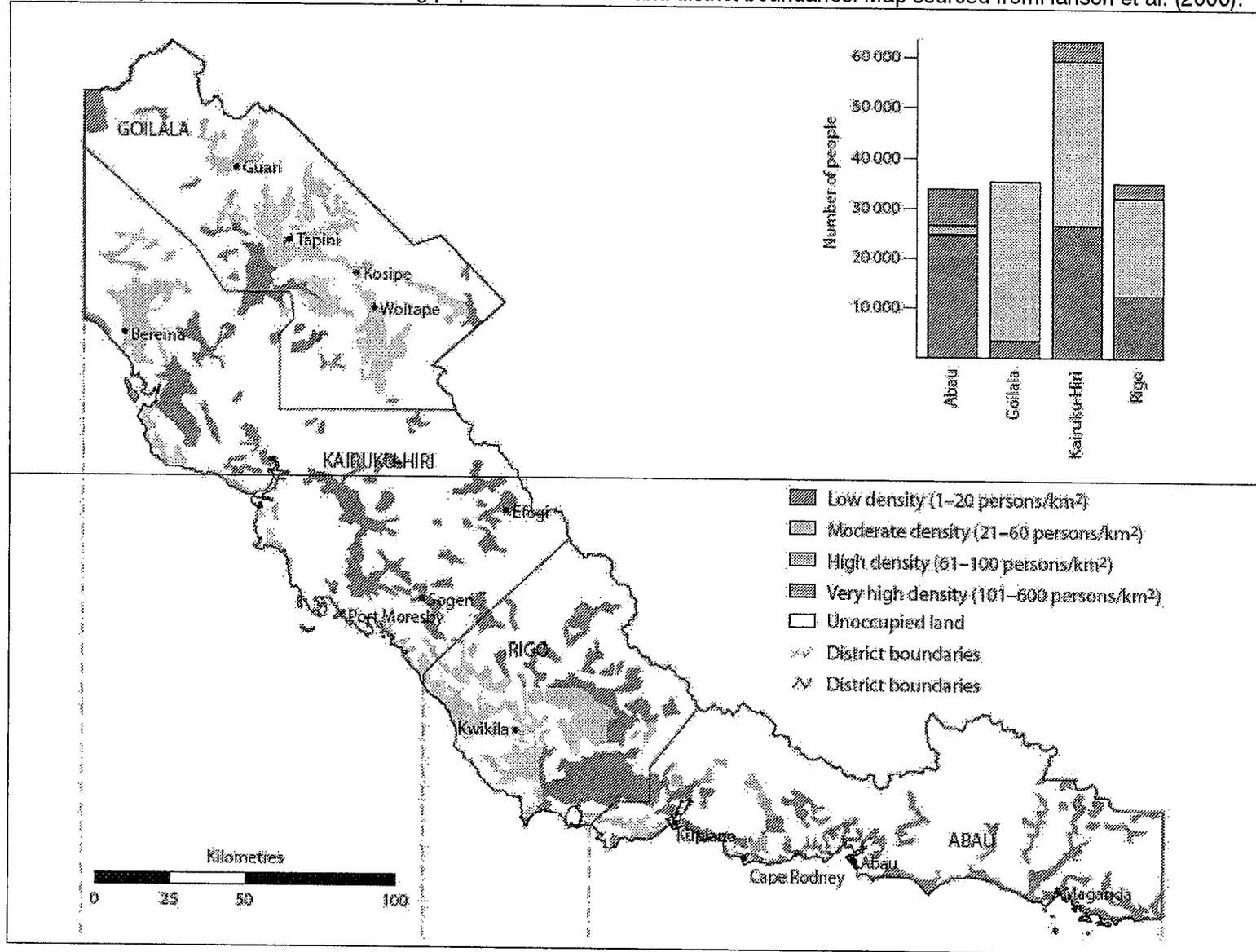
Figure 3: Map of Central Province showing population densities and district boundaries. Map sourced fromHanson et al. (2000).

ANNEX 5: Detailed Description of Project Tasks

Output 1:	A reforestation awareness programme is in operation for landowners and the wider community

Activity 1.1:   Establish forestry education service for primary and secondary schools

Task		Description
1.1.1	Assess present understanding, and awareness gaps	Survey forms will be used to collect information from teachers and students at target schools regarding their understanding of forestry issues, options and processes.
1.1.2	Produce and distribute educational material for target schools	Material (e.g. posters, supplementary teaching booklets and CDs) will be designed to reinforce the PNG primary and secondary school curriculum and supplement existing school material. Material will be developed in consultation with the National Department of Education (Curriculum Devt. Division), the provincial / district education authorities, and target school teachers / students.
1.1.3	Support educational activities at target schools	Technical and financial support will be given to selected school activities (e.g. school nurseries & plantings, and excursions to forests, grasslands & reforestation enterprises). Activities will be designed to reinforce the PNG primary and secondary school curriculum, and developed in consultation with provincial / district education authorities, and target schools.
1.1.4	Monitor and develop forestry education service	A participatory approach will be used.

Activity 1.2:   Establish reforestation awareness service for landowners and the wider community

Task		Description
1.2.1	Assess present understanding, and awareness gaps	Survey forms will be distributed to target groups (e.g. community leaders, public and private sector agencies) regarding their understanding of reforestation issues, options and processes.
1.2.2	Produce and distribute awareness materials for target groups	Material will include bulletins, booklets, newspaper articles, radio segments. Hard copies will be distributed through Kuriva (NFS), Laloki (NARI) and selected provincial / district / local outlets. Material will disseminate: ★ *Relevant social, environmental and economic issues, with reference to the research findings from ACIAR / FST-2004-050 and ACIAR / FST-2007-078 (refer Table 5, page 16)* ★ *Up to-date project information (e.g. project objectives, activities, progress reports, model business arrangements & production systems).*
1.2.3	Support awareness activities of target groups	Technical and financial support will be given to selected activities (e.g. exposure trips, meetings, theatre groups).
1.2.4	Monitor and develop reforestation awareness service	A participatory approach will be used.

Activity 1.3:   Establish model community reforestation arrangements at strategic locations

Task		Description
1.3.1	Produce site selection, land group incorporation and joint venture guidelines	With reference to: ★ *Present NFS policies, programmes and procedures* ★ *Community involvement, participatory appraisal, community organizing, and joint venture processes used during the Pre-project.*
1.3.2	Produce site selection, land group incorporation and joint venture database and materials	Materials will include land group incorporation hand-outs and joint venture templates.
1.3.3	Establish model sites and land groups.	The Pre-project led to the establishment of 3 model independent landowner arrangements at road-side locations within Rigo District. Selection criteria will be developed to ensure that a variety of additional model business types and production systems are established (activity 1.4) at strategic locations within Kairuku and Abau Districts.
1.3.4	Establish model reforestation agreements	The NFS Planted Forest Branch will supervise the preparation and signing of appropriate joint venture agreements that include acceptable business and land-use plans.
1.3.5	Monitor and develop community reforestation arrangements	A participatory approach will be used.

Activity 1.4:   Establish and promote model community reforestation enterprises at selected locations

Task		Description
1.4.1	Produce community reforestation guidelines	With reference to the awareness, training & support, and planting material distribution services (outputs 1-4).
1.4.2	Upgrade reforestation database and maps	NFS and NARI mapping officers will integrate their present database and mapping tools[15].
1.4.3	Select business models (start with 3 ILGs at Kwikila)	Trainers will assist land groups to select the best business type for their situation through the business training and support package (output 2)
1.4.4	Select production systems (start with 3 ILGs at Kwikila)	Trainers will assist land groups to select the best production system for their situation through the (agro) forestry training and support package (output 3)
1.4.5	Establish and develop model businesses (start with 3 ILGs at Kwikila)	Trainers will assist land groups to start and improve their small-scale businesses through the business training and support package (output 2). Medium / large-scale businesses will be expected to select a partner (private or public sector) with the required business expertise and access to finance.

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[15] PNGFA presently uses the Forest Inventory Mapping System (FIMS) and the PNG Resource Information System (PNGRIS).

Task		Description
1.4.6	Establish and maintain trial plots and planting sites (start with 3 ILGs at Kwikila)	Trainers will assist land groups establish first rotation plantings through the (agro) forestry training and support package (output 3), and the distribution system (output 4). NFS / NARI extension officers will establish trial plots at the model sites to research plants and production systems. Medium / large-scale businesses will be expected to select a partner (private or public sector) with the required (agro) forestry expertise
1.4.7	Promote model reforestation enterprises (start with 3 ILGs at Kwikila)	Promotional methods will include road-side notices boards, open-days, brochures, newspaper articles, radio segments, and worth-of-mouth.
1.4.8	Monitor and develop community reforestation process	A participatory approach will be used.

Output 2: A business training and support package is in operation for small-scale reforestation enterprises

Activity 2.1: Establish business training service for high school students & entrepreneurs

Task		Description
2.1.1	Assess present know-how, and training needs of target groups	Survey forms will be distributed to target group representatives
2.1.1	Upgrade business training guidelines and database	The tools and processes presently used by SBDC will be upgraded with reference to the SIYB Programme Review Findings (2008).
2.1.2	Upgrade business training materials for KAB and SIYB courses	The training materials presently used by SBDC for KAB courses (high schools), SYB courses (potential enterprises), and IYB courses (established enterprises) will be upgraded with reference to the SIYB Programme Review Findings (2008).
2.1.3	Select and train KAB and SIYB trainers	Selection criteria will ensure trainers provide long-term, high-quality training services. Priority will be given to long-term, locally based trainers. ToT courses will be conducted by SBDC master trainers.
2.1.4	Conduct KAB and SIYB training courses (start with 3 ILGs at Kwikila)	KAB courses will be delivered to selected schools. SIYB courses will be delivered to model land groups, and the 'wider' community upon request (depending upon availability of project resources). SYB courses will lead to the development of a complete Business Plan for each business group that: ★ Considers short / medium / long-term cash-flow and income generation requirements ★ Assists entrepreneurs apply for business finance
2.1.5	Provide follow-up coaching (start with 3 ILGs at Kwikila)	Follow-up coaching will be provided to SIYB course participants as required. High school teachers will provide ongoing assistance to KAB participants.
2.1.5	Monitor and develop business training service	A participatory approach will be used.

Activity 2.2:   **Establish business information service for reforestation entrepreneurs**

Task		Description
2.2.1	Assess present business know-how, and information needs of target groups	Survey forms will be distributed to target group representatives
2.2.2	Upgrade business information guidelines and database	The tools and processes presently used by SBDC will be upgraded with reference to the SIYB Programme Review Findings (2008).
2.2.3	Upgrade and distribute up to-date business information materials	The materials presently used by SBDC will be upgraded, adapted and extended to meet the needs of the reforestation sector with reference to the research findings from ACIAR / FST-2004-050 regarding business models, issues and constraints. Materials will be distributed through the SBDC head-office and selected district / local level outlets (e.g. district administrations and accredited trainers).
2.2.4	Monitor and develop business information service	A participatory approach will be used.

Output 3:	An (agro) forestry training and support package is in operation for small-scale reforestation enterprises

Activity 3.1:   **Establish (agro) forestry training service for reforestation entrepreneurs**

Task		Description
3.1.1	Assess present know-how, and training needs of target groups	Survey forms will be distributed to target group representatives
3.1.2	Produce (agro) forestry training guidelines and database	With reference to the tools and processes presently used by NFS and NARI.
3.1.3	Produce (agro) forestry training materials	With reference to materials presently used by NFS and NARI. Materials will be developed to assist landowner decision-making with reference to species (e.g. native and introduced) and site (e.g. soils, land-use, slope) characteristics, and the expected outputs / benefits / trade-offs from different production systems and silvicultural practices.
3.1.4	Conduct (agro) forestry training courses	NFS / NARI extension officers will provide on-site training at Kuriva (NFS), Laloki (NARI) and district / local level outlets (e.g. district and community-based resource centres). Training courses will cover land-use planning, site selection, site establishment, fire control, site operations through to harvesting, and nursery management. Training courses will be delivered to model land groups, and the 'wider' community upon request (depending upon availability of project resources).
3.1.5	Provide follow-up coaching	NFS / NARI extension officers will provide follow-up coaching to course participants as required.
3.1.6	Monitor and develop business training service	A participatory approach will be used.

Activity 3.2:   Establish (agro) forestry information service for reforestation entrepreneurs

Task		Description
3.2.1	Assess present (agro) forestry know-how, and information needs of target groups	Survey forms will be distributed to target group representatives
3.2.2	Produce (agro) forestry information guidelines and database	With reference to the tools and processes presently used by NFS and NARI.
3.2.3	Produce and distribute up to-date (agro) forestry information materials	With reference to: ★ *Materials presently used by NARI and NFS* ★ *Research findings from ACIAR / FST-2004-050 and ACIAR / FST-2007-078.* Materials will be distributed through Kuriva (NFS), Laloki (NARI) and selected district / local level outlets (e.g. district administrations and accredited trainers).
3.2.4	Monitor and develop (agro) forestry information service	A participatory approach will be used.

Output 4:	A distribution system is in operation providing (agro) forestry stock & materials for model reforestation enterprises

Activity 4.1:   Establish clonal orchard and seed production units

Task		Description
4.1.1	Assess present seed supplies, and future seed demands	Seed production should meet the immediate needs of the model reforestation enterprises (activity 4.3). Vegetative reproduction (activity 4.2) will be necessary to satisfy the medium to long-term requirements of the growers in Central Province, as well as the future specifications of domestic and overseas markets.
4.1.2	Produce seed production guidelines and database	With reference to the tools and processes presently used by NFS
4.1.3	Establish and maintain clonal orchard and seed trees at Kuriva	The highly regarded Mount Lawes Clonal Orchard is located on insecure customary land. A clone bank of grafts has been established at FRI under ACIAR / FST 2004/009, and the NFS Planted Forest Branch is now establishing replicate orchards at strategic locations on secure state land. This task will establish a replicate orchard on state land at the Kuriva Forestry Station. The orchard will provide a secure source of genetic material for reforestation activities in Central Province with reference to the findings from ACIAR / FST-2007-078 regarding installation of seed production units and provenance tests. The project will also manage seed trees at the Kuriva plantation (presently 44 candidate trees).
4.1.4	Monitor and develop seed production processes	A participatory approach will be used.

Activity 4.2: Establish model distribution network for reforestation enterprises

Task		Description
4.2.1	Assess planting stock and material requirements at model enterprises	Assessment will be made with reference to the Business Plan (activity 2.1e) prepared by each reforestation enterprise. There will be around 90 ha of plantation (i.e. 30 ha / district) which will require around 100,000 tree stumps, plus food crops etc).
4.2.2	Produce distribution guidelines and database	With reference to the tools and processes presently used by NFS and NARI.
4.2.3	Establish local distribution centres (start at Kwikila)	Kuriva (NFS) and Laloki (NARI) will provide the distribution 'hubs' for Central Province. Local distribution centres may provide a more cost-effective means of delivering planting stock and materials to reforestation enterprises. Issues such as water supply, fire control, security and overall management will need to be carefully considered, with reference to the research findings from ACIAR / FST-2007-078 with regards to: ★ *Identification of feasible options for sustaining germplasm supply through local, commercial nurseries (these may also provide local training and support services).*

Activity 4.3: Increase and diversify the production of planting stock

Task		Description
4.3.1	Assess present planting stock supplies, and future demands	Seed production (activity 4.1) should meet the immediate demands of the model reforestation enterprises (activity 4.3). Vegetative reproduction will be necessary to satisfy the medium to long-term requirements of growers in Central Province, as well as the future specifications of domestic and overseas markets.
4.3.2	Produce stock production guidelines and database	With reference to: ★ *The tools and processes presently used by NFS* ★ *Tasks c and d.*
4.3.3	Initiate an appropriate plant propagation programme for the Central Province lowlands	This task will focus on introducing vegetative propagation as an accepted means of increasing the supplies of planting stock for the future. Techniques will be developed with reference to the research findings from ACIAR / FST-2007-078 regarding: ★ *Propagation of juvenile material from seed collections using appropriate technology* ★ *Propagation of mature material from selected trees using appropriate technology* ★ *Establishment of clonal stock-plant gardens*
4.3.4	Upgrade nurseries at Kuriva Forestry Station	This task will focus on producing adequate supplies of appropriate planting stock (i.e. teak and selected high-value, high demand trees)
4.3.5	Upgrade nurseries at Laloki Agricultural Station	This task will focus on producing adequate supplies of appropriate food crop species / varieties.
4.3.6	Monitor and develop stock production processes	A participatory approach will be used.

	Task	Description
		★ *Adaptation of appropriate vegetative propagation techniques and protocols for local nurseries* There will be around 3 local nurseries (i.e. 1 / district)
4.3.7	Monitor and develop distribution processes	A participatory approach will be used.

ANNEX 6: Responses to Recommendations from the 38th Expert Panel

Expert Panel Recommendations	Project Proposal Modifications
1. In Section 1.2.2 (Relevance to the Submitting Country's Policies), provide more information on the lessons learned from the implementation of the National Forest Policy (1991) in connection to the establishment of forest plantations;	Table i (page 8) has been added to present the important lessons learned from the implementation of the National Forest Policy (1991) with regards to the establishment of forest plantations.
2. For the geographical location, provide more information on the 3 districts selected and explain briefly how the selection was made. For the cultural aspect, explain more the land tenure issue and clarify how the landowners will organize themselves for the project;	Table ii (page 9) provides some background information on the four Districts within Central Province, and shows how the three target Districts (i.e. Rigo, Kairuku Hiri and Abau) were selected. Table iii (page 10) has been added to explain the land tenure issues portrayed in the Problem Tree (Figure 4, page 20), and to present the mechanisms selected for addressing these constraints to community reforestation.
3. Further elaborate the model reforestation enterprise which will be developed on the basis of the model reforestation framework;	Table iv (pages 11-12) has been added to present the three components of a model reforestation enterprise.
4. Further elaborate Section 1.3.2 (Social, Cultural, Economic and Environmental Aspects) regarding conflict resolution approaches in connection to different opinions on land-ownership and land-use and benefit sharing which were identified as a sub-cause in the problem tree. Are there any other users of the resource who could be negatively affected by the afforestation program on degraded grasslands? If yes, identify them and explain how their interest will be considered. Explain how the project will address the differences of opinion which exist on land ownership and land-use;	Table iii (page 10) has been added to explain the land tenure issues portrayed in the Problem Tree (Figure 4, page 20), and present the selected mechanisms for addressing these constraints to community reforestation.
5. Adequately revise the logical framework matrix by improving the indicators, which must be specific, measurable, appropriate, realistic and time-bound (using years 1, 2, 3 instead of 2010, 2011 and 2012);	The logical framework indicators (pages 22-23) have been improved as requested, and sections 2.2.1, 2.2.2 and 3.1.1 (pages 24-25) updated accordingly.

Expert Panel Recommendations	Project Proposal Modifications
6. Improve the presentation of the work plan so that the execution of each activity can be clearly indicated by a black (not too dark) bar in a monthly basis in the Gantt Chart;	The presentation of the Gantt Chart in Section 3.3 (page 33) has been improved.
7. Revise the project budget in the following way: a) Justify the unit costs for the engagement of the NFS staff (item 11.1) and the project management specialist (item 11.2) as well as the purchase of a tractor (item 44.6), b) Include the costs of independent annual audits in the ITTO budget if not covered by the Executing Agency, and c) Recalculate the ITTO Programme Support Costs to 8% of the ITTO total contribution (items 10-82)	Table v (page 35) presents the detailed budget for the NFS personnel, capacity building and communication specialist and distribution centre equipment, together with a justification for their unit costs. ITTO Audit Costs have been added to budget line 62 of the Consolidated Budget by Component (page 34) and to budget line 60 of the ITTO Budget by Component (page 36) The Programme Support Costs have been recalculated, and the Consolidated Budget by Component (page 34) and the ITTO Budget by Component (page 36) updated accordingly.
8. Improve the stakeholder involvement mechanisms through the establishment of a consultative mechanism to build ownership and to achieve the commitment towards the successful implementation of the project;	Sub-section 4.1.4 (page 43) contains an Advisory Committee as an additional mechanism to provide stakeholders with a platform for receiving information and giving advice to project management through the project steering committee. Figure 6 (page 40) has been updated to present the improved project structure.
9. Further improve the sustainability of the project showing how the "reforestation framework" will contribute in the future to the development and dissemination of the rehabilitation of under-utilized grasslands;	Table vi (page 39) has been added to show how the Model Reforestation Framework is expected to expand over time both within and beyond Central Province, leading to the gradual rehabilitation of under-utilized grasslands within Central and other Provinces with adequate resources
10. In Section 4.1.1 (Executing Agency and Partners), provide information on the capacity of technical collaborators such as Small Business Development Corporation (SBDC) and National Agriculture Research Institute (NARI), and explain why it is an appropriate choice; and	Table vii (pages 41-42) has been added to summarise the capacity assessment findings that led to the selection of the four Technical Partners. Table vi supplements Table 6 (pages 13-14).
11. Provide an Annex showing the recommendations of the Thirty-eighth Expert Panel and the respective modifications made in tabular form. Modifications should be highlighted (bold and underlined) in the text.	Annex 6 (pages 59-60) has been added to summarise the modifications made in response to the recommendations from the 38[h] Expert Panel.