

PROJECT TITLE: ENABLING CUSTOMARY LANDOWNERS TO PARTICIPATE EFFECTIVELY IN CFM AND REDD SCHEMES WITHIN FOUR PILOT AREAS OF PNG

REPORT TITLE: TECHNICAL REPORT ONE:
*SITE SELECTION, LANDOWNERSHIP MAPPING AND
BASELINE DATA COLLECTION.*

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Table of Contents

SUMMARY	3
1. INTRODUCTION.....	3
2. METHODOLOGY.....	4
2.1 FRAMEWORK AND TOOLS	4
2.2 ACTIVITIES AND OUTPUTS	5
2.3 LOCAL PARTNERS AND LANDOWNER GROUPS	6
3. BASELINE DATA	8
3.1 COMMUNITY BASED FOREST MONITORING PROJECT (CBFM)	8
3.2 CRATER MOUNTAIN WILDLIFE MANAGEMENT AREA (CMWMA)	15
3.3 CENTRAL SUAU REDD PILOT SITE	22
3.4 PAYMENT FOR ENVIRONMENTAL SERVICES (PES) TRIAL PROJECT	25
3.5 TREE KANGAROO CONSERVATION PROGRAM (TKCP).....	32
3.6 VILLAGE-REDD+ PROJECT	39
4. CONCLUSIONS	42
5. RECOMMENDATIONS.....	42
6. REFERENCES.....	43
7. ANNEXES.....	44
7.1 LOCAL PARTNER ASSESSMENT FORM	44
7.2 PRA GUIDELINES.....	45
7.3 INVITATION LETTER	46
7.4 SUMMARY SCORING SHEET	47
7.5 CRITERIA FOR SELECTION OF REDD+ DEMONSTRATION SITES.....	48

Abbreviations and Acronyms

AusAID	Australian Agency for International Development
CA	Conservation Area
CBFM	Community Based Forest Monitoring
CFE	Community Forest Enterprise
CFM	Community Forest Management
CFME	Community Forest Management and Enterprises
CMWMA	Crater Mountain Wildlife Management Area
CO	Community Organisation
FCA	Forest Clearance Authority
FORCERT	Forest Management and Product Certification Service
FPCD	Foundation for People and Community Development
FSC	Forest Stewardship Council
ILG	Incorporated Land Group
ITTO	International Tropical Timber Organisation
LLG	Local Level Government
MBPA	Milne Bay Provincial Administration
NFS	National Forest Service
PES	Payment for Environmental Services
PNG	Papua New Guinea
PNGFA	PNG National Forest Authority
PRA	Participatory Rural Appraisal
RCF	Research & Conservation Foundation
REDD	Reduced Emissions from Deforestation and Degradation
SABL	Special Agricultural Business Lease
TKCP	Tree Kangaroo Conservation Program
UNFCCC	United Nations Framework Convention on Climate Change
USA	United States of America
WCS	Wildlife Conservation Society
YUS	Yopno Uruwa Som

Summary

The International Tropical Timber Organisation (ITTO) is currently helping the PNG Forest Authority (PNGFA) to formulate a full-project that enables customary landowners to participate effectively in CFM and REDD schemes within 4 pilot areas of Papua New Guinea. This report concludes the first round of project design activities, and introduces the project's selected partners, demonstration sites and target landowner groups. The baseline data collection findings reveal a diverse project context - with similar strengths and weaknesses at the community level - in which local partners offer target landowners an important link with the outside world; opening up new opportunities for enhancing rural livelihoods. The report recommends the full-project build on shared strengths, address similar weaknesses, and learn from the diverse skills and experiences of local project partners and target communities. Some possible community "entry points" for the full-project proposal are highlighted for consideration during the strategy selection activities ahead.

1. Introduction

The *PNG Forestry and Climate Change Policy Framework for Action* emphasises the need for a multi-stakeholder approach to CFM and REDD programming that engages customary landowners at the local level and enhances the capacity of government institutions at the national level. Whilst customary landowners and their CFEs are generally well informed about the quality of their forests, they are often excluded from forest resource assessment activities, forest management decision-making processes, and associated development opportunities (e.g. REDD financing mechanisms).

The Pre-Project is developing a model community-based land ownership mapping and forest resource assessment system that supports CFM and REDD schemes within six pilot areas of PNG. Pre-Project activities first involve the selection of demonstration sites, identification of landowners and local partners, and formation of project agreements. This is followed by the collection of baseline data, selection of cost-effective implementation strategies, and preparation of technical specifications for the required equipment, materials and support services.

This technical report first examines the proposed context for the full-project, and then provides some suggestions for the strategy selection activities ahead. This report completes the first phase of project activities, namely:

- **Activity 1.1:** Selection of eight demonstration sites and local CFM / REDD partners;
- **Activity 1.2:** Identification of customary landowners of selected sites;
- **Activity 2.1:** Collection of baseline social, economic and environmental data at model sites with customary landowners and local partners.

2. Methodology

2.1 Framework and Tools

The project management team first selected the sustainable livelihoods framework (DFID, 1999) as a guideline for designing a full-project proposal that complements the UNFCCC objectives to minimize poverty and enhance livelihoods of rural communities. An assessment form (Annex 6.1, page 44) was then prepared to assist project management team members choose local CFM partners to collaborate with the project. PRA guidelines (Annex 6.2, page 45) were then assembled to assist local partners collect a set of disaggregated data on forest-livelihood interactions at each selected site, with reference to 5 research tools:

- Village Profile Form
- Community Sketch Map
- Venn Institutional Diagram
- Group Discussion Sheets
- Seasonal Calendar

Figure 1 (below) highlights the set of tools that were developed to collect baseline data from both local partners (pink) and target community groups (green) with reference to the sustainable livelihoods framework elements.

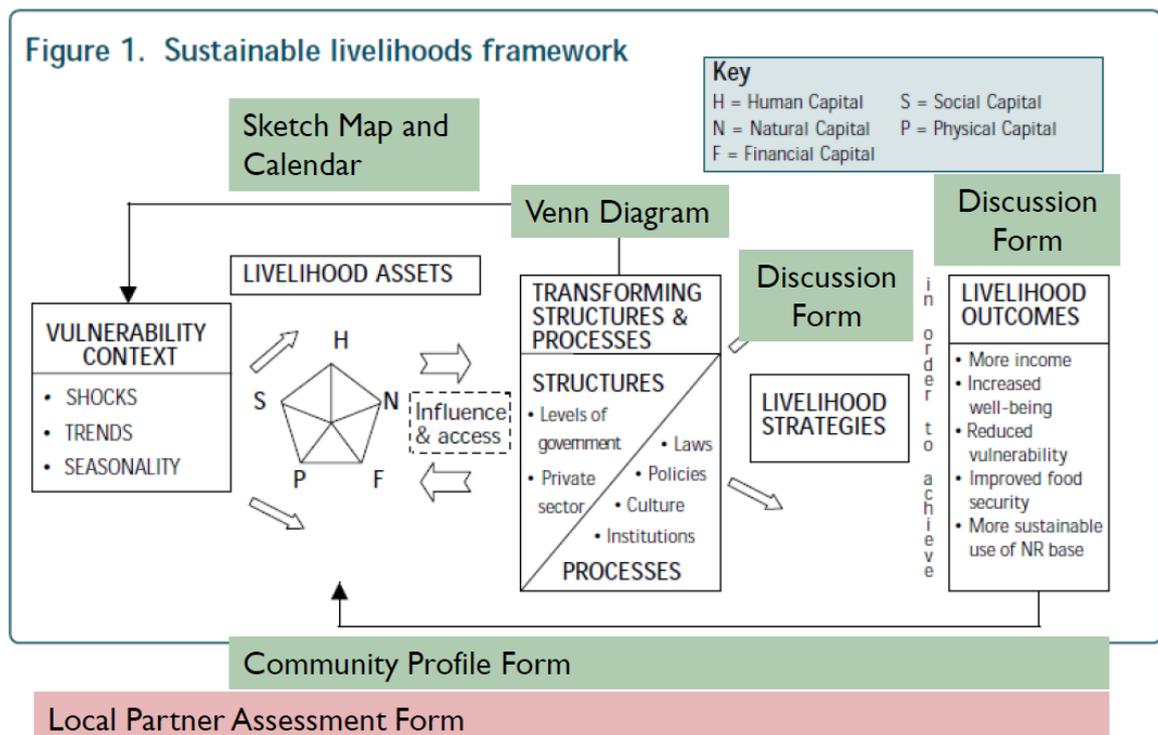
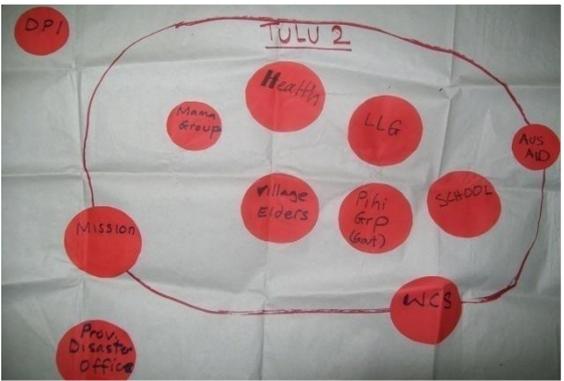


Figure 1: Sustainable livelihoods framework (source DFID, 1999) and data collection tools

2.2 Activities and Outputs

Table 1 (below) outlines the project's site selection, landownership mapping and baseline data collection activities and outputs.

Table 1: Site selection, landownership mapping and baseline data collection activities and outputs.

Project Activity	Project Output
1.1: Select eight demonstration sites and local CFM / REDD partners	
<ul style="list-style-type: none"> The project management team first identified 23 potential local partners from the government, non-government and private sectors. The PNG Forest Authority then sent out formal letters (Annex 6.3, page 46) inviting each organization to apply to become a local partner to the project. The project management team assessed 9 applications using the assessment form's scoring sheet (Annex 6.4, page 47), and the PNG Forest Authority's criteria for selection of REDD+ demonstration sites (Annex 6.5, page 48). 	 <p>Six local CFM partners in place (Table 2, page 6).</p>
1.2: Identify customary landowners of selected sites	
<ul style="list-style-type: none"> The project coordinator and consultants visited each local CFM partner to discuss the selection of demonstration site(s) and landowner groups for the project to work with. Each local CFM partner then prepared their demonstration site maps with landowner group boundaries. 	 <p>Pilot landowner groups in place at each demonstration site (Table 2, page 6).</p>
2.1: Collect baseline social, economic and environmental data at model sites with customary landowners and local partners	
<ul style="list-style-type: none"> The project coordinator and consultants visited local partners to introduce and collect feed-back on the PRA guidelines and tools, and initiate the baseline data collection tasks Each local CFM partner then collected their baseline data at selected sample sites with reference to the PRA guidelines and tools. 	 <p>Set of baseline data in place for each sample community</p>

2.3 Local Partners and Landowner Groups

Table 2 (below) introduces the project's 6 local CFM partners and the selected landowner groups at each demonstration site. Figure 2 (page 7) locates each partner within Papua New Guinea.

Table 2: Local partners, projects and selected landowner groups

Local Partner	Project	Landowner Groups
Foundation for People and Community Development (FPCD)	Community Based Forest Monitoring Project	6 selected landowner groups (1 clan and 5 sub-clans) from 5 districts in Madang Province
Research & Conservation Foundation (RCF)	Crater Mountain Wildlife Management Area	17 selected clans from 2 ethno-linguistic groups in Eastern Highlands (Gimi tribe) and Gulf/Simbu (Pawaia tribe) Provinces
Milne Bay Provincial Administration (MBPA) with PNG Forest Authority (PNGFA)	Central Suau REDD Pilot Site	110 clan groups from 1 district in Milne Bay Province
FORCERT (Forest Management and Certification Service)	Payment for Environmental Services (PES) Trial Project	5 selected business groups from 2 districts in East and West New Britain Provinces
Tree Kangaroo Conservation Program (TKCP)	YUS Conservation Area	Conservation area members from the SOM and Nambis Zones in Morobe province
Wildlife Conservation Society (WCS)	Village-REDD+ Project	83 clans / sub-clans from 5 selected villages in 2 LLGs (north coast and south coast)

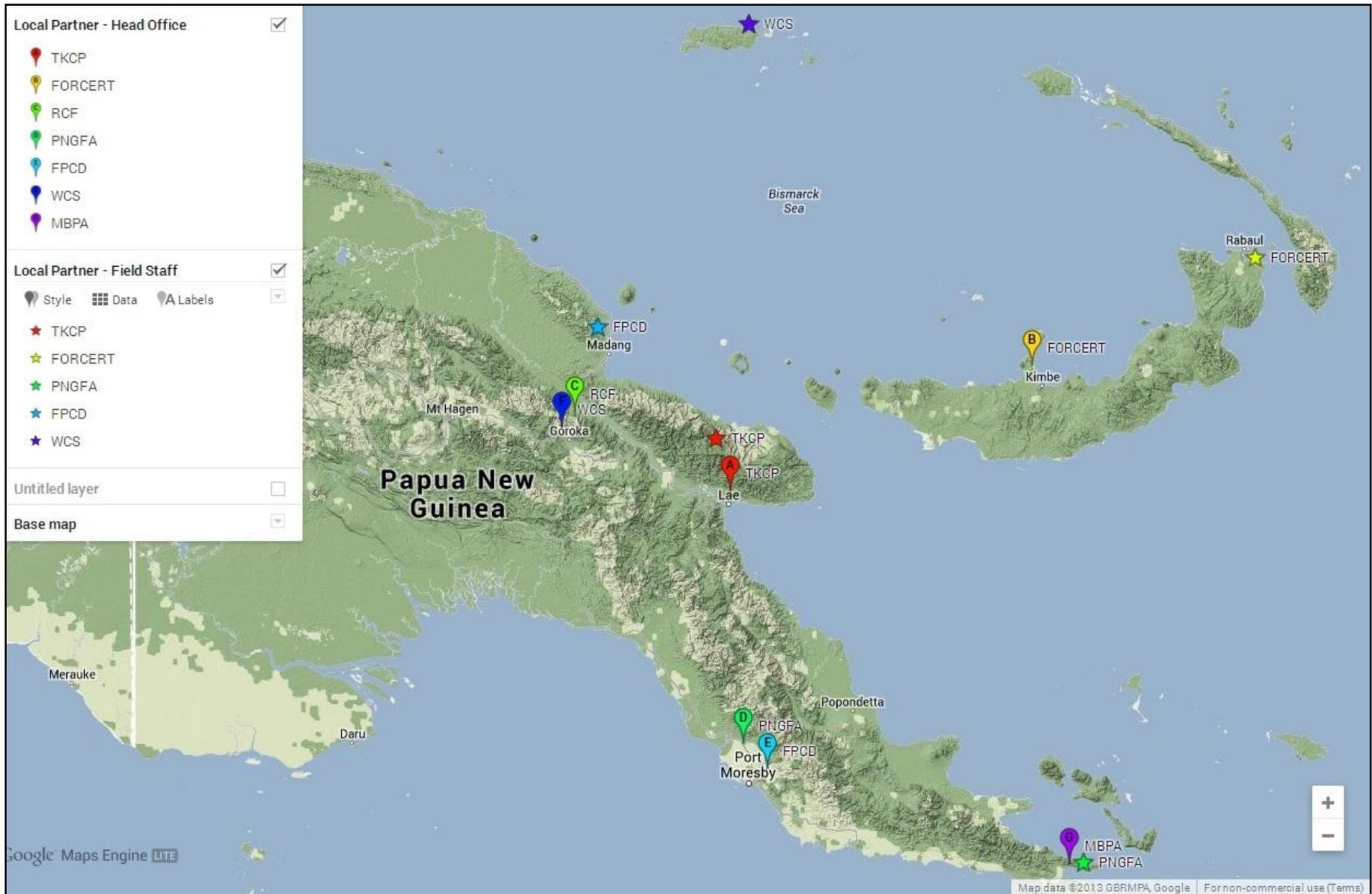


Figure 2: Map showing the location of the project sites and local partners

3. **Baseline Data**

PNG has a land area of around 463,000 km², the majority of which is held under customary ownership with only 27% occupied by people. The landscape comprises islands, lowlands and highlands ranging from sea level to over 4,000 metres. PNG has a very diverse natural environment due to large variations in landform, rainfall and altitude. It is also tectonically and volcanically active. These conditions often limit rural development, with over 50% of the land area being mountainous, and 20% being seasonally or permanently flooded. As a result, around 70% of land has very low to low potential for most food and cash crops, and people's ability to access markets and services is also often restricted (Hanson et al., 2001). PNG's social context is equally diverse, with over 800 tribal groups with different languages. Each tribe comprises a number of distinct clans, with each clan sharing a common ancestor (either male or female). Important land-use decisions are usually made at the clan level. PNG has a population of over 7 million¹ people with an annual growth rate of 2.76%. There are three levels of government - national, provincial and local.

Figure 2 (page 7) shows the location of the 6 selected local partners, together with their selected project sites. Sections 3.1 to 3.6 introduce each local partner, and provide an overall assessment of the local context, together with a more detailed description of each selected sample area with reference to the:

- **Resources** that are available for people to use;
- **Structures and processes** that either help or restrict people's ability to use these resources;
- **Strategies** that are now being used to realize people's short and long-term livelihood objectives.

3.1 **Community Based Forest Monitoring Project (CBFM)**

The Foundation for People and Community Development (FPCD) is a national, non-government, not-for-profit organization that was established in 1993 to assist Papua New Guineans develop and manage their own forest resources towards environmental, economic and social benefits. FPCD's head office is in Port Moresby. Its Certified Community Forestry Program (CCFP) works with 6 clans in Madang Province under an FSC Group Certificate that was awarded in 2007 (expired in 2012). The CBFM Project has been set-up with the Institute for Global and Environmental Studies to complement FPCD's community forestry program. The CBFM Project plans to:

- Develop and implement an approach to community-based forest monitoring;
- Analyse the data gathered by the communities and assist the communities in interpreting the results;
- Assess the feasibility of REDD+ to provide an additional incentive for community-based management at the project sites.

The CBFM Project works with the six landowner groups (1 clan and 5 sub-clans) in five districts. Their combined land area is around 9,177 ha. The Pre-project's baseline data was collected with the Awane Sub-clan (Rai Coast District) and the Yate Sub-clan (Usini Bundi District).

Figure 3 (page 9) summarises the overall situation in Madang Province and locates the 6 landowner groups in their respective districts.

¹ The population figures quoted in this report use the 2000 census data adjusted by 2.76% per annum.

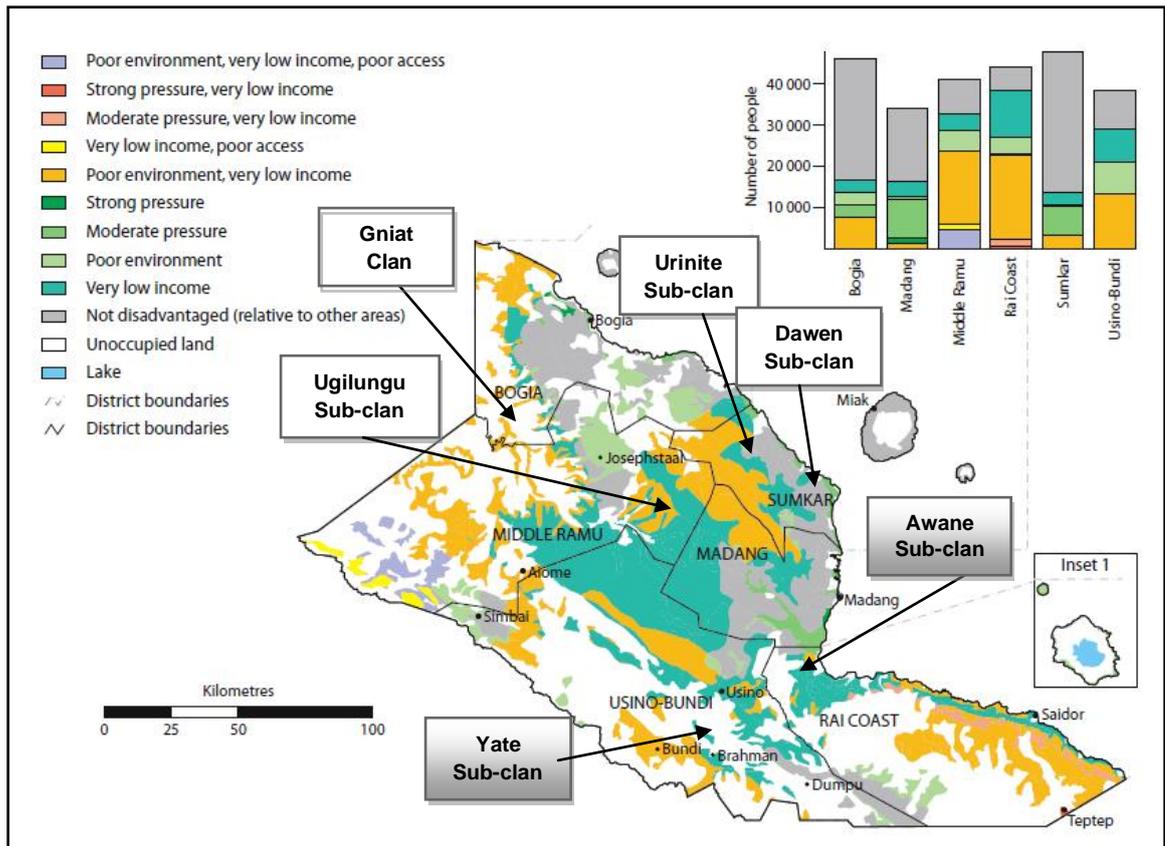


Figure 3: Map of Madang Province showing district development constraints, together with the location of the 6 clans (2 sample clans highlighted grey) . Sourced from Hanson et al. (2001)

a) Rai Coast District

The Awane Sub-clan is responsible for 650 hectares of land in the north-west of Rai Coast District. This district has a population of around 63,000 people - living from sea level up to 2,200 metres. Hanson et al. (2001) conclude that *overall, the people of Rai Coast District are extremely disadvantaged relative to people in other districts of PNG. There is some agricultural pressure, land potential is low, access to services is moderate and cash incomes are very low. Child malnutrition is of concern.* Table 3 (below) provides a more detailed description of the sample clan from Rai Coast.

Table 3: The present situation for the Awane Sub-clan

Livelihood Assets	
<p>Financial resources: The members of Awane Sub-clan have 3 main sources of income. The community sawmill contributes around 60% of this amount. There is no reliable access to credit.</p>	
<p>Figure 8: Main sources of clan income</p>	<p>Figure 9: Reliable access to credit</p>

Table 3: The present situation for the Awane Sub-clan (continued)

Livelihood Assets	
<p>Human resources: The Awane Sub-clan live in Erima village (population 300). Their population is around 26 (46% adults and 4 households) with a 0.5% annual growth rate. This includes one family from the inland Wanuma Tribe. One person has completed secondary education and another operates a trade store. The community sawmill operates on a part-time basis.</p>	
<p>Figure 10: Clan resident qualifications and experience</p>	<p>Figure 11: Number of clan residents and non-residents employed full-time</p>
<p>Natural resources: The Awane Sub-clan is responsible for around 650 ha of land with around 470 ha of natural forest.</p>	
<p>Figure 12: Land cover</p>	<p>Figure 13: Land ownership</p>
<p>Physical resources: Local markets can be accessed on foot. Madang town is accessible by bus. There is a local primary school (lower and upper) and health centre (5 km), together with a secondary school at Madang (15 km). There is no reliable mobile network, and each household is responsible for securing its own power and water supply. One household has a genset.</p>	
<p>Figure 14: Access to markets and services</p>	<p>Figure 15: Access to reliable power supply</p>

Table 3: The present situation for the Awane Sub-clan (continued)

<u>Structures and Processes</u>
<p>External structures and processes: FPCD has been working with the Awane Sub-clan since 2004. Extension activities are provided by FPCD's field staff in Madang (2 foresters and 1 driver). The CFMP has 3 activity phases:</p> <ul style="list-style-type: none"> • <u>Community Entry</u> - awareness, assessment, community organising; • <u>Training and Implementation</u> - forest management, inventory and planning, harvesting and milling, business development, nurseries and reforestation, certification, operation and maintenance; monitoring (permanent sample plots) • <u>Exit Strategy</u> - sustainability assessment, exit planning, good governance training.
<p>Internal structures and processes: Internal structures and decision-making processes fall into 3 categories:</p> <ul style="list-style-type: none"> • <u>Clan</u> - the Awane Sub-clan (Gamaura Sagigi family) are members of the Awane Clan which forms part of the Uya Tribe (patrilineal). They share boundaries with the Tobi and Daora Clans. The Awane Clan members are currently applying to become an Incorporated Land Group with support from FPCD. • <u>Local Government</u> - Erima Village is located within Ward 13 of the Astrolabe Bay LLG. • <u>Church</u> - Lutheran (80%); PNG Revival (20%).
<u>Livelihood Strategies</u>
<p>Long-term strategies: The Awane Sub-clan is keen to improve their standard of living through increased capacity to generate income from CFM. Market access for their timber is sometimes restricting.</p>
<p>Short-term strategies: Awane clan members are focused on feeding, housing and educating their family, as well as contributing to their various clan and village obligations. Households are generally able to meet their priority needs through subsistence activities (e.g. gardening, hunting, collecting firewood and wild fowl eggs), market sales (e.g. garden food), cash-cropping (cocoa), and FSC timber sales (local and international).</p>

b) *Usino Bundi District*

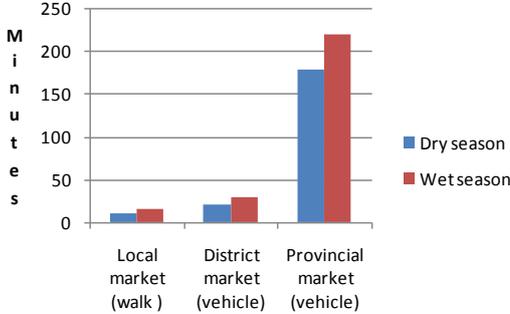
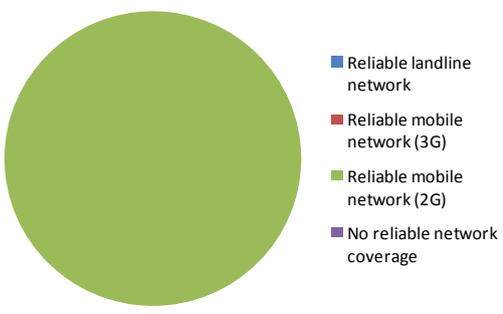
The Yate Sub-clan is responsible for 560 hectares of land in Usino Bundi District. This district has a population of around 68,000 people - living at 100 to 2,200 metres above sea level. Hanson et al. (2001) conclude that *overall, the people in Usino-Bundi District are extremely disadvantaged relative to people in other districts of PNG. There is no agricultural pressure, land potential is low, access to services is poor and cash incomes are very low. Child malnutrition is of concern.*

Table 4 (page 12) provides a more detailed description of the sample clan from Usino Bundi.

Table 4: The present situation for the Yate Sub-clan

Livelihood Assets	
<p>Financial resources: The members of Yate Sub-clan source most of their income from garden and non-timber forest products. Their community sawmill contributes around 10% of this amount. There is no reliable access to credit.</p>	
<p>Figure 8: Main sources of clan income</p>	<p>Figure 9: Reliable access to credit</p>
<p>Human resources: The members of Yate Sub-clan live within Mom 2 village. Their current population is around 57 (51% adults and 9 households) with a 7.8% annual growth rate. Education and employment levels are moderate. The community sawmill operates on a part-time basis.</p>	
<p>Figure 10: Clan resident qualifications and experience</p>	<p>Figure 11: Number of clan residents and non-residents employed full-time</p>
<p>Natural resources: The Yate Sub-clan is responsible for around 560 ha of land with around 409 ha of managed forest for sawmilling.</p>	
<p>Figure 12: Land cover</p>	<p>Figure 13: Land ownership</p>

Table 4: The present situation for the Yate Sub-clan (continued)

<u>Livelihood Assets</u>																							
<p>Physical resources: Local markets can be accessed on foot. Usino, Bundi and Madang towns are accessible by bus. There is a health centre, primary (lower and upper) and secondary school nearby (1 km). People also have access to a reliable mobile network, and each household is responsible for securing its own power and water supply. One household has a genset.</p>																							
 <p>Figure 14: Access to markets and services</p> <table border="1"> <caption>Data for Figure 14: Access to markets and services (MUSD)</caption> <thead> <tr> <th>Market Type</th> <th>Dry season</th> <th>Wet season</th> </tr> </thead> <tbody> <tr> <td>Local market (walk)</td> <td>~10</td> <td>~15</td> </tr> <tr> <td>District market (vehicle)</td> <td>~20</td> <td>~30</td> </tr> <tr> <td>Provincial market (vehicle)</td> <td>~180</td> <td>~220</td> </tr> </tbody> </table>	Market Type	Dry season	Wet season	Local market (walk)	~10	~15	District market (vehicle)	~20	~30	Provincial market (vehicle)	~180	~220	 <p>Figure 15: Access to reliable power supply</p> <table border="1"> <caption>Data for Figure 15: Access to reliable power supply</caption> <thead> <tr> <th>Power Supply Type</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Reliable mobile network (3G)</td> <td>100%</td> </tr> <tr> <td>Reliable mobile network (2G)</td> <td>0%</td> </tr> <tr> <td>No reliable network coverage</td> <td>0%</td> </tr> <tr> <td>Reliable landline network</td> <td>0%</td> </tr> </tbody> </table>	Power Supply Type	Percentage	Reliable mobile network (3G)	100%	Reliable mobile network (2G)	0%	No reliable network coverage	0%	Reliable landline network	0%
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<u>Structures and Processes</u>																							
<p>External structures and processes: FPCD has been working with the Yate Clan since 2006. Extension activities are provided by FPCD's field staff in Madang (2 foresters and 1 driver).</p> <p>The CFMP has 3 activity phases:</p> <ul style="list-style-type: none"> • <u>Community Entry</u> - awareness, assessment, community organising; • <u>Training and Implementation</u> - forest management, inventory and planning, harvesting and milling, business development, nurseries and reforestation, certification, operation and maintenance; • <u>Exit Strategy</u> - sustainability assessment, exit planning, good governance training. <p>The Catholic Mission provides pastoral services including health, education and informal credit.</p>																							
<p>Internal structures and processes: Internal structures and decision-making processes fall into 3 categories:</p> <ul style="list-style-type: none"> • <u>Clan</u> - the Yate Sub-clan (Yarope family) are members of the Goni Clan which forms part of the Brahman Tribe (patrilineal). Goni Clan members are currently applying to become an Incorporated Land Group with support from FPCD. • <u>Local Government</u> - Mom 2 Village are located within Ward 18 of the Bundi LLG • <u>Church</u> - Catholic (95%); Baptist (3%); Lutheran (2%) <p>Mom 2 village includes migrants from other areas, mainly Bundi (30%); Simbu (10%) and Goroka (5%).</p>																							
<u>Livelihood Strategies</u>																							
<p>Long-term strategies: The Yate Sub-clan is keen to develop their community forestry enterprise. Whilst FPCD provides adequate technical support, they would like to increase their income from CFM activities. They are also keen to be seen as a role model for surrounding clans, as well as other members of the Goni Clan. They are concerned that landowners may have unexpectedly high expectations about what CFM / REDD can deliver (especially in the short-term), and believe community awareness and empowerment to be key ingredients of any community development initiative.</p>																							
<p>Short-term strategies: Yate clan members are focused on feeding, housing and educating their family, as well as contributing to their various clan and village obligations. Households are generally able to meet their priority needs through subsistence activities (e.g. gardening, hunting, collecting firewood and nuts), market sales (e.g. garden food and NTFPs), cash-cropping (cocoa), and FSC timber sales (local and international markets).</p>																							

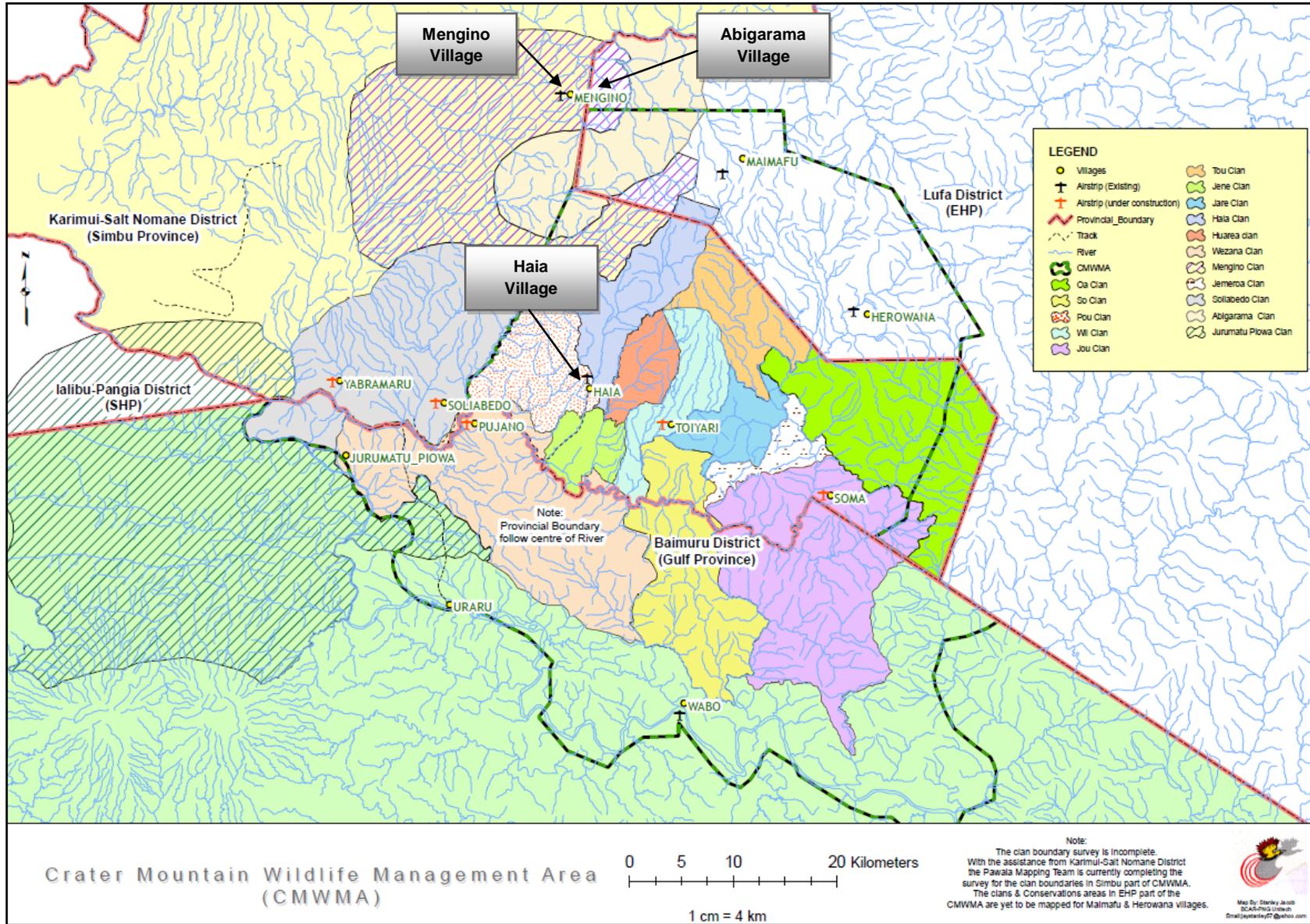


Figure 4: Map of Crater Mountain Wildlife Management Area showing provincial boundaries, clan land boundaries and airstrips

3.2 Crater Mountain Wildlife Management Area (CMWMA)

The Research & Conservation Foundation (RCF) is one of the longest-serving national NGOs in PNG, incorporated on the 28 July 1986. The Foundation is based in Goroka and manages two core programs - the Conservation Education Program (CEP) and the Natural Resource Management Program (NRMP). The NRMP aims to ensure the communities from the CMWMA sustainably use their natural resource to maintain their livelihoods. The NRMP has 4 objectives:

- To develop the local's capacity to sustainably manage their livelihoods through transfer of technical skills and knowledge
- To enable the local's to sustainably manage their natural source through clan land boundary mapping and land use planning.
- To increase the local's environmental knowledge and information base through conservation training and awareness
- To maintain a shared and common conservation and development goals between the organisation and the Crater's local communities

The CMWMA covers three provincial boundaries and around 260,000 hectares of land owned by 16 clans (Figure 4, page 14). The Pre-project's baseline data was collected from Mengino and Abigarama villages (Lufa District), and Haia village (Karimui Salt-Nomane District).

a) Lufa District

The CMWMA covers parts of Lufa District to the far west of Eastern Highlands Province. Lufa District has a population of around 75,000 people - who mostly live at 1,400 to 2,200 metres above sea level. Hanson et al. (2001) conclude that *overall, people in Lufa District are slightly disadvantaged relative to people in other districts of PNG. There is little agricultural pressure, land potential is moderate, access to services is good and cash incomes are low.* Figure 5 summarises the overall situation in Eastern Highlands Province and locates the two sample villages. Table 5 (page 15) provides a more detailed description of the two sample villages.

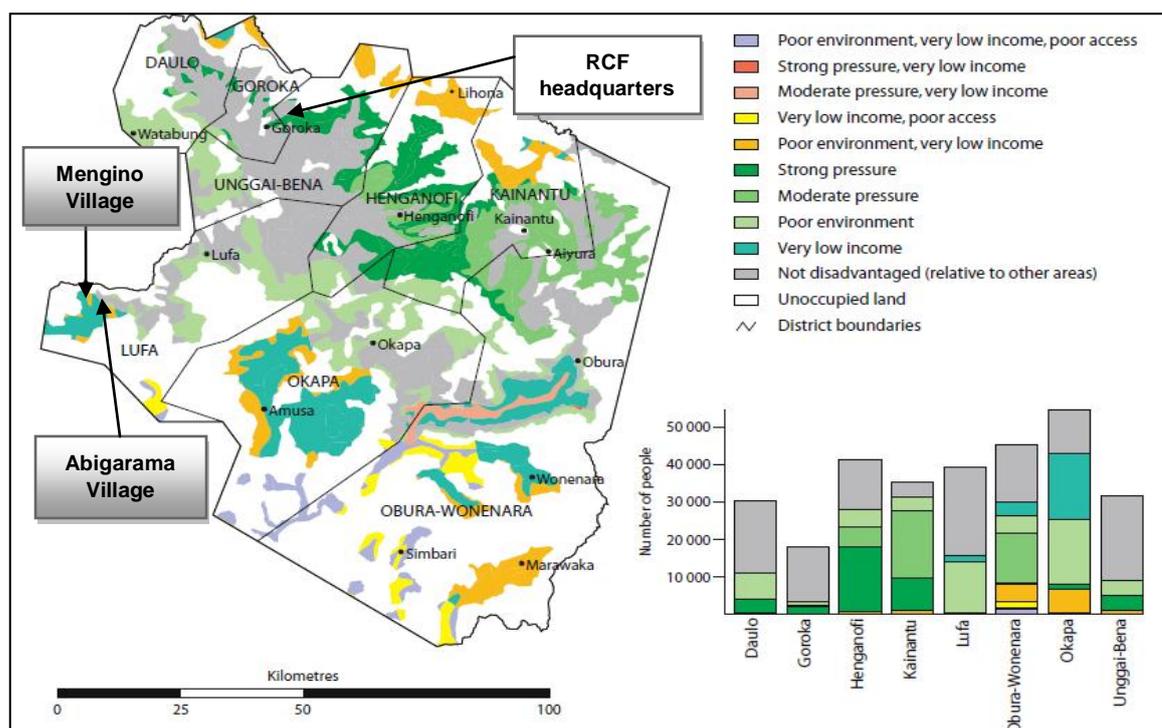


Figure 5: Map of Eastern Highlands Province showing district development constraints, together with the location of the 2 sample villages. Sourced from Hanson et al. (2001)

Table 5: The present situation at Mengino and Abigarama villages in Lufa District

Livelihood Assets	
<p>Financial resources: The residents of Mengino and Abigarama villages have 6 main sources of income. People have poor access to formal credit (e.g. banking or micro-finance institutions) and some access to informal credit (e.g. savings clubs or money lenders).</p>	
<p>Figure 8: Main sources of village income</p>	<p>Figure 9: Reliable access to credit</p>
<p>Human resources: Mengino and Abigarama villages were established in the early 1960s. The current population is around 730 (64% adults and 143 households) with a growth rate of around 2.4% per annum. Over the last 10 years, in-migration has been equal to out-migration. Education and employment levels are low. The Coffee Industry Corporation has provided training in organic coffee growing to around 250 farmers, and some people have worked on cash crop plantations in other parts of PNG.</p>	
<p>Figure 10: Village resident qualifications and experience</p>	<p>Figure 11: Number of village residents and non-residents employed full-time</p>
<p>Natural resources: The village has around 25,798 ha of land owned by 2 clans. There are around 20,250 ha of natural forest.</p>	
<p>Figure 12: Land cover</p>	<p>Figure 13: Land ownership</p>

Table 5: The present situation at Mengino and Abigarama villages in Lufa District (continued)

<u>Livelihood Assets</u>																							
<p>Physical resources: Local and district markets are accessed on foot. Flights to provincial markets (Goroka and Kundiawa) are expensive and infrequent. There is a local lower primary school and health centre (1-2 km), together with an upper primary school at Karimui (17 km) and secondary school at Lufa (35 km). Around 75% of people do not have access to a reliable mobile network, and each household is responsible for securing its own power and water supply.</p>																							
<table border="1"> <caption>Data for Figure 14: Access to markets and services</caption> <thead> <tr> <th>Market Type</th> <th>Dry season (minutes)</th> <th>Wet season (minutes)</th> </tr> </thead> <tbody> <tr> <td>Local market (walk)</td> <td>~100</td> <td>~100</td> </tr> <tr> <td>District market (walk)</td> <td>~1000</td> <td>~2000</td> </tr> <tr> <td>Provincial market (fly)</td> <td>~100</td> <td>~100</td> </tr> </tbody> </table> <p>Figure 14: Access to markets and services</p>	Market Type	Dry season (minutes)	Wet season (minutes)	Local market (walk)	~100	~100	District market (walk)	~1000	~2000	Provincial market (fly)	~100	~100	<table border="1"> <caption>Data for Figure 15: Access to reliable power supply</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>No reliable network coverage</td> <td>~75%</td> </tr> <tr> <td>Reliable mobile network (2G)</td> <td>~15%</td> </tr> <tr> <td>Reliable mobile network (3G)</td> <td>~10%</td> </tr> <tr> <td>Reliable landline network</td> <td>0%</td> </tr> </tbody> </table> <p>Figure 15: Access to reliable power supply</p>	Category	Percentage	No reliable network coverage	~75%	Reliable mobile network (2G)	~15%	Reliable mobile network (3G)	~10%	Reliable landline network	0%
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<p>External structures and processes: There are five airstrips in the project area, but no regular flights. Most of RCF's funding goes toward chartered flights, which are expensive so around 5 trips are scheduled per year. RCF's Strategy Paper (2012) explains that RCF management experience was often a top down process where communities were included in passive forms of co-operation and consultation rather than as an active agent. This has led to mistrust, misunderstanding, disagreement and disengagement in its relationship with the communities.</p> <p>Based on the lessons learnt, RCF is now applying a strategic community engagement process of undoing the past and re-engaging with the CMWMA communities as a way forward, through (i) Sustainable livelihood activities; (ii) Clan land boundary mapping; (iii) Land use planning; (iv) Conservation awareness; and (iv) Formation of community based organisations</p> <p>The residents of Mengino and Abigarama villages also receive some extension services from the Coffee Industry Corporation in organic coffee growing.</p> <p>Anomaly Gold's Nevera Prospect is located just outside the eastern boundaries of the Crater Mountain WMA. There are some clans within the existing boundaries of the CMWMA which currently benefit from employment opportunities either at the proposed mine site at Nevera or at exploration sites around the proposed (main) mine site. However these employment opportunities cannot accommodate for all so only the landowning clans are benefiting at the moment. There are existing tensions between the neighbouring clans that currently benefit from employment from mining and the Mengino and Abigarama clans.</p>																							
<p>Internal structures and processes: Internal structures and decision-making processes fall into 3 categories:</p> <ul style="list-style-type: none"> • <u>Clan</u> - The Lauli Clan (50%) and the Niniveaova Clan (50%) come from the Gimi Tribe (patrilineal). Neither clan has formed an Incorporated Land Group. There are ongoing land disputes with other clans. • <u>Local Government</u> - Mengino & Abigarama Villages are located within Ward 1 of the Unavi LLG • <u>Church</u> - SDA (100%) 																							
<u>Livelihood Strategies</u>																							
<p>Long-term strategies: People are interested in conserving their resources, and RCF wants to encourage the communities to take ownership over their natural resource management projects.</p>																							
<p>Short-term strategies: The residents of Mengino and Abigarama Villages are well focused on feeding, housing and educating their family, as well as contributing to their various clan and village obligations. Households are generally able to meet their priority needs through subsistence activities (e.g. gardening, hunting, collecting firewood), local and district market sales (e.g. peanuts), and cash-cropping for provincial markets (vanilla and coffee).</p>																							

b) Karimui Salt-Nomane District

The CMWMA covers parts of Karimui Salt-Nomane district to the south of Simbu Province. This district has a population of around 53,000 people - who mostly live in the Karimui area at around 800 to 1,200 metres above sea level. Hanson et al. (2001) conclude that *overall, people in Karimui-Nomane District are moderately disadvantaged relative to people in other districts of PNG. There is no agricultural pressure, land potential is low, access to services is moderate and cash incomes are low.* Figure 6 (below) summarises the overall situation in Simbu Province, and Table 6 provides a more detailed description of the sample village in Karimui Nomane District.

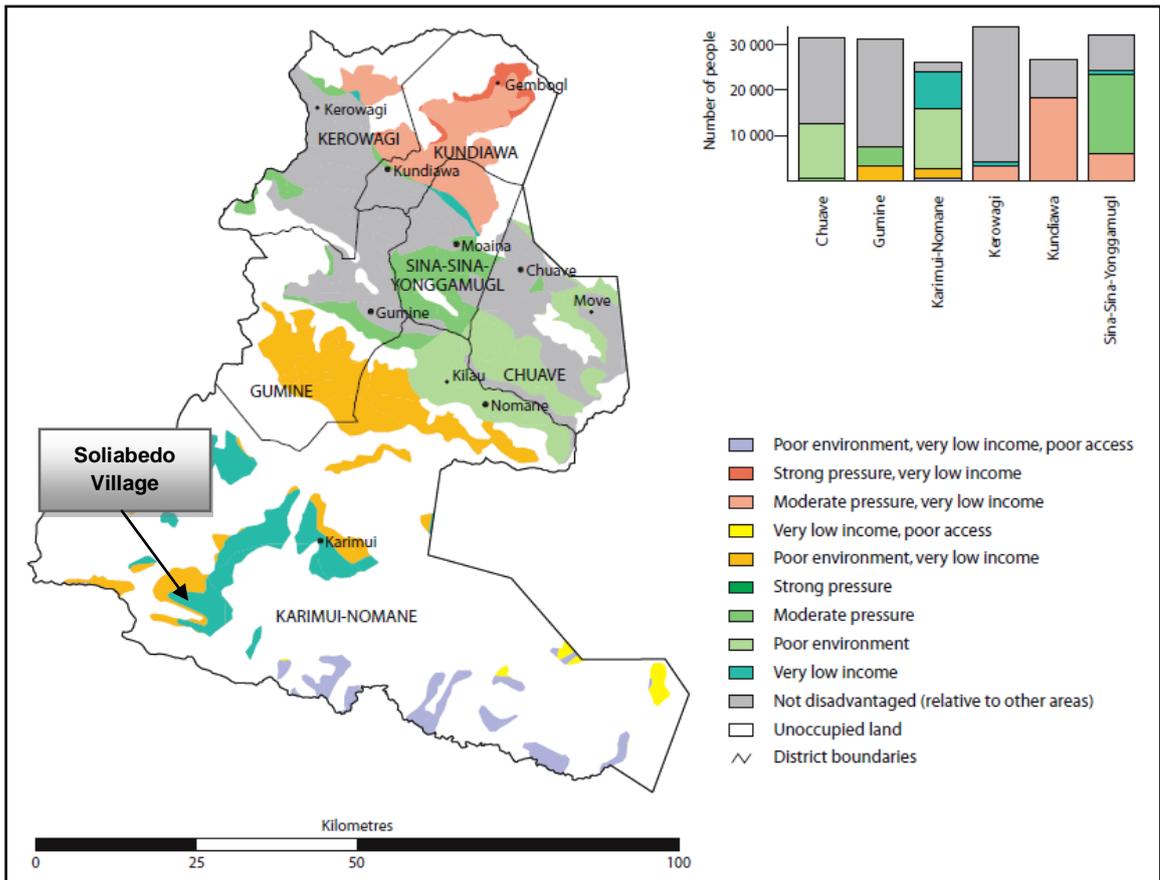


Figure 6: Map of Simbu Province showing district development constraints, together with the location of the sample village. Sourced from Hanson et al. (2001)

Table 6: The present situation at Haia village in Karimui Salt-Nomane District

Livelihood Assets	
<p>Financial resources: The residents of Haia have three main income sources which includes the supply of part-time contract labour to Inter Oil. Village residents have no reliable access to credit.</p>	
<p>Figure 8: Main sources of village income</p>	<p>Figure 9: Reliable access to credit</p>

Table 6: The present situation at Haia village in Karimui Salt-Nomane District (continued)

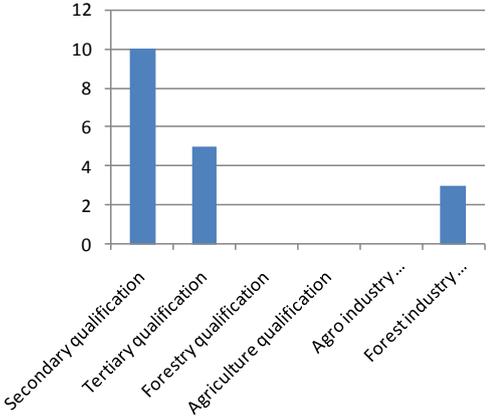
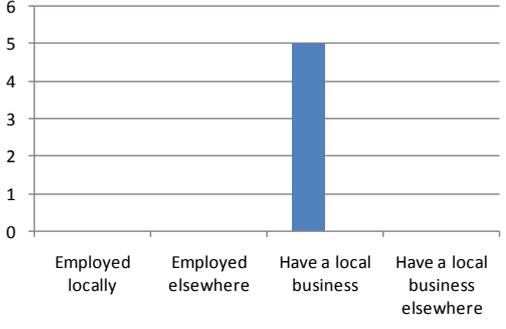
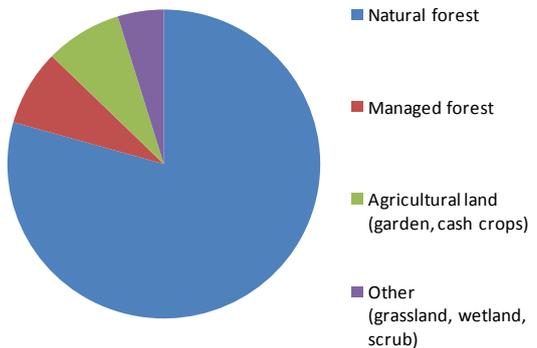
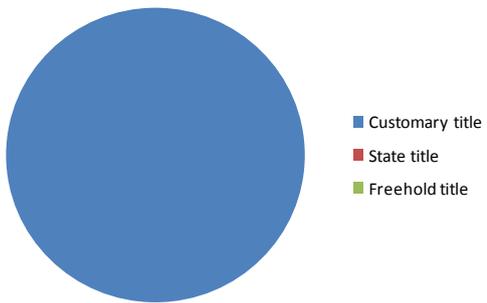
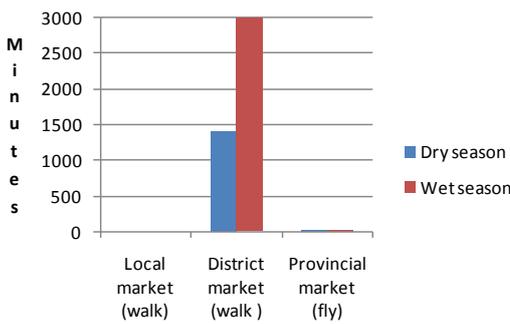
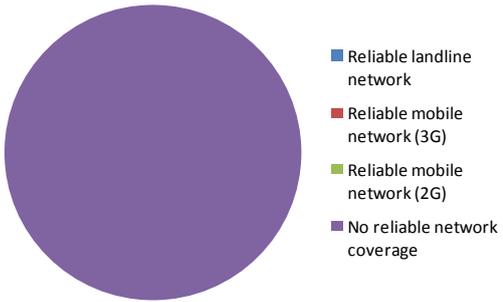
Livelihood Assets	
<p>Human resources: Haia village was established in the 1970s. The current population is around 1,300 (62% adults and 145 households) with a growth rate of around 2.6% per annum. Over the last 10 years, in-migration has been far greater than out-migration (+280). This number represents residents who have got to live in urban areas or have sought employment etc. in other areas and have retired and returned home. Some have married spouses who are not from the local area and have brought them and their children back home to the village. Education and employment levels are low.</p>	
 <p>Figure 10: Village resident qualifications and experience</p>	 <p>Figure 11: Number of village residents and non-residents employed full-time</p>
<p>Natural resources: Haia village has around 255,149 ha of land owned by 14 clans. There are around 202,500 ha of natural forest.</p>	
 <p>Figure 12: Land cover</p>	 <p>Figure 13: Land ownership</p>
<p>Physical resources: Local and district markets are accessed on foot. Flights to Goroka and Kundiawa are expensive and irregular. There is a local primary school and health centre nearby, together with an upper primary school at Karimui (31 km) and various secondary schools in Simbu province (average 60 km). Village residents do not have access to a reliable mobile network, and each household is responsible for securing its own power supply. There is a poorly maintained gravity fed water supply system which goes to several outlets throughout the village.</p>	
 <p>Figure 14: Access to markets and services</p>	 <p>Figure 15: Access to reliable power supply</p>

Table 6: The present situation at Haia village in Karimui Salt-Nomane District (continued)

<u>Structures and Processes</u>
<p>External structures and processes: There are five airstrips in the project area, but no regular flights. Most of RCF's funding goes toward chartered flights, which are expensive so around 5 trips are scheduled per year. RCF's Strategy Paper (2012) explains that the history of RCF management experience was often a top down process where communities were included in passive forms of co-operation and consultation rather than as an active agent. This has led to mistrust, misunderstanding, disagreement and disengagement in its relationship with the communities.</p> <p>Based on the lessons learnt, RCF is now applying a strategic community engagement process of undoing the past and re-engaging with the CMWMA communities as a way forward, through (i) Sustainable livelihood activities; (ii) Clan land boundary mapping; (iii) Land use planning; (iv) Conservation awareness; and (v) Formation of community based organisations</p> <p>InterOil's drill site - Antelope - may become the site of PNG's second LNG Project located at Wabo near the southern end of the Crater Mountain Wildlife Management Area. It is located on land owned by the ethnic Pawaia people, the same ethno-linguistic group of people as the people from Soliabedo. Since they are the same group of people there are various cultural links and relationships between people from Soliabedo and those from Wabo as would be the case with other such groups in other parts of PNG. People follow these cultural links and relationships to benefit from employment opportunities (through supply of labour) at the InterOil project site, on land owned by neighbouring clans at Wabo.</p> <p>Three timber concessions within Gulf Province are just adjacent to the Crater Mountain Wildlife Management Area (WMA). Baimuru Block 3 FMA lies just below (south), Kikori Block 3 FMA lies south-west and the East Kikori TRP lies on the south-east of the WMA. Logging royalties go to the landowner clans (ILGs) when harvesting occurs on their land. Logging royalties go to the landowner clans (ILGs) when harvesting occurs on their land.</p>
<p>Internal structures and processes: Internal structures and decision-making processes fall into 3 categories:</p> <ul style="list-style-type: none"> • <u>Clan</u> - The Haia Clan owns land around the village. There are current land disputes along the 4 main border areas with the Maimafu, Mengino, Karimui and Wabo Clans. These clans are from the Pawaia Tribe (patrilineal). They are in the process of forming Incorporated Land Groups with assistance from their Member of Parliament in preparation / anticipation for major resource projects that may soon occur on their land (Inter Oil's Antelope Site is some kilometres to the south). • <u>Local Government</u> - Haia Village is located within Ward 27 of the Karimui LLG • <u>Church</u> - New Tribes Mission (93%)
<u>Livelihood Strategies</u>
<p>Long-term strategies: •People are interested in conserving their resources, and RCF wants to encourage the communities to take ownership over their natural resource management projects.</p>
<p>Short-term strategies: The residents of Haia Village are well focused on feeding, housing and educating their family, as well as contributing to their various clan and village obligations. Households are generally able to meet their priority needs through subsistence activities (e.g. gardening, hunting, collecting firewood), local and district market sales (e.g. peanuts), cash-cropping for provincial markets (vanilla), and the supply of part-time labour to the oil and gas industry, and royalties from logging (landowner clans)</p>

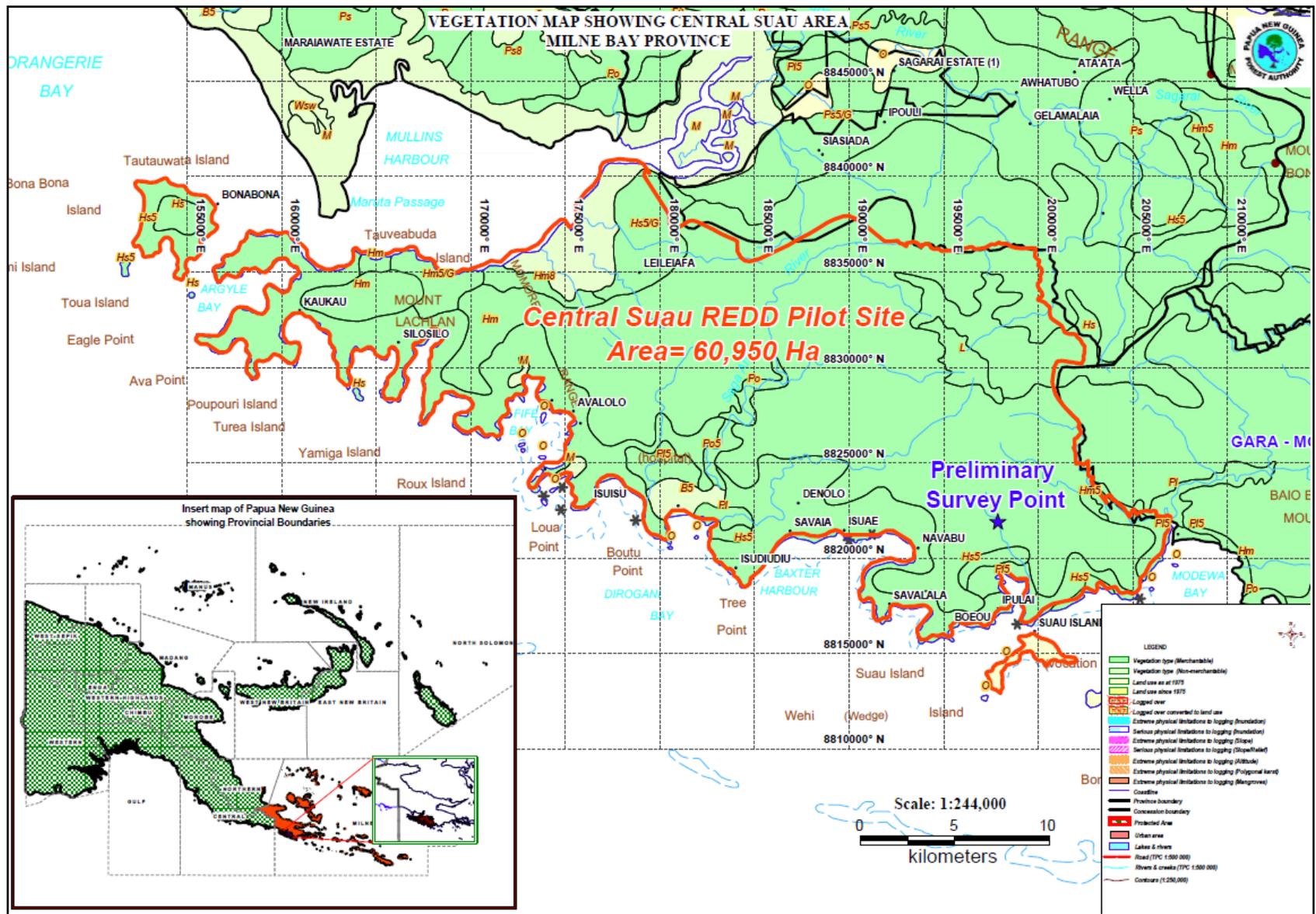


Figure 7: Vegetation map of the Central Suau REDD Pilot Site. Dark green indicates the presence of merchantable timber. Light green indicates non-merchantable timber.

3.3 Central Suau REDD Pilot Site

Central Suau is one of five national REDD pilot sites selected through a multi-institutional assessment led by the PNG Forest Authority through its Provincial Forestry Office in Alotau. The German Agency for International Development (GIZ) and the Secretariat of the Pacific Community (SPC) have been supporting PNG's efforts to establish REDD+ mechanisms that will reduce emissions while providing alternative revenue options for rural areas. As part of this support, GIZ has committed to developing a Project Design Document (PDD) for the Central Suau REDD Pilot Site in Milne Bay Province. The first step was to undertake a feasibility study, which indicated a VCS logged-to-protected project type could provide significant income for landowners, while still maintaining vital ecosystem services. The next step involves the PNG Forest Authority collaborating with the Department of Lands to assist each participating clan form their Incorporated Land Group (ILG).

The Central Suau REDD Pilot Site covers around over 60,000 hectares of land (Figure 8, page 20). This land area is owned by 110 clans and is located within the Suau Local Level Government (LLG) area of Alotau District. The Pre-project's baseline data was collected from the 23 Wards located within the pilot site

a) Alotau District

The Central Suau REDD Pilot Site lies within Alotau District which has a population of around 85,000 people - who mostly live near sea level. Altitudes range from sea level to 2,900 metres (Hanson et al. (2001) conclude that overall, people in Alotau District are seriously disadvantaged relative to people in other districts of PNG. There is some agricultural pressure, land potential is moderate, access to services is poor and incomes are low. Child malnutrition is of concern. Figure 8 summarises the overall situation in Milne Bay Province, and Table 7 (page 22) provides a more detailed description of the pilot area.

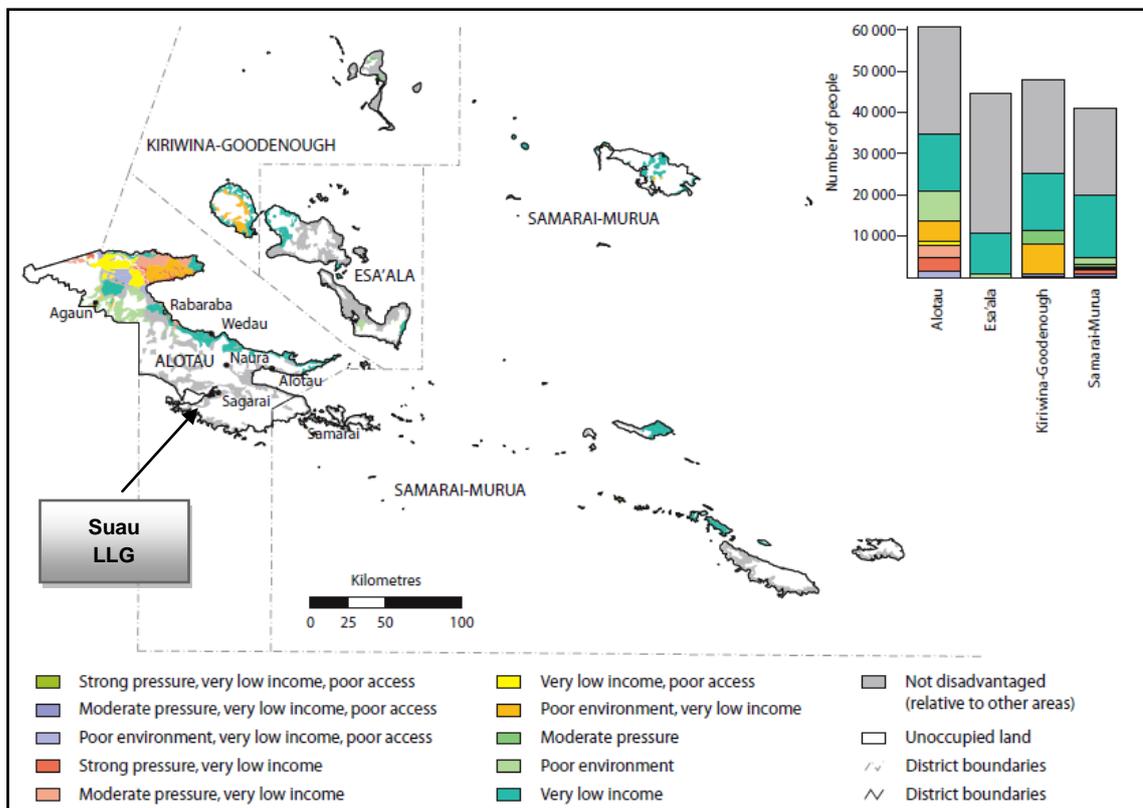


Figure 8: Map of Milne Bay Province showing district development constraints, together with the location of the Suau Kocal level Government (LLG) area. Sourced from Hanson et al. (2001)

Table 7: The present situation in Suau LLG in Alotau District

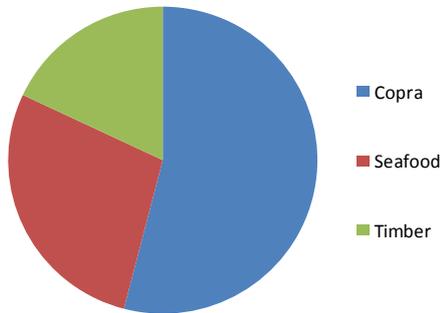
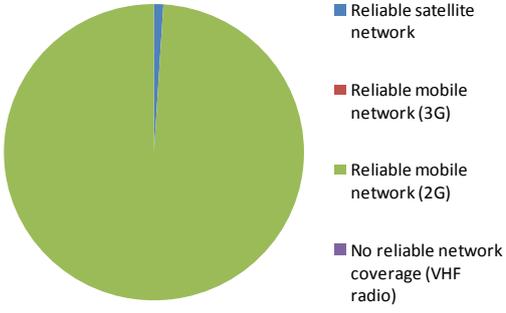
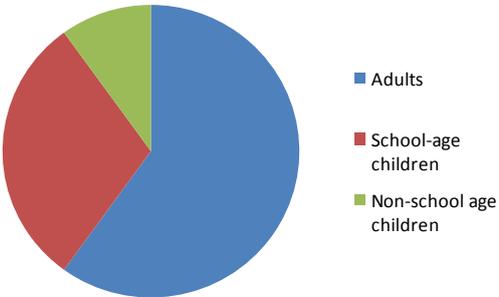
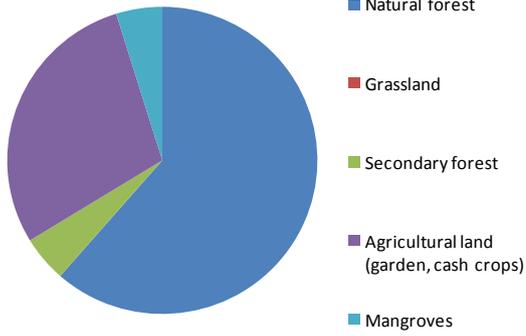
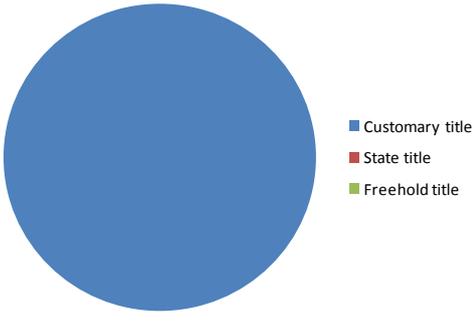
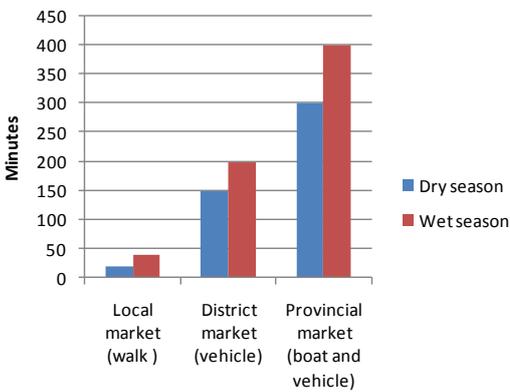
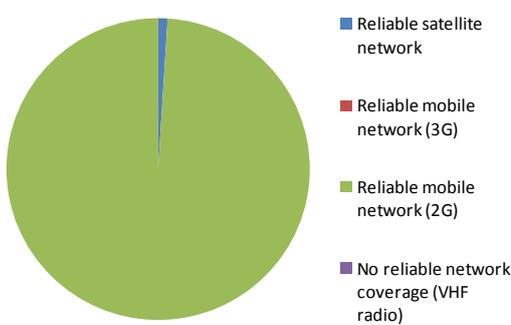
Livelihood Assets	
<p>Financial resources: The 23 Wards have three main income sources. Village residents have no reliable access to credit.</p>	
 <p>Figure 8: Main sources of village income</p>	 <p>Figure 9: Reliable access to credit</p>
<p>Human resources: The current population is around 7,000 (60% adults).</p>	
 <p>Figure 10: Village members</p>	
<p>Natural resources: The village has around 63,013 ha of land owned by 110 clans. There are around 38,706 ha of natural forest and 18,222 ha of agricultural land.</p>	
 <p>Figure 12: Land cover</p>	 <p>Figure 13: Land ownership</p>

Table 7: The present situation in Suau LLG in Alotau District (continued)

<u>Livelihood Assets</u>																							
<p>Physical resources: Local markets are accessed on foot and District markets by bus. Alotau is accessible by boat. Village residents have access to a reliable mobile network. There is also a government V-Sat at Fife Bay Government Station and Suau Island. Each household is responsible for securing its own power and water supply. Some Wards have a gravity fed water supply system, and some households use solar power (solar lamps; recently i.e. 2013) but most are dependent on torches (flash lights) and kerosene lamps or have a genset.</p>																							
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<u>Structures and Processes</u>																							
<p>External structures and processes: The PNG Forest Authority's REDD project team, together with the Provincial Forestry Office in Alotau, are currently supervising the:</p> <ul style="list-style-type: none"> • Establishment and monitoring of 12 permanent sampling plots to gather data to calculate carbon stocks and to record different plant species with a diameter over 10 cm. diameter (with the Forest Research Institute in Lae) • Formation of Incorporated land Groups through preliminary sketch mapping followed by GPS tracking (with Department of Lands in Port Moresby) <p>The Division of Agriculture and Livestock has provided some agricultural training (e.g. vanilla, cocoa, rice farming). However, there has been minimal follow-up training to ensure sustain what was started.</p>																							
<p>Internal structures and processes: Internal structures and decision-making processes fall into 3 categories:</p> <ul style="list-style-type: none"> • <u>Clan</u> - There are 110 clans from the Suau Tribe (matrilineal). Each clan is being assisted by the PNG Forest Authority to establish Incorporated Land Groups. There are some land disputes which will have to go through land mediation. • <u>Local Government</u> - There are 23 Wards from the Suau LLG within the pilot area. • <u>Church</u> - United, CLC, Revival and Catholic 																							
<u>Livelihood Strategies</u>																							
<p>Long-term strategies: Group discussions identified the following development goals:</p> <ul style="list-style-type: none"> • <u>Social</u> - Improve their current living standards (health, education) • <u>Economic</u> - Build capacity to help themselves make their own income (take ownership of the project) • <u>Environmental</u> - To maintain the pristine forests for now and for future generations, so as to conserve and maintain the stability of the environment. 																							
<p>Short-term strategies: The 23 Wards are focused on feeding, housing and educating their family, as well as contributing to their various clan and village obligations. Households are generally able to meet their priority needs through subsistence activities (e.g. gardening, hunting, collecting firewood), local and district market sales (e.g. sea food), cash-cropping for provincial markets (copra), and timber sales (mostly rosewood) to provincial buyers.</p>																							

3.4 Payment for Environmental Services (PES) Trial Project

FORCERT is a national, not-for-profit company that promotes sustainable forest management through providing certification and marketing services of forests and products for local small-scale producers and timber yards. FORCERT was established in 2004. The organisation has a head office outside Kimbe (West New Britain) and a field office in Kokopo (East New Britain). In 2005, FORCERT achieved FSC certification for its Group Certification System and in 2006 was certified by the World Fair Trade Federation as a Fair Trade Support Organisation. FORCERT started the PES Trial Project in 2010, aiming to develop PES as a management option for FSC certified forests through:

- Providing climate change awareness and training on “community carbon forestry”
- Establishing and monitoring permanent sample plots
- Encouraging landowners to take ownership of carbon inventory and monitoring
- Providing essential business training to communities to manage their sawmill enterprise

The PES Trial Project currently works with 5 village communities selected from FORCERT’s 23 producer members. This provides around 28,156 hectares of land in East and West New Britain Provinces owned by 32 clans. The Pre-project’s baseline data was collected from each village.

a) Pomio District

The four PES trial communities in East New Britain are located in Pomio District. Pomio District has a population of around 88,000, with the highest densities along the coastal plains around Pomio. Altitudes range from sea level to over 2,000 metres. Hanson et al. (2001) conclude that *overall, people in Pomio District are extremely disadvantaged relative to people in other districts of PNG. There is no agricultural pressure, land potential is low, access to services is poor and cash incomes are very low. Child malnutrition is of concern.* Figure 9 (below) summarises the overall situation in East New Britain Province, and Table 8 (page 26) provides a more detailed description of the four PES villages in Pomio District.

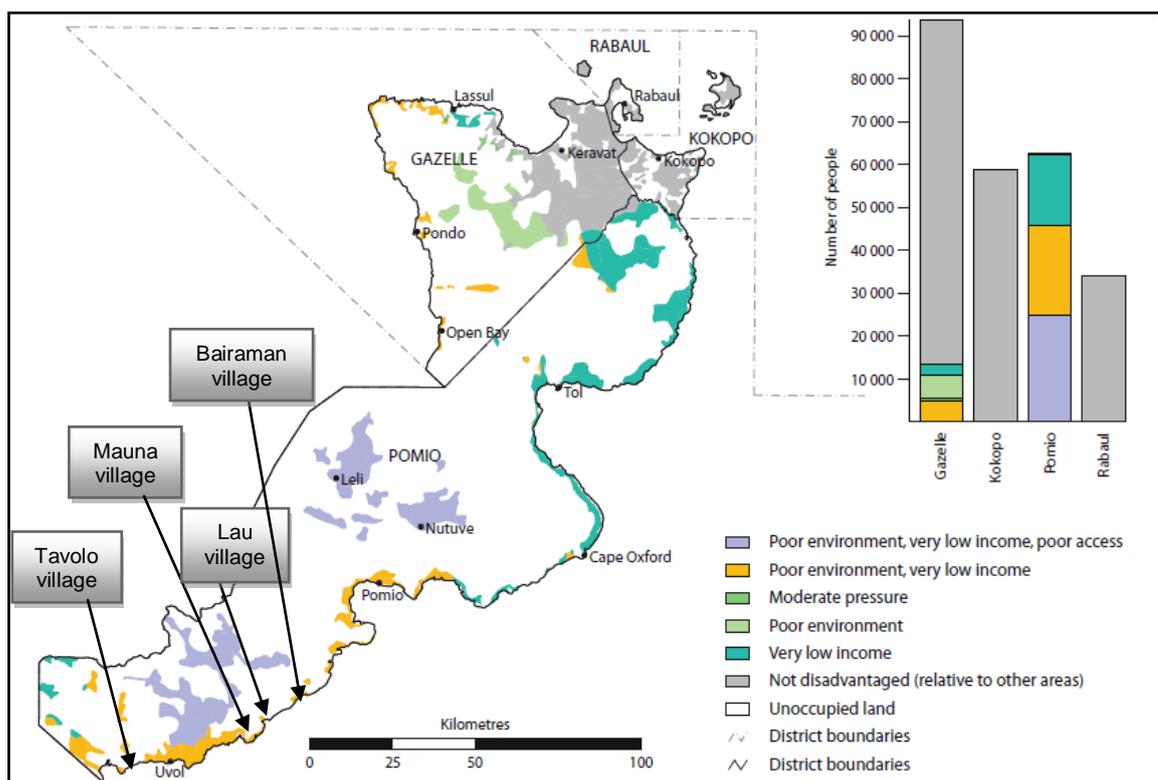


Figure 9: Map of East New Britain Province showing district development constraints, together with the location of the 4 PES villages in East New Britain Province. Sourced from Hanson et al. (2001)

Table 8: The present situation at Bairaman, Lau, Mauna and Tavolo villages

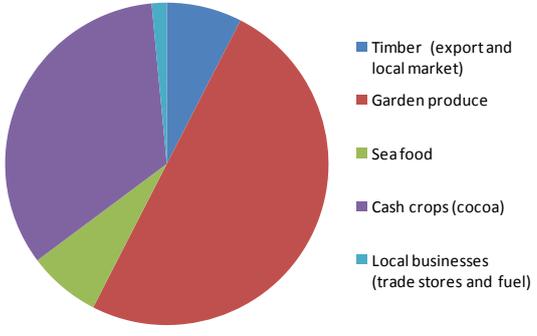
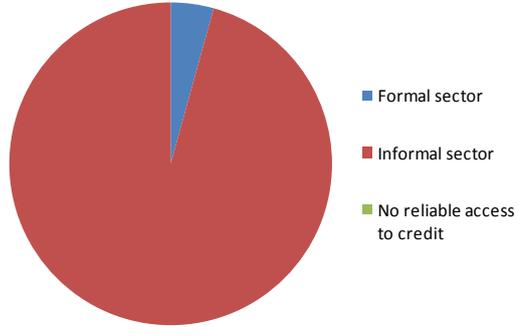
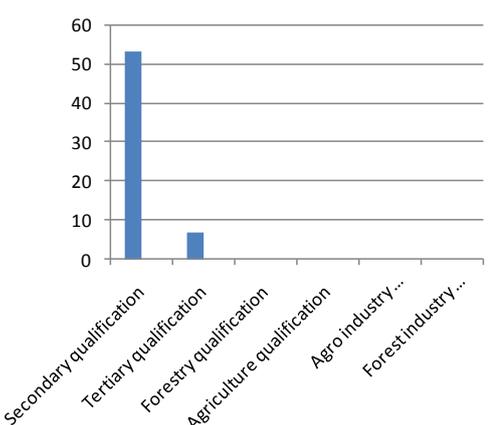
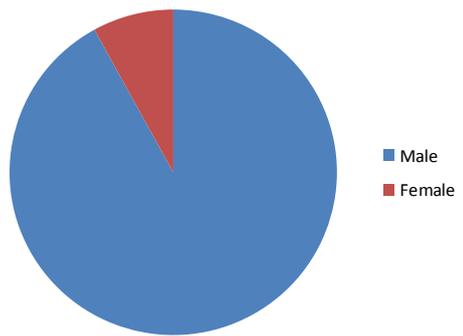
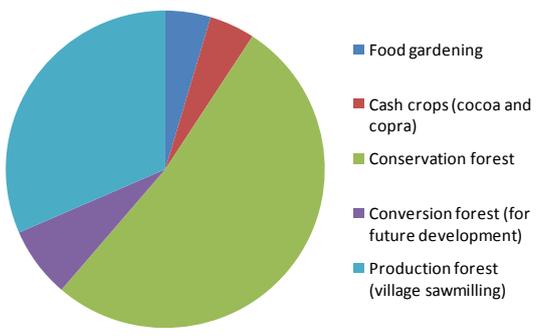
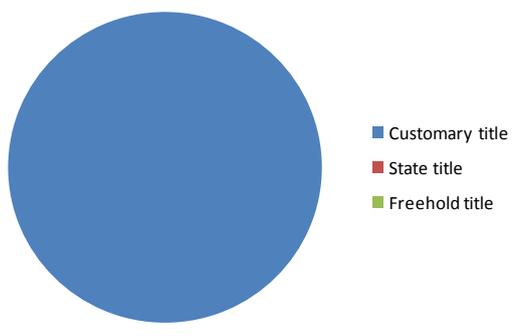
Livelihood Assets	
<p>Financial resources: The residents of Bairaman, Lau, Mauna and Tavolo villages source most of their income through the sale of garden produce and cocoa. Their community sawmill contributes around 8% of total income. Most households have reliable access to credit through the informal sector.</p>	
 <p>Figure 8: Main sources of village income</p>	 <p>Figure 9: Reliable access to credit</p>
<p>Human resources: Bairaman, Lau, Mauna and Tavolo villages have a combined population of around 774 residents. Education levels are low, particularly so for women. One female has a tertiary qualification.</p>	
 <p>Figure 10: Village resident qualifications and experience</p>	 <p>Figure 11: Secondary school qualifications</p>
<p>Natural resources: Bairaman, Lau, Mauna and Tavolo villages have a combined land area of around 27,575 ha owned by 30 clans. This includes 13,595 ha of conservation forest and 8,240 ha of production forest allocated for FSC timber production.</p>	
 <p>Figure 12: Land cover</p>	 <p>Figure 13: Land ownership</p>

Table 8: The present situation at Bairaman, Lau, Mauna and Tavolo villages (continued)

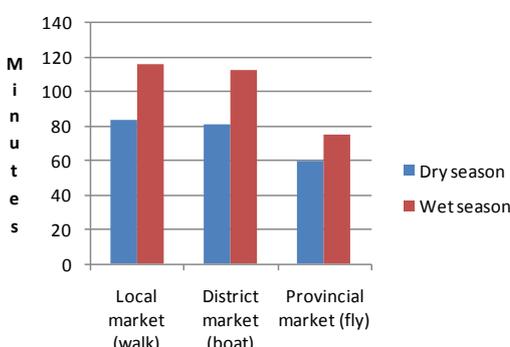
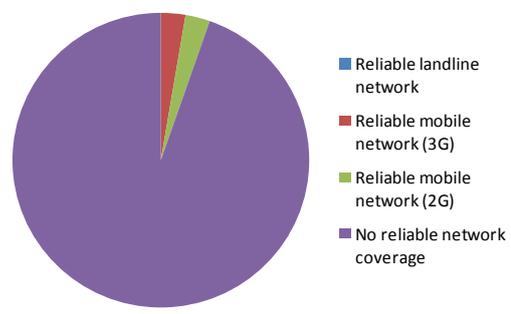
<u>Livelihood Assets</u>																							
<p>Physical resources: Local markets can be accessed on foot or by boat. For the case of Bairaman, Lau and Mauna, there is no road access to district and provincial markets. There is a local lower and upper primary school and health clinic situated at Lau village which serves these 3 villages. Nearest Health Centre is at Palmalmal which can be reached by boat or foot. From Bairaman, it will take 1 hour 30 minutes by boat to reach Palmalmal and 3 hours by walking. Nearest High School is also at Palmalmal and children who are selected for Secondary studies travelled all the way to Kokopo and Rabaul. As for Tavolo, local markets can be accessed on foot, boat and car. The recently upgraded road last year, linking Tavolo and Uvol station makes it a bit easier for them to access the Health Center, lower and upper Primary school and their LLG office. High and Secondary school is still Palmalmal and Kokopo or Rabaul. Provincial market is at Kimbe and be accessed by an 1 hour ride by boat to the nearest road access and 4 hours by car. . 94% of village residents do not have access to a reliable phone network. Each household is responsible for securing its own power and water supply. Ten households have a genset, and one household has solar power, and that is Tavolo Guest House (solar equipments for the Guest House were purchased with aid from Mama Graun Conservation Trust Fund).</p>																							
 <p>Figure 14: Access to markets and services</p> <table border="1"> <caption>Data for Figure 14: Access to markets and services (Meters)</caption> <thead> <tr> <th>Market Type</th> <th>Dry season</th> <th>Wet season</th> </tr> </thead> <tbody> <tr> <td>Local market (walk)</td> <td>~85</td> <td>~115</td> </tr> <tr> <td>District market (boat)</td> <td>~80</td> <td>~110</td> </tr> <tr> <td>Provincial market (fly)</td> <td>~60</td> <td>~75</td> </tr> </tbody> </table>	Market Type	Dry season	Wet season	Local market (walk)	~85	~115	District market (boat)	~80	~110	Provincial market (fly)	~60	~75	 <p>Figure 15: Access to reliable power supply</p> <table border="1"> <caption>Data for Figure 15: Access to reliable power supply</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Reliable landline network</td> <td>~1%</td> </tr> <tr> <td>Reliable mobile network (3G)</td> <td>~2%</td> </tr> <tr> <td>Reliable mobile network (2G)</td> <td>~3%</td> </tr> <tr> <td>No reliable network coverage</td> <td>~94%</td> </tr> </tbody> </table>	Category	Percentage	Reliable landline network	~1%	Reliable mobile network (3G)	~2%	Reliable mobile network (2G)	~3%	No reliable network coverage	~94%
Market Type	Dry season	Wet season																					
Local market (walk)	~85	~115																					
District market (boat)	~80	~110																					
Provincial market (fly)	~60	~75																					
Category	Percentage																						
Reliable landline network	~1%																						
Reliable mobile network (3G)	~2%																						
Reliable mobile network (2G)	~3%																						
No reliable network coverage	~94%																						
<u>Structures and Processes</u>																							
<p>External structures and processes: FORCERT has been working with the 5 villages since 2004 (Bairaman, Lau, Mauna), and Tavolo in 2007.. Extension activities are provided by FORCERT's field staff in Kokopo for 3 Pomio communities, Bairaman, Lau and Mauna (1 extension foresters, 1 PES foresters and 1 business development officer), whereas for Tavolo extension activities were done by FORCERT field staff in Kimbe, using participatory awareness, training and decision-making tools and techniques. Tavolo is in ENB but due to its geographical location, it is looked after by field staff in Kimbe office.</p> <p>Bairaman, Lau and Mauna are located within the Topo Sapalona Kaisalolo SABL area with Memalo as the Landowner Company. Their Land Use Plan was supposed to have been excluded from the SABL / FCA area - but this did not eventuate. The Topo Sapalona Kaisalolo SABL was investigated during the recent Commission of Inquiry - but the report and its recommendations are pending. Tavolo is located within the Sigite Mukus SABL and was also investigated during the COI.</p>																							
<p>Internal structures and processes: Internal structures and decision-making processes fall into 3 categories:</p> <ul style="list-style-type: none"> • <u>Clan</u> - Tavolo Village has 8 clans from the Lote Tribe (matrilineal). Bairaman and Lau Village have 14 clans from the Mengen Tribe (matrilineal). Mauna Village has 9 clans from the Mamusi Tribe (matrilineal). • <u>Business Group</u> - FORCERT has been working through the Tavolo Business Group for 7 years; Bairaman Timber Resource Ltd for 9 years; Gogomate (Lau) Timber Resource Ltd for 9 years; and Suli Timbers (Mauna) for 9 years. These groups comprise members from each village clan. • <u>Local Level Government</u> - Tavolo Village is located in the Melkoi LLG. Bairaman, Lau and Mauna are located in the West Pomio Mamusi LLG • <u>Church</u> - Dominant church in all villages is Catholic, except for Lau village with half of the population as SDA and the other half Catholic 																							

Table 8: The present situation at Bairaman, Lau, Mauna and Tavolo villages (continued)

<u>Livelihood Strategies</u>
Long-term strategies:
Short-term strategies: Bairaman, Lau, Mauna and Tavolo village residents are focused on feeding, housing and educating their family, as well as contributing to their various clan and village obligations. Households are generally able to meet their priority needs through subsistence activities (e.g. gardening, hunting, collecting firewood), local and district market sales (e.g. garden crops and seafood), cash-cropping for provincial markets (cocoa), and occasional timber sales.

b) Talasea District

The PES trial community in West New Britain is located in Talasea District. Talasea has a population of 90,000 with highest densities along the north-east coast. Altitudes rise from sea level to over 2,000 metres. Hanson et al. (2001) conclude that *overall, people in Talasea District are not disadvantaged relative to people in other districts of PNG. There is some agricultural pressure, land potential is moderate, access to services is good and cash incomes are high.*

Figure 10 (below) summarises the overall situation in West New Britain Province, and Table 9 (page 29) provides a more detailed description of the PES village in Talasea District.

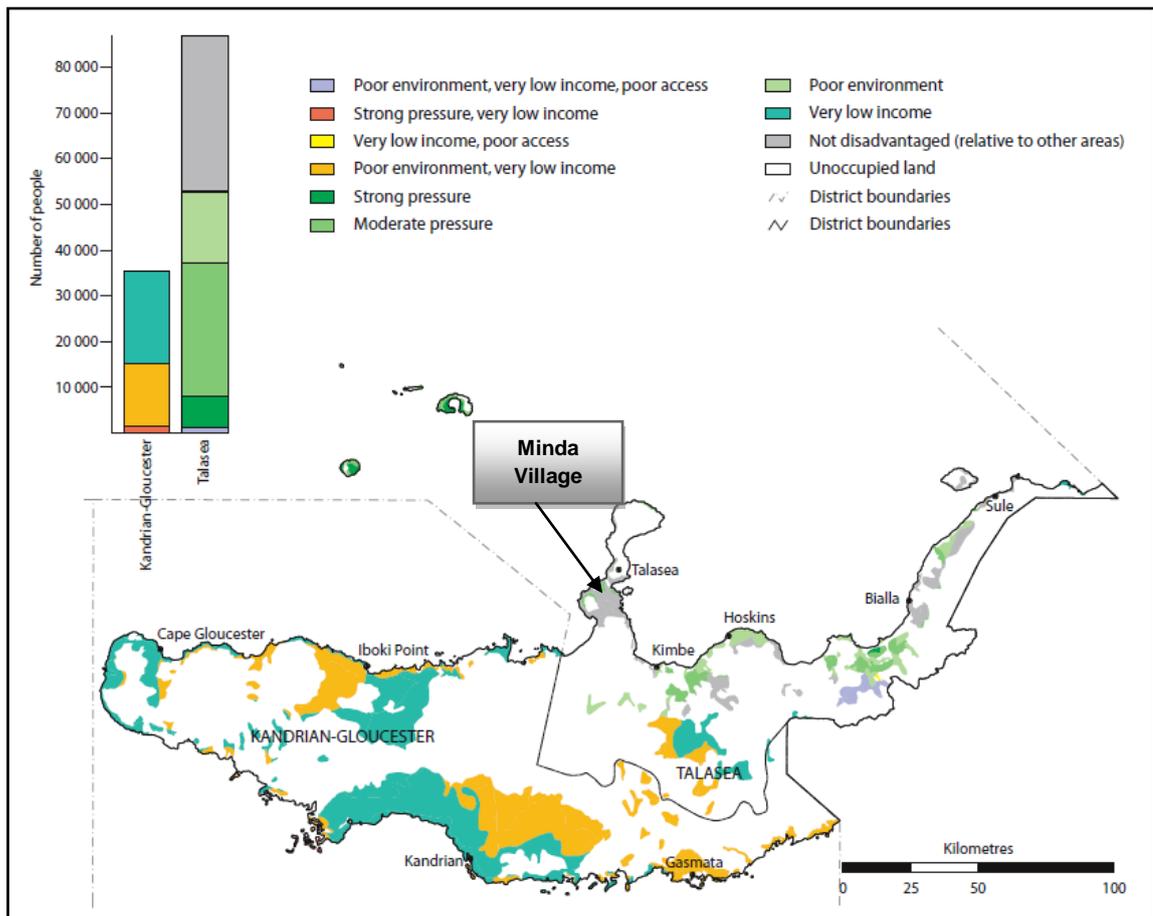


Figure 10: Map of West New Britain Province showing district development constraints, together with the location of the PES village in West New Britain Province. Sourced from Hanson et al. (2001)

Table 9: The present situation at Minda village

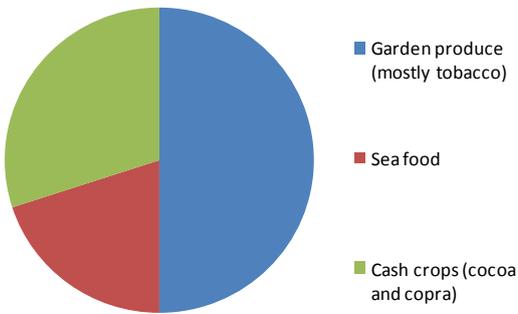
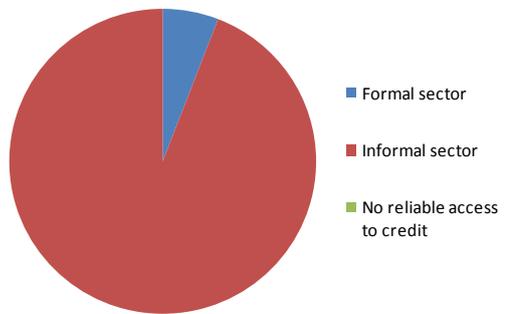
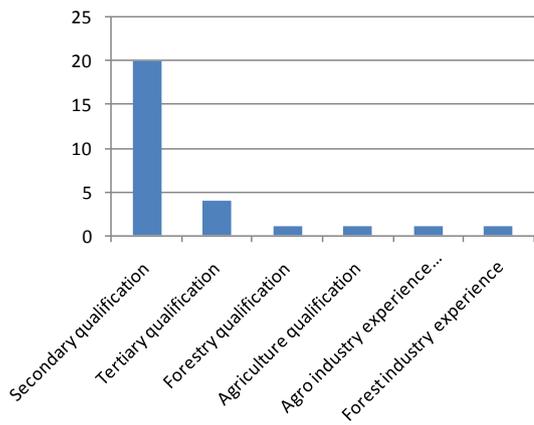
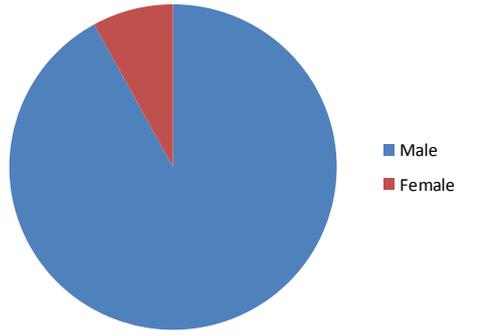
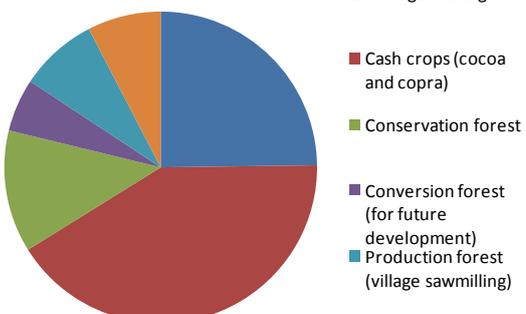
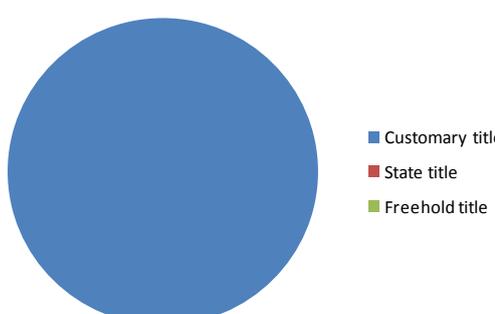
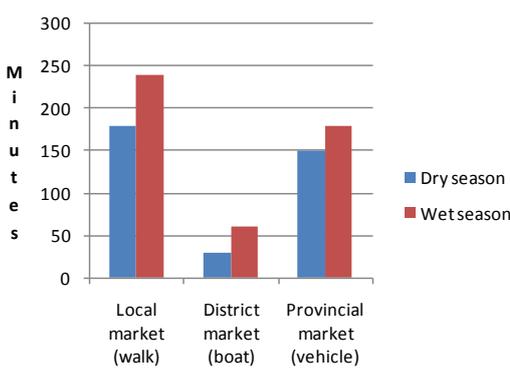
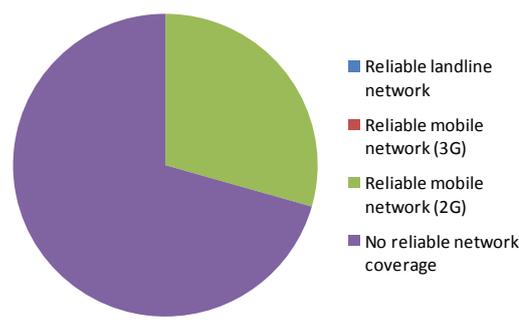
Livelihood Assets	
<p>Financial resources: The residents of Minda village have three main sources of income. Their community sawmill has not been purchased income is mainly earned from garden and seafood sales, selling betel nut and tobacco and copra sales. Recently copra price has dropped drastically and they are only concentrating on market sales.. Most households have reliable access to credit through the informal sector.</p>	
 <p>Figure 8: Main sources of village income</p>	 <p>Figure 9: Reliable access to credit</p>
<p>Human resources: Minda village has a population of around 774 residents (187 households). Education levels are low, particularly so for women.</p>	
 <p>Figure 10: Village resident qualifications and experience</p>	 <p>Figure 11: Secondary school qualifications</p>
<p>Natural resources: Minda village has a land area of around 581 ha owned by 2 clans. This includes 74 ha of conservation forest and 47 ha of production forest allocated for FSC timber production.</p>	
 <p>Figure 12: Land cover</p>	 <p>Figure 13: Land ownership</p>

Table 9: The present situation at Minda village (continued)

<u>Livelihood Assets</u>																							
<p>Physical resources: Local markets can be accessed on foot or by boat. Provincial market can be reached by an 1 hour ride by boat and 2hrs to Kimbe town. There is a local lower and upper primary school and health clinic in the neighboring village (Bagum) which can take 40 minutes by foot and 15 minutes by boat. Nearest Health center is Bitokara Health Center which is about 2-3 hours walk., Lower and upper primary school is also situated in Bagum and nearest secondary school is Kimbe Secondary. 71% of village residents do not have access to a reliable phone network. All households have access to piped water from a gravity-fed system, funded by Live and Learn. Each household is responsible for securing its own power. Four households have a genset.</p>																							
 <p>Figure 14: Access to markets and services</p> <table border="1"> <caption>Data for Figure 14: Access to markets and services (Minutes)</caption> <thead> <tr> <th>Market Type</th> <th>Dry season</th> <th>Wet season</th> </tr> </thead> <tbody> <tr> <td>Local market (walk)</td> <td>~180</td> <td>~240</td> </tr> <tr> <td>District market (boat)</td> <td>~30</td> <td>~60</td> </tr> <tr> <td>Provincial market (vehicle)</td> <td>~150</td> <td>~180</td> </tr> </tbody> </table>	Market Type	Dry season	Wet season	Local market (walk)	~180	~240	District market (boat)	~30	~60	Provincial market (vehicle)	~150	~180	 <p>Figure 15: Access to reliable power supply</p> <table border="1"> <caption>Data for Figure 15: Access to reliable power supply</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Reliable landline network</td> <td>~10%</td> </tr> <tr> <td>Reliable mobile network (3G)</td> <td>~15%</td> </tr> <tr> <td>Reliable mobile network (2G)</td> <td>~15%</td> </tr> <tr> <td>No reliable network coverage</td> <td>~60%</td> </tr> </tbody> </table>	Category	Percentage	Reliable landline network	~10%	Reliable mobile network (3G)	~15%	Reliable mobile network (2G)	~15%	No reliable network coverage	~60%
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<u>Structures and Processes</u>																							
<p>External structures and processes: FORCERT has been working with Minda village since 2006. Extension activities are provided by FORCERT's field staff in Kimbe (1 extension forester, 2 PES foresters and 1 business development officer) using participatory awareness, training and decision-making tools and techniques.</p>																							
<p>Internal structures and processes: Internal structures and decision-making processes fall into 4 categories:</p> <ul style="list-style-type: none"> • <u>Clan</u> - There are 2 clans from the Bakovi Tribe (patrilineal). Land disputes, Incorporated Land Groups. • <u>Business Group</u> - FORCERT has been working through the Lagasive Business Group for 8 years. This group comprises members from each clan • <u>Local Government</u> - Minda Village is located in Ward 9 of the Talasea LLG. • <u>Church</u> - Catholic 																							
<u>Livelihood Strategies</u>																							
<p>Long-term strategies: Data needs to be collected on people's long term goals and strategies.</p>																							
<p>Short-term strategies: The 5 villages are focused on feeding, housing and educating their family, as well as contributing to their various clan and village obligations. Households are generally able to meet their priority needs through subsistence activities (e.g. gardening, hunting, collecting firewood), local and district market sales (e.g. garden crops and seafood), cash-cropping for provincial markets (cocoa), and occasional timber sales.</p>																							

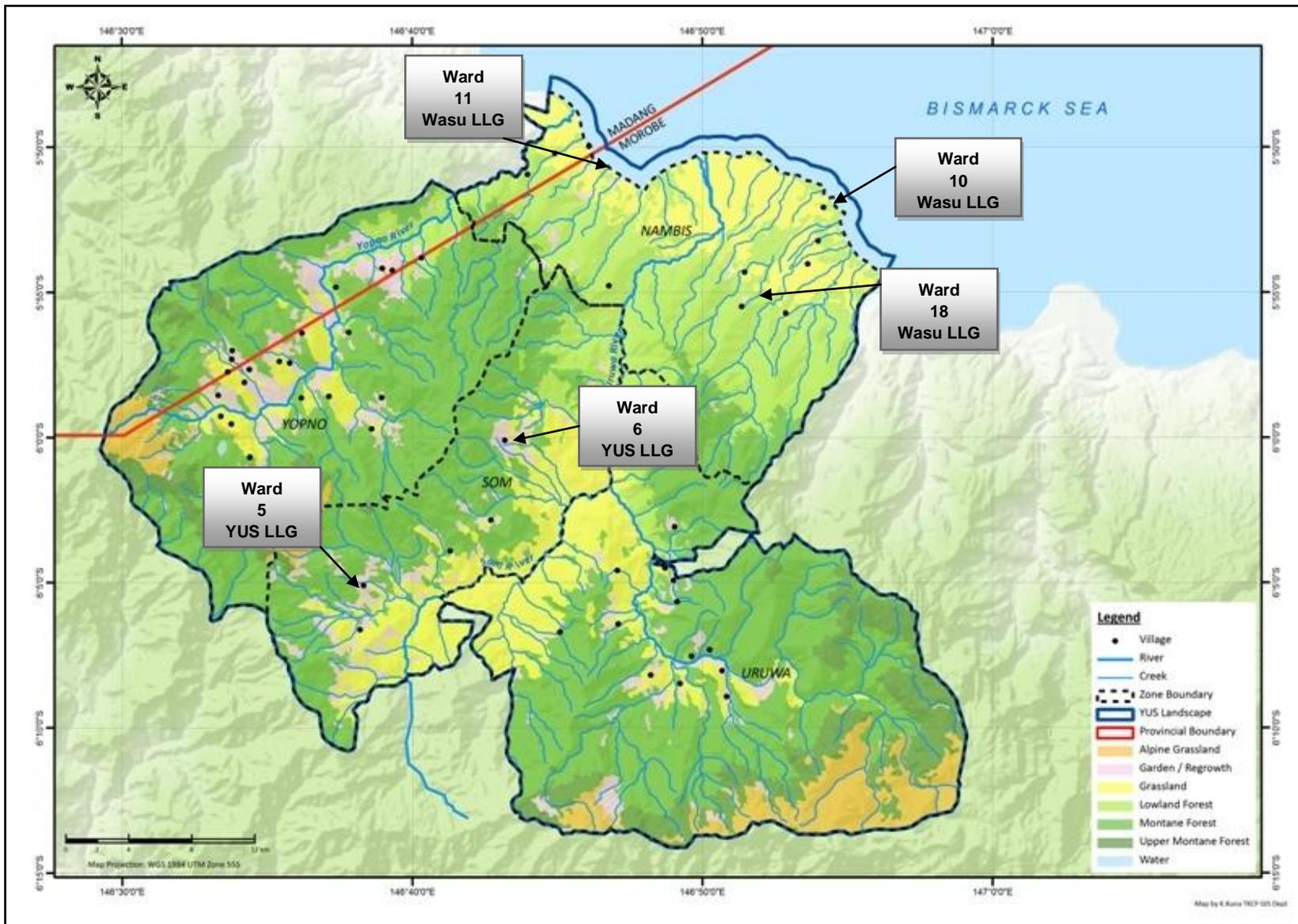


Figure 11: Map of YUS landscape management zones, vegetation types and sample wards

3.5 Tree Kangaroo Conservation Program (TKCP)

TKCP fosters wildlife and habitat conservation and supports local community livelihoods in PNG through global partnerships, land protection and scientific research. The program has office in Seattle (USA), Cairns (Australia) and Lae (PNG). In 2009, the PNG National Government officially declared the gazettal of the Yopno-Uruwa-Som (YUS) Conservation Area which forms part of the Huon Peninsular. This protected area encompasses core land parcels pledged by clans to conservation and buffer areas of mixed use, covering an area of over 161,573 ha in and around the YUS Local Level Government. The protected area also extends from sea level to 4,000-metre mountain ranges, thus preserving a complete altitudinal spectrum of Huon Peninsula habitats.

TKCP is guided by the YUS Landscape Plan. The Plan is a threat abatement strategy developed in partnership with YUS stakeholders (communities, scientists and government) to ensure protection of environmental and cultural values in the long term, but also to maximise and enhance development opportunities for communities. The Plan is guided by five strategies:

- YUS Conservation Area management
- Research to inform resource and landscape management
- **Sustainable resource use and environmental services** - This strategy consists of two inextricably linked programs focussing on community-based long term planning for resource use, and enhancing the ability of communities to continue to access benefits from ecosystem services. Both programs align directly with national and local plans to balance rural development and environmental protection.
- Community services, livelihoods and healthy families
- Implementation and management

TKCP proposes two areas within the YUS Conservation Area and Landscape as pilot sites for the Full-project. These are the YUS Nambis Zone 32,386 hectares and the YUS Som Zone 26,162 hectares. The Pre-project's baseline data was collected from Wards 5 and 6 (Som Zone, Kabwum District) and Wards 10, 11 and 18 (Nambis Zone, Tewai Siassi District). Figure 11 (page 31) shows the YUS landscape management zones and the sample wards.

a) **Tewai Siassi District (YUS Nambis Zone)**

The Nambis or Coastal Zone is predominantly lowland rainforest and kunai, with evidence of selective timber harvesting in small patches (using walk about saw mills). This area has the potential to implement REDD+ to mitigate future clearing. The Nambis Zone forms part of Tewai Siassi District which has a population of around 43,000. Altitudes ranging from sea level to over 2,000 metres. Hanson et al. (2001) conclude that *overall, people in Tewai-Siassi District are seriously disadvantaged relative to people in other districts of PNG. There is some agricultural pressure, land potential is moderate, access to services is moderate and cash incomes are very low.*

Figure 12 (page 33) summarises the overall situation in Morobe Province, and Tables 10 (page 33) provides a more detailed description of the sample wards in the Nambis Zone.

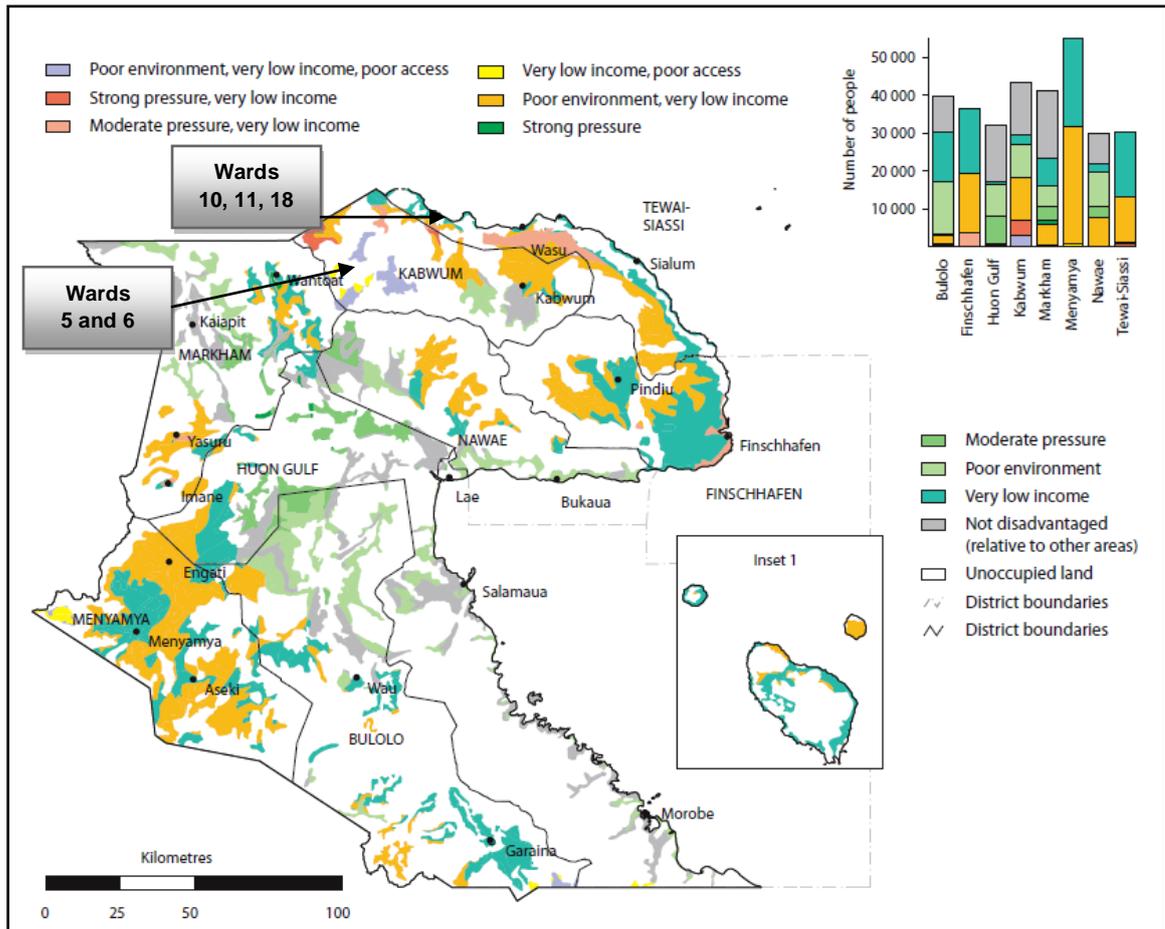


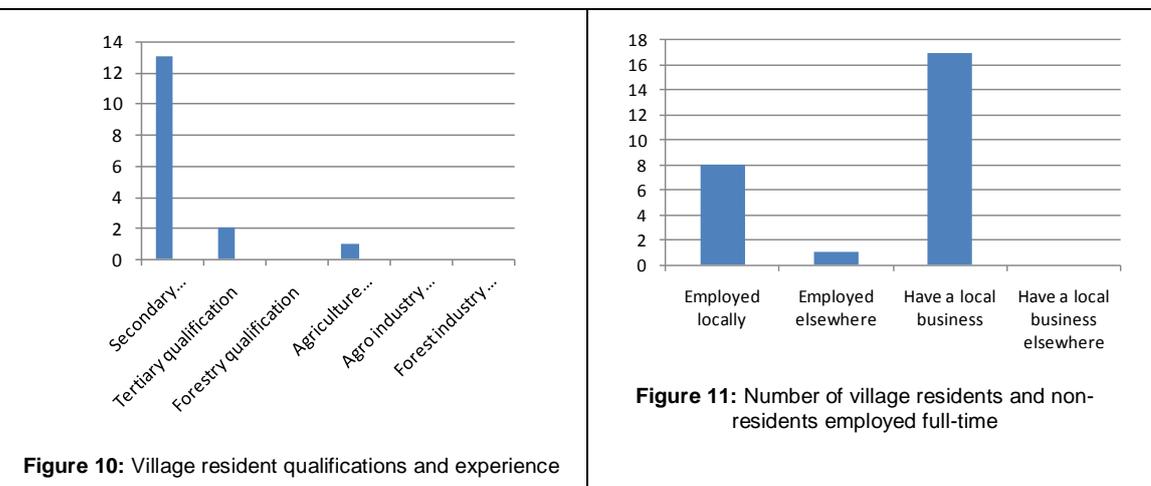
Figure 12: Map of Morobe Province showing district development constraints, together with the location of the sample Wards in Kabwum and Tewai Siassi Districts. Sourced from Hanson et al. (2001)

Table 10: The present situation at Wards 10, 11 and 18

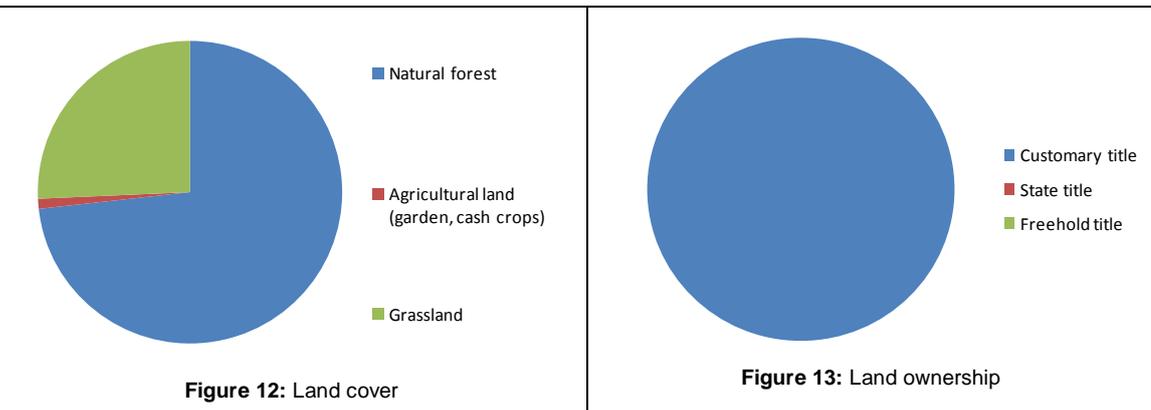
Livelihood Assets	
Financial resources: The residents of Wards 10, 11 and 18 (11 villages) source most of their income from selling garden produce, copra and cocoa. Village residents have no reliable access to credit.	
<p>Figure 8: Main sources of village income</p>	<p>Figure 9: Reliable access to credit</p>

Table 10: The present situation at Wards 10, 11 and 18 (continued)

Human resources: Wards 10, 11 and 18 have a current population of around 1,684 (56% adults) with a 2.4% annual growth rate. Over the last 10 years, in-migration has been similar to out-migration (+1). Education and employment levels are low.



Natural resources: Wards 10, 11 and 18 have around 32,449 ha of land owned by 17 clans. There are around 23,764 ha of natural forest and 8,337 ha of grassland.



Physical resources: Local markets are accessed on foot. District and provincial markets are accessed by boat. There is a local primary school (lower and upper) and health centre 6-8 km, and a district secondary school at Wasu (25 km). Village residents do not have access to a reliable mobile network, and each household is responsible for securing its own power supply. There are 5 household with solar power and 2 with a genset.

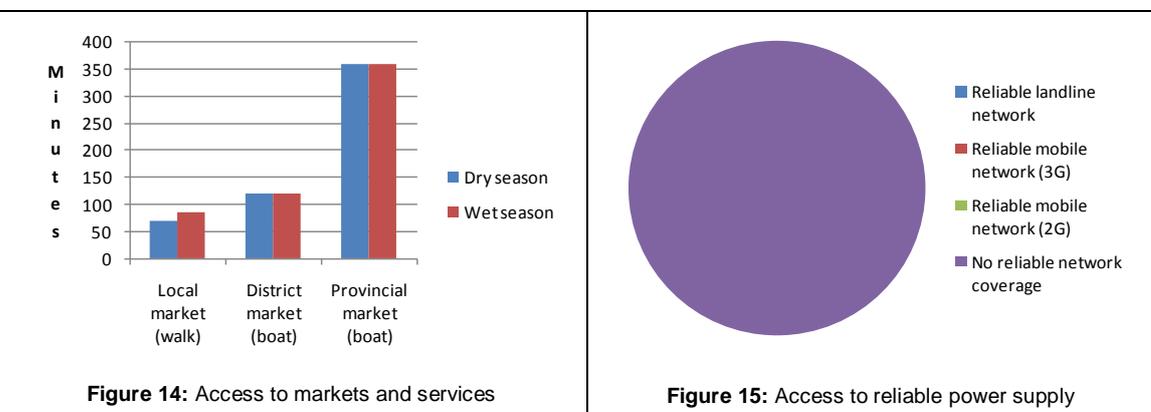


Table 10: The present situation at Wards 10, 11 and 18 (continued)

<u>Structures and Processes</u>
<p>External structures and processes: TKCP has 17 YUS-based field staff (2 Mapping officers; 12 YUS Rangers; 3 Conservation Officers). Lae-based staff travel out to one of the 3 project zones each month. Field Conservation Officers, based in each of the 3 zones, travel to Lae quarterly. TKCP staff communicate via VHF radio.</p> <p>The Philippines government has funded a Population, Health and Environment program that encouraged women to consider population growth in their land use planning. TKCP are interested in pursuing this program in the future.</p>
<p>Internal structures and processes: Internal structures and decision-making processes fall into 4 categories:</p> <ul style="list-style-type: none"> • <u>Clan</u> - There are 17 clans from 2 patrilineal tribes (Yopno and Mato). Land disputes are not a significant issue • <u>YUS Conservation Organisation (CO)</u> - A local body of 48 landowners (local leaders) who serve as a board of advisors to TKCP. The YUS CO therefore guides local priorities and seeks assistance from TKCP – the NGO devoted to the site. The YUS Conservation Area also has a set of bylaws. • <u>Local Government</u> - Wards 10, 11 and 18 are located in the the Wasu LLG of Tawai Siassi District. • <u>Church</u> - Lutheran (75%) and Apostolic (25%)
<u>Livelihood Strategies</u>
<p>Long-term strategies: Group discussions identified some common community development goals and strategies:</p> <ul style="list-style-type: none"> • <u>Social</u> - Educate people on family planning to minimise population pressure on the forest; Support vital knowledge on tree planning and harvest techniques; Promote sustainable timber harvest for local consumption; Promote healthy village, health forest and healthy population concept • <u>Economic</u> - Facilitate for effective resource use and make markets available to promote for forest products that are ethically appropriate; Tap into new concept of REDD+ and reward hard working communities. Develop financial management capabilities within community. • <u>Environmental</u> - Facilitate community engagement in family units by encouraging tree plantings.
<p>Short-term strategies: The 5 villages are focused on feeding, housing and educating their family, as well as contributing to their various clan and village obligations. Households are generally able to meet their priority needs through subsistence activities (e.g. gardening, hunting, collecting firewood), local and district market sales (e.g. garden crops and betelnut), and cash-cropping for provincial markets (cocoa and copra)</p>

b) Kabwum District (YUS Som Zone)

The Som Zone comprises large areas of kunai, and is another good REDD+ area to demonstrate post-clearing/conversion regeneration, and also to mitigate soil erosion, nutrient loss, and current siltation of the Som and Uruwa rivers and impacts to marine ecosystems. The Nambis Zone forms part of Kabwum District which has a population of around 61,000 with most people living at altitudes ranging from 800 to 2,000 m. Hanson et al. (2001) conclude that *overall, people in Kabwum District are seriously disadvantaged relative to people in other districts of PNG. There is some agricultural pressure, land potential is low, access to services is moderate and cash incomes are moderate. Child malnutrition is of concern.*

Figure 12 (page 33) summarises the overall situation in Morobe Province, and Table 11 (page 36) provides a more detailed description of the sample wards in the Som Zone.

Table 11: The present situation at Wards 5 and 6

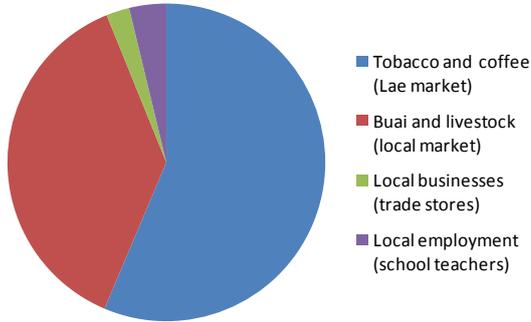
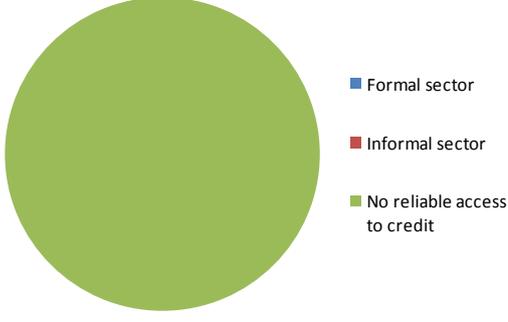
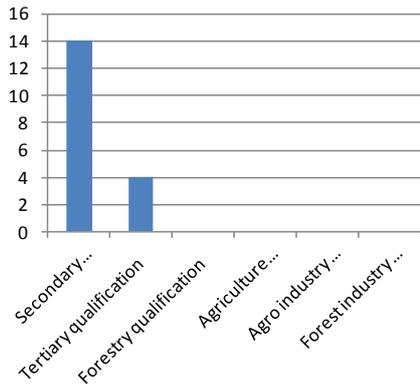
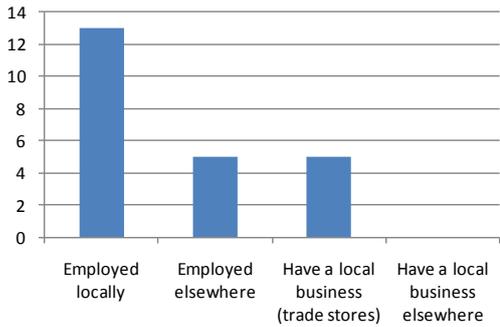
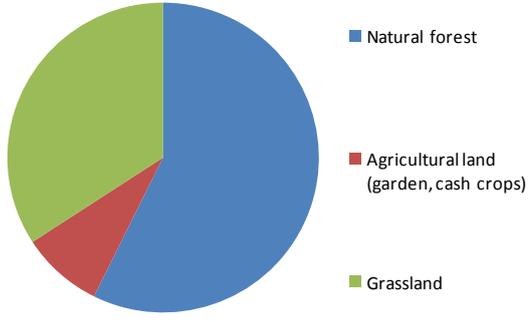
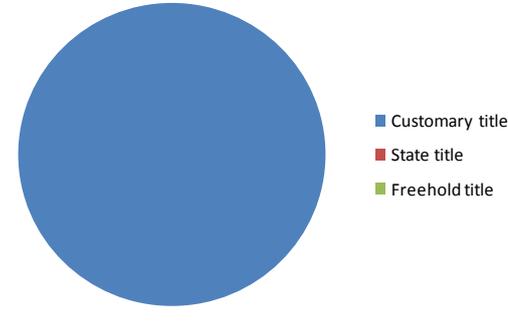
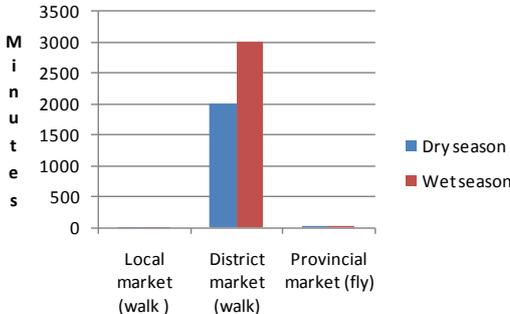
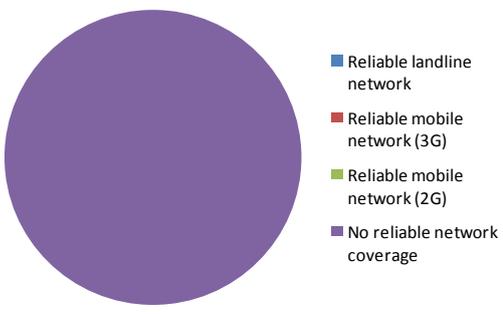
Livelihood Assets	
<p>Financial resources: The residents of Wards 5 and 6 (5 villages) source most of their income from selling tobacco, coffee, beetlenut and livestock. Village residents have no reliable access to credit.</p>	
 <p>Figure 8: Main sources of village income</p>	 <p>Figure 9: Reliable access to credit</p>
<p>Human resources: Wards 5 and 6 have a current population of around 1,322 (39% adults) with an 8.7% annual growth rate. Over the last 10 years, in-migration has been stable. Education and employment levels are low.</p>	
 <p>Figure 10: Village resident qualifications and experience</p>	 <p>Figure 11: Number of village residents and non-residents employed full-time</p>
<p>Natural resources: The village has around 26,162 ha of land managed by 14 clans. There are around 14,966 ha of natural forest and 8,940 ha of grasslands.</p>	
 <p>Figure 12: Land cover</p>	 <p>Figure 13: Land ownership</p>

Table 11: The present situation at Wards 5 and 6 (continued)

Livelihood Assets																							
<p>Physical resources: Local and district markets are accessed on foot. Weekly flights to Lae are expensive (there are 5 airstrips with the YUS CA). There is a local primary school (lower and upper) and health centre (15 -18 km), and a district secondary school at (60+ km) . Village residents do not have access to a reliable mobile network, and each household is responsible for securing its own power supply. There are 6 household with solar power and 1 with a genset.</p>																							
 <p>Figure 14: Access to markets and services</p> <table border="1"> <caption>Data for Figure 14: Access to markets and services (Millions of USD)</caption> <thead> <tr> <th>Market Type</th> <th>Dry season</th> <th>Wet season</th> </tr> </thead> <tbody> <tr> <td>Local market (walk)</td> <td>~100</td> <td>~100</td> </tr> <tr> <td>District market (walk)</td> <td>~2000</td> <td>~3000</td> </tr> <tr> <td>Provincial market (fly)</td> <td>~100</td> <td>~100</td> </tr> </tbody> </table>	Market Type	Dry season	Wet season	Local market (walk)	~100	~100	District market (walk)	~2000	~3000	Provincial market (fly)	~100	~100	 <p>Figure 15: Access to reliable power supply</p> <table border="1"> <caption>Data for Figure 15: Access to reliable power supply</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Reliable landline network</td> <td>0%</td> </tr> <tr> <td>Reliable mobile network (3G)</td> <td>0%</td> </tr> <tr> <td>Reliable mobile network (2G)</td> <td>0%</td> </tr> <tr> <td>No reliable network coverage</td> <td>100%</td> </tr> </tbody> </table>	Category	Percentage	Reliable landline network	0%	Reliable mobile network (3G)	0%	Reliable mobile network (2G)	0%	No reliable network coverage	100%
Market Type	Dry season	Wet season																					
Local market (walk)	~100	~100																					
District market (walk)	~2000	~3000																					
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No reliable network coverage	100%																						
Structures and Processes																							
<p>External structures and processes: TKCP has 17 YUS-based field staff (2 Mapping officers; 12 YUS Rangers; 3 Conservation Officers). Lae-based staff travels to one of the 3 project zones each month. Field Conservation Officers, based in each of the 3 zones, travel to Lae quarterly. TKCP staff communicate via VHF radio.</p> <p>The Philippines government has funded a Population, Health and Environment program that encouraged women to consider population growth in their land use planning. TKCP are interested in pursuing this program in the future.</p>																							
<p>Internal structures and processes: Internal structures and decision-making processes fall into 4 categories:</p> <ul style="list-style-type: none"> • <u>Clan</u> - There are 16 clans from 2 patrilineal tribes. Land disputes are not a significant issue • <u>YUS Conservation Organisation (CO)</u> - A local body of 48 landowners (local leaders) who serve as a board of advisors to TKCP. The YUS CO therefore guides local priorities and seeks assistance from TKCP – the NGO devoted to the site. The YUS Conservation Area also has a set of bylaws. • <u>Local Government</u> - Wards 5 and 6 are located in the YUS LLG of Kabwum District • <u>Church</u> - Lutheran (75%) and Apostolic (25%) 																							
Livelihood Strategies																							
<p>Long-term strategies: Group discussions identified some common community development goals and strategies:</p> <ul style="list-style-type: none"> • <u>Social</u> - Educate people on family planning to minimise population pressure on the forest; Support vital knowledge on tree planning and harvest techniques; Promote sustainable timber harvest for local consumption; Promote healthy village, health forest and healthy population concept • <u>Economic</u> - Facilitate for effective resource use and make markets available to promote for forest products that are ethically appropriate; Tap into new concept of REDD+ and reward hard working communities. Develop financial management capabilities within community. • <u>Environmental</u> - Facilitate community engagement in family units by encouraging tree plantings and reforestation. 																							
<p>Short-term strategies: The 5 villages are focused on feeding, housing and educating their family, as well as contributing to their various clan and village obligations. Households are generally able to meet their priority needs through subsistence activities (e.g. gardening, hunting, collecting firewood), local and district market sales (betelnut and livestock), and cash-cropping for provincial markets (tobacco and coffee).</p>																							

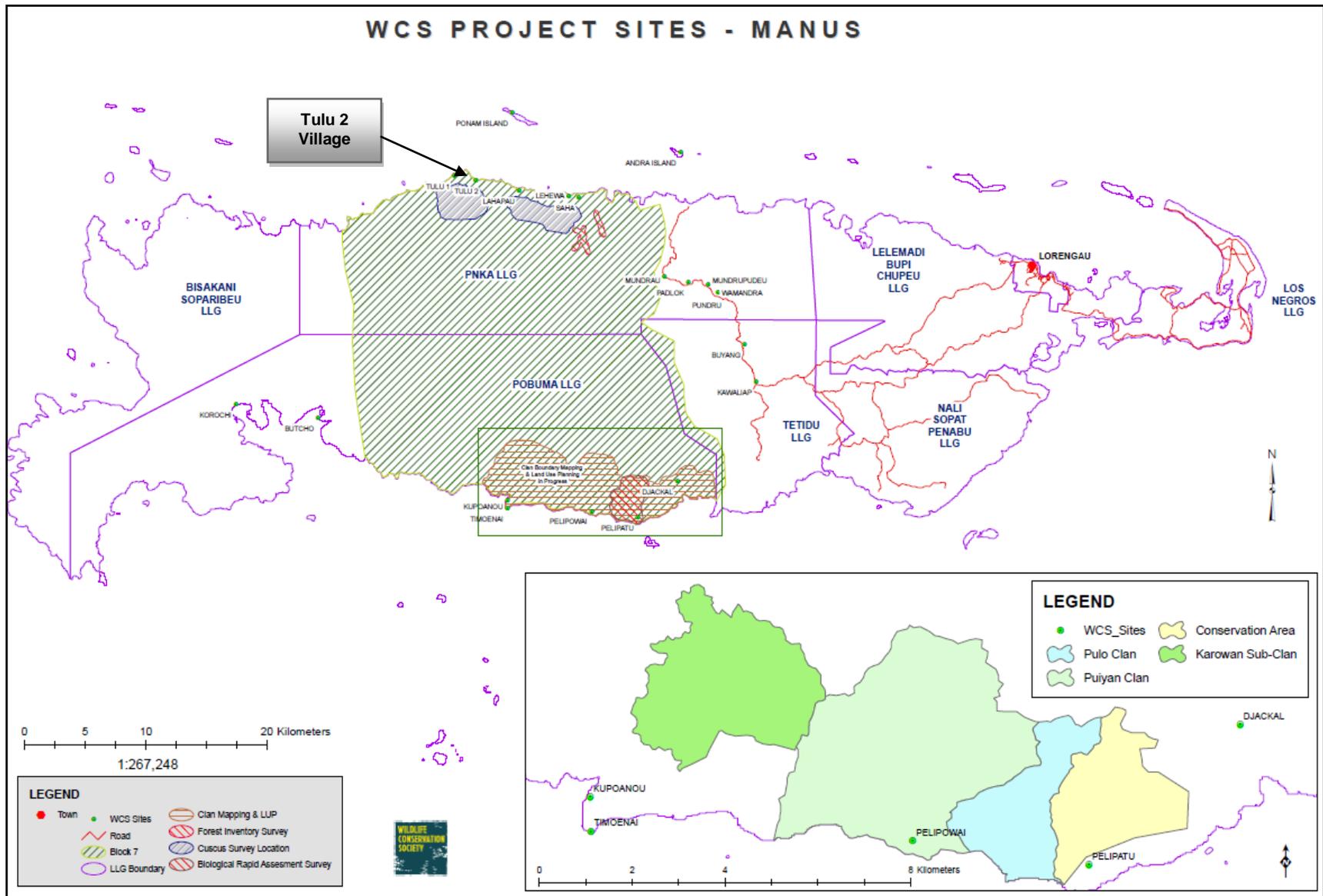


Figure 13: Map of Village-REDD Project area, Local Level Government boundaries and selected clan and boundaries

3.6 Village-REDD+ Project

WCS is a global organisation with a head office in New York (USA). WCS-PNG is based in Goroka with a field office in Lorengau (Manus Province) and Kavieng (New Ireland Province). It was the first international conservation organization to work in PNG and has had a full-time presence there since the late 1980s. The goals of the WCS program in PNG are to promote the sustainable use of terrestrial and coastal marine ecosystems, and to identify and implement measures to address the effects of climate change. WCS-PNG has initiated a Village-REDD+ Project on Manus Island, the largest remaining area of forest in the Admiralty Islands. The Village-REDD+ Project follows a 10-step process that allows social groups to organise themselves and plan their participation in REDD+ activities. It has the following features:

- **Landowner control and responsibility for project** - the scheme allows relatively small parcels of land (1,000 hectares or more) to be bundled into a larger REDD+ scheme.
- **Local distribution of benefits** - with a focus on education and employment-generating activities.
- **Capacity building and employment** - the scheme seeks to build capacity within sub-national governments to carry out monitoring and reporting.
- **Bundling forests and/or carbon** - creating a sub-national mechanism called a 'Carbon-credit pool' to provide management and technical services to landowners and act as the focal point for buying and selling carbon

WCS-PNG has selected 5 villages from 2 LLGs (along north coast and south coast) to work with the project (83 clans / sub-clans) within the Village-REDD+ area (figure 13, page 38). The Pre-project's baseline data was collected from Tulu 2 in the north.

a) Central Manus

Central Manus forms part of Manus District which has a population of 53,000 which covers most of the island. Altitudes range from sea level to 700 m. Hanson et al. (2001) conclude that *overall, people in Manus District are slightly disadvantaged relative to people in other districts of PNG. There is some agricultural pressure, land potential is moderate, access to services is good and cash incomes are moderate.* Figure 14 (below) summarises the overall situation in Manus Province, and Table 12 (page 40) provides a more detailed description of the sample village.

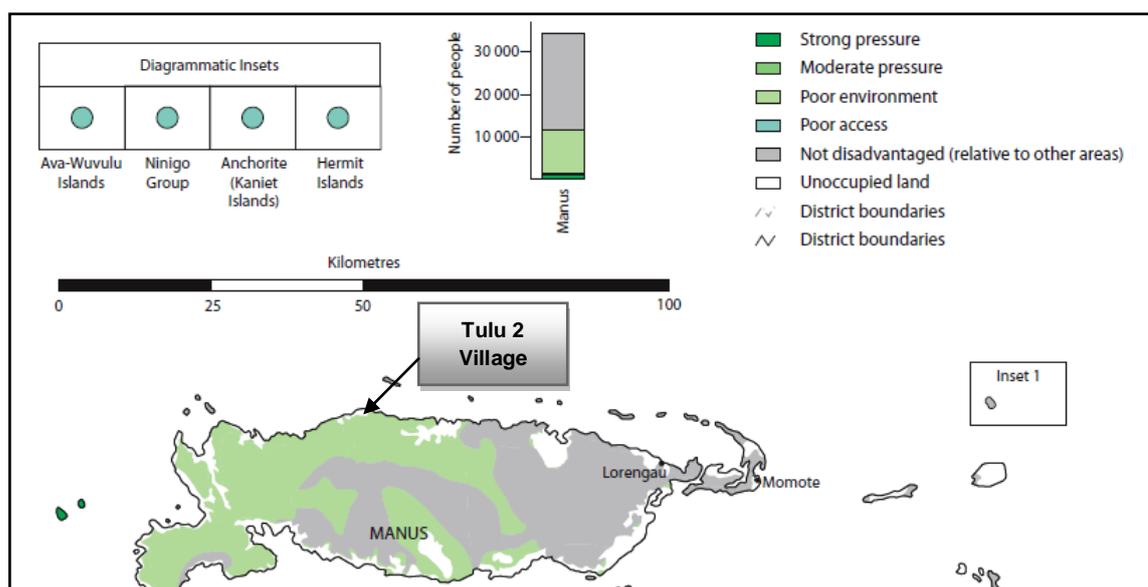


Figure 14: Map of Manus Province showing district development constraints, together with the location of the sample Village-REDD+ site. Sourced from Hanson et al. (2001)

Table 12: The present situation in Tulu 2 village.

<u>Livelihood Assets</u>
<p>Financial resources: Coconut and cocoa plantations are grown on a small scale and were the first two cash crops in Tulu 2. Marketing is all year around - sago, coconut, coconut oil, betelnut, fish, ferns, and tuna fish are common things sold within the village. Betelnut season is from January to May which provides good income for the people. Betelnut yield is low beginning June to October which also reduces their cash flow.</p>
<p>Human resources: The ancestral settlement area was on Mt. Posawen but people migrated down to the coast in 1950 due to an outbreak of typhoid.</p>
<p>Natural resources: The village has around 2,862 ha of land owned by 3 clans. There is both primary forest and secondary forest. Virgin forest dominated the mountain area until the EL Nino related drought in 1997. A terrible bush fire blazed across the virgin forest vegetation and completely destroyed a third of it. People then started making gardens in these areas. The infestation of taro beetle and leaf blight are year around issues for farmers. Wild pigs are also a problem.</p>
<p>Physical resources: Transportation to access local and provincial markets is expensive. Boat fare is K50 one way and a return trip is K100. To access health service they have to walk or paddle to Bundralis which takes them about an hour to reach. There is widespread mobile phone usage and Digicel coverage in 12-13 of the 16 villages involved in the project (including Tulu 2).</p>
<u>Structures and Processes</u>
<p>External structures and processes:</p> <ul style="list-style-type: none"> • <u>Provincial Division of Primary Industries</u> has introduced food crops (e.g. rice and African yam) and cash crops (e.g. vanilla, rubber, cocoa, coconut, and eagle wood) to the people of Tulu 2. However, none of their projects lasted due to lack of market, lack of facilities and lack of monitoring and technical skills provided to the community to keep the projects going. • <u>Provincial Disaster Office</u> communicates through the <u>Catholic Mission</u> at Bundralis and has helped the community to move to their safe location. • <u>AusAID</u> assisted 2 years ago with the new classrooms at Tulu 2 primary school. • <u>WCS</u> is the only organization that has on-going direct contact with the people. WCS mostly communicates through Community Facilitators (field visits generally last 2-4 weeks and are planned on a 3-month basis) who are trained by WCS field staff. For example, WCS and its community facilitators work to engage women in the project while also being sensitive to and respectful of local cultures. • <u>Mining Exploration</u> is happening outside the Tulu 2 border, about 10 km away from the village. • <u>Logging and Rubber</u> activities are all happening outside Tulu 2. A road is currently being built from Bundralis and going through Tulu 2 to Tulu 1 village.
<p>Internal structures and processes: Internal structures and decision-making processes fall into 4 categories:</p> <ul style="list-style-type: none"> • <u>Clan</u> - There are 3 clans (Chapoe, Pwekeh and Lahok). Villagers mentioned that the current clan boundaries are not traditional or customary as they were set by the kiaps during the colonial era. That is why they sometimes have land disputes among sub-clans. • <u>Local Government</u> - Tulu 2 is located in the PNK LLG of Manus Province • <u>Church</u> - Catholic <p>Other important structures include Mama Group; Pihi Group (mama group supported by government); village elders; health centre; and local school.</p>
<u>Livelihood Strategies</u>
<p>Long-term strategies: Household surveys identified some common goals:</p> <ul style="list-style-type: none"> • New / improved school buildings • Improved water supply • Permanent housing (local durable timber is becoming harder to access).
<p>Short-term strategies: The residents of Tulu 2 are focused on feeding, housing and educating their family, as well as contributing to their various clan and village obligations. Households are generally able to meet their priority needs through subsistence activities (e.g. fishing, gardening, hunting, collecting firewood), and local market sales (garden food, sea food).</p>

	1. Financial resources: income and access to credit		2. Human resources: qualifications and experience		3. Natural resources: land area, cover and ownership		4. Physical resources: access to markets and services		5. External structures: government, NGO, private sector		6. External processes: government, NGO, private sector		7. Internal structures: local organisations		8. Internal processes: local customs and protocols		9. Long-term strategies: that lead to desired outcomes		10. Short-term strategies: that lead to desired outcomes	
PROJECTS (WITH LOCAL PARTNERS)	COMMUNITY ASSETS				TRANSFORMING STRUCTURES AND PROCESSES				COMMUNITY STRATEGIES				NOTES							
1. Community Based Forest Monitoring Project (with FPCD)	3	2	4	3	3	4	4	4	2	3	Point 3 assumes participating Sub-clans are supported by all Clan members									
2. Crater Mountain Wildlife Management Area (with RCF)	2	2	4	1	3	3	4	4	2	3										
3. Central Suau REDD Pilot Site (with MBPA)	2	2	4	2	3	2	4	4	1	2										
4. Payment for Environmental Services Trial Project (with FORCERT)	2	2	4	2	3	4	5	4	2	3	Point 3 assumes the SABL issue is resolved									
5. YUS Conservation Area (with TKCP)	2	2	4	1	3	3	4	4	2	3										
6. Village-REDD+ Project (with WCS)	2	2	4	2	3	4	3	3	2	3										
Overall Assessment	2	2	4	2	3	3	4	4	2	3	Overall Assessment									
Community Weakness	1		2		3		4		5		Community Strength									

Figure 15: Target community strengths and weaknesses assessed with reference to the sustainable livelihoods framework elements

4. Conclusions

The proposed context for the full-project is diverse; spanning the Highlands, Islands, Momase and Southern Regions of Papua New Guinea. Not surprisingly, the baseline data reveals a wide range of:

- **Resources** that are available for people to use;
- **Structures and processes** that either help or restrict people’s ability to use these resources;
- **Strategies** that are now being used to realize people’s short and long-term livelihood objectives.

The study also identifies some interesting similarities. People living in the target areas are generally disadvantaged relative to those living in other parts of the country with regards to household income, local qualifications, and access to markets and government services. On the other hand, each local community appears well organized and self-reliant, with large areas of forest owned and managed by local clan groups. Households are generally well-focused on feeding, housing and educating their family, as well as contributing to their various clan and village obligations. Figure 15 (page 41) provides a simple assessment of target community strengths and weaknesses.

In this environment, the project’s local partners provide an important link with the outside world; opening up new opportunities for enhancing rural livelihoods. These local partners are also diverse, with head offices in the USA, Port Moresby and Walindi. Whilst local partner resources and development strategies are quite varied, their overall objectives are similar.

5. Recommendatons

The full-project should build on shared strengths, address similar weaknesses, and learn from the diverse skills and experiences of local project partners and target communities. Table 13 (below) presents some possible “entry points” for the full-project proposal which should be discussed further developed during the strategy selection activities ahead.

Livelihood Elements		Entry Point
Community Assets	1. Financial resources	Develop income generation opportunities and benefit sharing mechanisms.
	2. Human resources	Raise awareness of CFM opportunities and challenges. Strengthen local capacity for land tenure mapping, forest monitoring and land-use planning.
	3. Natural resources	Collect data on forest biomass, land cover, land tenure and biodiversity.
	4. Physical resources	Improve access to appropriate technology and support services.
Structures and Processes	5. External structures	Strengthen strategic linkages between local partners and key district, provincial, national and international stakeholders to increase flow of information that will support: <ul style="list-style-type: none"> • Local land use planning and land tenure documentation; • National & sub-national carbon MRV; • Forest and climate change policy implementation; • Recognition of clan landownership in forestry and other project types.
	6. External processes	
	7. Internal structures	Work through selected community groups (e.g. clan, business, church, local level government) to strengthen local capacity for forest management decision making, communication and partnership building.
	8. Internal processes	
Community Strategies	9. Long-term strategies	Use entry-points above to strengthen local capacity to develop appropriate livelihood strategies that realize their desired outcomes.
	10. Short-term strategies	

6. References

1999. *Sustainable Livelihoods Guidance Sheets*. Department for International Development: London, United Kingdom.

7. **Annexes**

7.1 **Local Partner Assessment Form**

7.2 PRA Guidelines

7.3 Invitation Letter

7.4 Summary Scoring Sheet

7.5 Criteria for selection of REDD+ demonstration sites