

FOREST MANAGEMENT AND PRODUCT CERTIFICATION SERVICE (PNG)

SOCIO-ECONOMIC IMPACT SURVEY



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Henry Scheyvens

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Cover photo: FSC certified community timber milling, Mauna, PNG. Photo credit – Henry Scheyvens

FOREWORD

The Institute for Global Environmental Strategies (IGES) is researching forest certification as an instrument to assist communities to manage forests for multiple purposes, including timber production. This research has focused on innovative models that could suggest ways of increasing the accessibility of forest certification for community-based forest management. The Forest Management and Production Certification Service (FORCERT), which provides a certification service for community-based timber operations in Papua New Guinea, was included in the research because of a number of innovations that set it apart from other models.

This report is based on a survey of forest management and timber milling in nine communities that were receiving FORCERT support services. It examines the socio-economic impacts of forest certification in the producer communities and it also considers the sustainability of the village-based timber enterprises and the FORCERT certification network. IGES consulted with FORCERT in designing the research. The survey was led by Henry Scheyvens (IGES) and the research team included Margaret Rokus, Diane Mirio (FORCERT), and Zola Sangga (WWF).

Thanks are due to all the staff at FORCERT who assisted in formulating and organising the research, particularly Peter Dam, Cosmas Makamet and Diane Mirio, and past and present FORCERT foresters (Wesley Watt, Martin Kikilia, Eliuda Laisik, Joshua Kialo, Clement Bailey) who facilitated the research during their certification monitoring and extension visits. I am particularly grateful to Peter Dam, Enrique Ibarra Gene, and Cosmas Makamet for their comments and thoughts on a draft of this report.

The research team owes its gratitude to the communities of Bairaman, Lau, Mauna, Tavolo, Arabam, Kait, Minda, Baikakea, Tsiatz, Yalu and Maskikilir for their wonderful hospitality during the survey. The team also appreciates the organisational assistance provided by the Village Development Trust (VDT) and the information that was shared by Narapela Wei. We are grateful to Tim Catling for proofreading the report. The author alone is responsible for any errors in fact.

If this report raises awareness of the potential of forest certification as an instrument for both community development and forest conservation, and contributes to strengthening certification models for community-based forest management and timber operations, then the survey will have achieved its broader goal.

18 May 2009

Henry Scheyvens

Manager, Forest Conservation, Livelihoods and Rights Project, IGES

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ACRONYMS

BOD	Board of Directors
CAR	corrective action request
CBFT	community-based fair trade
CCF	Community Carbon Forestry
CELCOR	Centre for Environmental Law and Community Rights
CMU	central marketing unit
DfID	UK Department for International Development
EOC	Enterprise Overseeing Committee
EU	European Union
FIP	Forest Industry Participant
FORCERT	Forest Management and Product Certification Service
FPCD	Foundation for People and Community Development
FSC	Forest Stewardship Council
IGA	income generating activity
IGES	Institute for Global Environmental Strategies
IFAT	International Fair Trade Organisation
ILG	Incorporated Land Group
IRECDP	Islands Region Environment and Community Development Programme
K	Papua New Guinea Kina
PNG	Papua New Guinea
SEEBs	socio-economic and environmental baseline survey
SYTB	Start Your Timber Business
VDT	Village Development Trust
WFTO	World Fair Trade Organisation
WWF	World Wide Fund for Nature

1. Assessment design

1.1. IGES research on forest certification

This report is part of a research project launched by the Institute for Global Environmental Strategies in 2005 on innovative certification models for small forest enterprises. The research was motivated by two observations:

1. While the literature indicates that certification of community-based forest management can bring significant benefits to communities, only a small number of forest management certificates have been granted for village-based timber operations in the Asia-Pacific region.
2. Commonly, models to support the certification of village-based timber operations require heavy subsidisation of not only the certification process, but also the subsequent production, transport and marketing of timber, which means that the models are not replicable on a broad scale.

Four research questions were developed based on these observations:

1. Under what *conditions* is certification of forests managed by small forest enterprises a *cost-effective* means to promote sustainable forest management?
2. How can certification be made more *effective* in promoting sustainable forest management?
3. How can certification be made more *accessible* to small forest enterprises?
4. How can the *sustainability* of forest certification be enhanced?

The methodology includes an assessment of innovative models that assist communities to have their forest management certified and to produce and market the certified timber. Innovation does not necessarily translate into success, but the willingness to be innovative is clearly needed for sustainable and replicable models to evolve. Several models were selected for the study, including the approach of the Forest Management and Product Certification Service (FORCERT) in Papua New Guinea (PNG).

When selecting models for the research, the IGES team observed that innovative features of the FORCERT approach are its national application and its use of business agreements (service and production agreements) between the producers and the timber yards (central marketing units – CMUs). Other unique aspects of the FORCERT model were “discovered” during the course of research and others evolved after the research was initiated. Two particularly innovative features are FORCERT’s arrangement of a microfinance loan facility to support producers and its development of a “stepwise approach”.

1.2. Focus and objectives

This report focuses foremost on the socio-economic impacts of forest certification in FORCERT producer villages. The report also considers, albeit to a lesser extent, the financial sustainability of the village-based timber enterprises and the network, which is critical to ensuring a sustained flow of positive social and economic impacts.

Socio-economic impact assessment is relevant to the goal of FORCERT to “facilitate the responsible management and conservation of forest resources that maximises the economic benefits for local resources owners”. Impact assessment was also called for in the findings of an external review of FORCERT conducted in 2007. The review stated:

It is the Evaluation Team’s observations that FORCERT currently does not monitor impact. FORCERT’s objectives and indicators are task /activity oriented. Impact oriented objectives and indicators will be needed to monitor changes in communities. It will be important to monitor empowerment. Some indicators for this may be the quality of participation in community decision–making processes eg: who is actively participating, how their input is appreciated, who feels ownership of the decisions, how equitable is the distribution of benefits.

The objectives of this assessment are to:

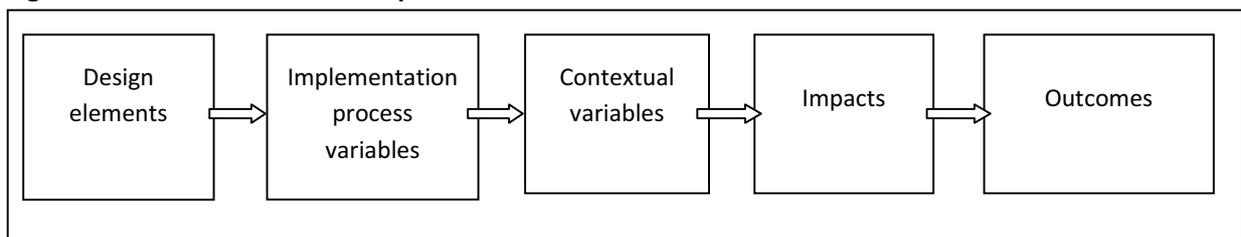
- Identify and assess the socio-economic impacts of the FORCERT model for producers;
- Consider the sustainability of the village-based timber enterprises and the network;
- Identify options for further strengthening the model to maximise its developmental outcomes.

1.3. Socio-economic impact assessment - concepts and methodology

Impacts from a development intervention (programme or project) are determined by the design of the intervention, variables associated with the implementation process, and contextual variables. Implementation variables could include, for example, the enthusiasm or local knowledge of extension workers involved in the intervention. Contextual variables are variations between the locations where the intervention is implemented. For example, one village may have strong leadership, while another may have weak leadership, leading to entirely different outcomes from the same intervention.

A further consideration is the difference between immediate impacts and developmental outcomes (Fig. 1). Immediate impacts are impacts that are readily observable and are directly associated with the activities of the intervention. In contrast, developmental outcomes are positive changes that may emerge over a much longer period. For example, the immediate impacts of a microfinance programme that provides loans to women might be an increase in household income. A developmental outcome could be a strengthening of women’s position in society because of their increased confidence arising from their successful involvement in micro-enterprises. While immediate impacts are observable, long-term developmental outcomes are not. At best, likely developmental outcomes can be inferred from realistic assumptions, good information and good analysis.

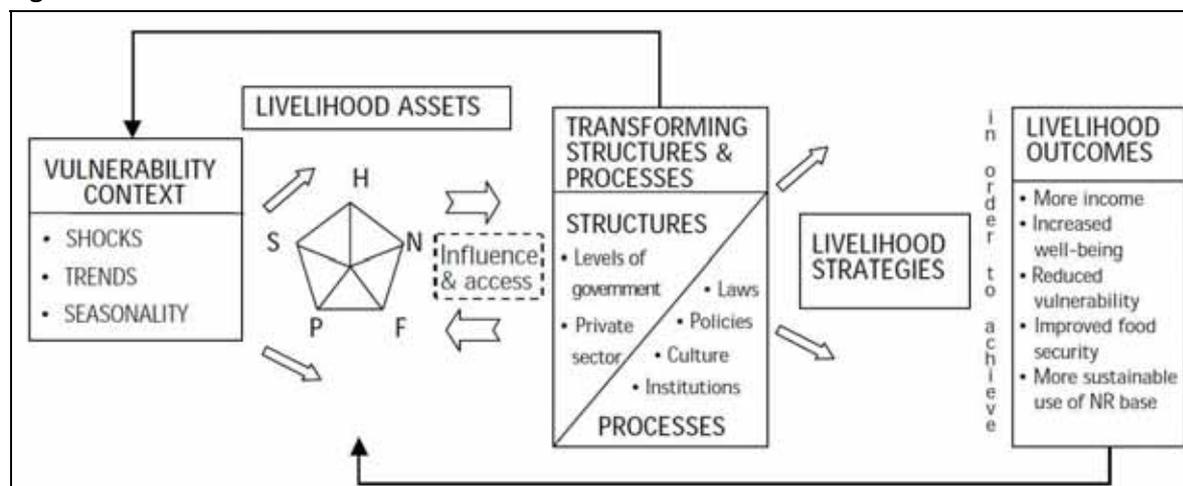
Figure 1: Determinants of developmental outcomes



1.3.1. Concepts

This assessment employs the concept of livelihoods which describes the capabilities, assets (including both material and social resources) and activities required for a means of living (Chambers and Conway 1992). The sustainable livelihoods framework (Fig. 2) is used in this assessment to conceptualise the livelihoods assets and needs of communities in FORCERT producer villages. The framework views people as operating in a context of vulnerability. Within this context, they have access to certain assets that gain their meaning and value through the prevailing social, institutional and organisational environment. This environment also influences the livelihood strategies – ways of combining and using assets – that are open to people in pursuit of beneficial livelihood outcomes that meet their own livelihood objectives.

Figure 2: Sustainable livelihoods framework



Source: DFID, 1999.

The concept of livelihoods assets is useful for understanding the capabilities of households to achieve livelihood outcomes. Livelihood assets can be categorised as: human capital (H), social capital (S), natural capital (N), physical capital (P) and financial capital (F).

- Human capital = the skills, knowledge, ability to labour and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives.
- Social capital = the social resources upon which people draw in pursuit of their livelihood objectives and include informal and formal groups/networks and connectedness, and relationships of trust, reciprocity and exchanges.
- Natural capital = the natural resource stocks from which resource flows and services useful for livelihoods are derived.
- Physical capital = the basic infrastructure (e.g. roads) and producer goods (e.g. tools and equipment) needed to support livelihoods.
- Financial capital = financial resources that people use to achieve their livelihood objectives.

This categorisation is also useful for understanding the FORCERT model as it attempts to support producers in building or conserving all of these five types of capital (Table 1).

Table 1: Examples of livelihood assets supported under the FORCERT model

Livelihood Asset	FORCERT support services - examples
Human capital	<ul style="list-style-type: none">• forest management training• training on timber production• timber enterprise planning and management training
Social capital	<ul style="list-style-type: none">• participatory processes for landowner group incorporation• participatory processes to develop forest management plans and land use maps
Natural capital	<ul style="list-style-type: none">• land group incorporation• land use mapping• forest management planning
Physical capital	<ul style="list-style-type: none">• portable sawmills• chainsaws• timber storage sheds• buffalos and trailers
Financial capital	<ul style="list-style-type: none">• income from timber milling• microfinance facility

The concept of sustainable livelihoods is also suited to the rural context of PNG as it rightly views people as operating in a context of vulnerability. While village communities in PNG may have strong social institutions and are “rich” in their ownership of natural assets and their cultural expressions, they are vulnerable to outside pressures, as evidenced by their experience of industrial-scale logging and other large-scale development projects.

1.3.2. Methodology

The methodology for the socio-economic impact assessment was a survey of producers. As of 30 September 2008 there were a total of 39 producers. Variation between producers is large and it is difficult to conceptualise a “typical” producer. The survey attempted to capture the diversity of contextual variables by selecting producers that represent this diversity, i.e. are different rather than similar. Variables considered in selecting the producers were decided through discussion with FORCERT staff. These were:

- Entry date (i.e. registration as a FORCERT producer)
- Access
- Village composition/organisation
- Development threats/opportunities
- Income generating activities (IGAs)
- Equipment for timber milling
- Certified status
- Enterprise management quality
- Participation (e.g. entire village or single clan).

Nine producers were selected for the survey (Table 2). Four producers (referred to in this report as the “Pomio producers”) are located on the remote south coast of East New Britain. Three of these (Bairaman, Lau, Mauna) received support for certified eco-forestry under the European Union (EU)

funded Islands Region Environmental and Community Development Programme (IRECDP). They have been timber producers for over ten years and have FSC Certified status; hence, there are likely to be a variety of discernable impacts. Despite a number of commonalities, their quality of management has been quite different. The fourth Pomio producer (Tavolo) is a new producer that is unique in being the only village surveyed to have established a Wildlife Management Area. As a new producer village it provides a control for identifying impacts in the other three villages. All four villages have difficult access.

One further producer (Arabam) in East New Britain was selected, and one producer (Kait) in New Ireland was selected for the survey. Arabam is an inland village with good road access to the CMU and is located near an open-cast gold mining operation. It is a new member yet to begin production and only one of its two clans will participate in the eco-forestry. Kait, located in Namatanai District, New Ireland, previously experienced selective logging of its forests, must transport its timber by boat to the CMU, and is an example of where FORCERT is working directly with the producers rather than through partners.

Two villages were selected in West New Britain. Baikakea is located adjacent to an industrial-scale oil palm operation, has relatively good road access to the CMU, and is close to the district town and markets. It was the first producer to receive microfinance. Minda, in contrast, is a coastal village with no road access and without a portable sawmill for its eco-forestry.

One village, Tsiatz, was selected for the study in Morobe Province. Tsiatz is an inland village which has only recently joined the network and at the time of the survey was yet to mill timber. Access to Lae, the provincial capital, is partly by river. Tsiatz is allowing a gold mining project to be developed on its land.

One other village in Morobe Province, Yalu, was also surveyed but is mostly excluded from the analysis as the quality and volume of information gathered was limited by the short duration and inadequate advanced announcement (*toksave*) of the visit. The Yalu producers are the only example amongst the surveyed villagers where FORCERT's partner organisation (Village Development Trust) has extension foresters supporting eco-forestry activities.

Table 2: Features of producer villages surveyed

Producer	Village	Location	Features
Bairaman Timber Resources Ltd.	Bairaman	Remote coastal village, West Pomio, East New Britain	<ul style="list-style-type: none"> • Entry date: Nov. 2004 • Access: No road connection; tracks to neighbouring villages; canoe; community owns 40hp motor • Village composition/organisation: 9 clans; 5 ILGs • Development threats/opportunities: Local movement to organise logging concession and oil palm plantation development • IGAs: Cocoa, copra; fish and garden produce sold locally • Equipment: 3 buffalos; trailer; Lewisaw and rail; 2 chainsaws; 1 winch set • Certified status: FSC • Participation: Village • Others: Elementary school; forest rich in commercial species; 1,570 hectares of production forest area
Gogomate Development Corporation	Lau	Remote coastal village, West Pomio, East New Britain	<ul style="list-style-type: none"> • Entry date: Nov. 2004 • Access: No road connection; tracks to neighbouring villages; canoe; 1 motorised boat privately owned • Village composition/organisation: 5 clans; 5 ILG's • Development threats/opportunities: Local movement to organise logging concession and oil palm plantation development • IGAs: Cocoa, copra, rice (school project); fish and garden produce sold locally • Equipment: Lewisaw (18 and 24 hp engines); 2 buffalos and 1 trailer needing repair; 1 chainsaw; winch • Certified status: FSC • Participation: Village • Others: First aid post with two way radio; primary school which children from Bairaman and Mauna also attend; resettling further inland because of coastal flood events; 1,390 hectares of production forest area
Suli Timbers	Mauna	Remote coastal village, West Pomio, East New Britain	<ul style="list-style-type: none"> • Entry date: Nov. 2004 • Access: No road connection; tracks to neighbouring villages; canoe • Village composition/organisation: 9 clans; 9 ILGs • Development threats/opportunities: Local movement to organise logging concession and oil palm plantation development • IGAs: Cocoa (each family has block of trees), copra, rice; fish and garden produce sold locally • Equipment: Lewisaw; 2 buffalos and trailer; chainsaw • Certified status: FSC

Tavolo Timbers Business Group	Tavolo	Remote coastal village, Pomio, East New Britain	<ul style="list-style-type: none"> • Participation: village • Others: resettling further inland because of coastal flood events; participates in Healthy Island Concept programme – elected as model village; no school; 1,710 hectares of production forest area • Entry date: Expressed formal interest to FORCERT in July 2008 • Access: 2.5 hours walk to district town of Uvol; banana boat for coastal transport; mostly logging road to Kimbe - about 6 hours drive, impassable in wet season. • Village composition/organisation: 9 clans; 9 ILG's in preparation • Development threats/opportunities: Plantation and village oil palm; logging • IGAs: Betel nut; coffee; copra; cocoa; garden produce; fish (crocodile skin) • Equipment: Chainsaw and Alaskan mill • Certified status: Pre-Certified • Management quality: Strong organisation and leadership • Participation: Village • Others: Part of forest registered as Wildlife Management Area; guest house and resource centre; intermediate school; 600 hectares of production forest area
Rapki Investment Corporation Ltd	Arabam	Inland village, 30km SSW of Kokopo, East New Britain	<ul style="list-style-type: none"> • Entry date: Status pending • Access: Mostly sealed road • Village composition/organisation: 3 clans; 1 clan involved • Development threats/opportunities: Open cast gold mining; proposed geothermal energy development; sale of land to outsiders; harvesting by private portable sawmills • IGAs: All households have cocoa blocks; coffee; betel nut; garden produce; wild birds • Equipment: No mill, chainsaw, winch, or buffalo • Certified status: Pending (assessment done for Pre-Certified status) • Participation: Mararap sub-clan of Uramat • Others: Open cast gold mining (Sinivit mine); past village-based milling supported by Pacific Heritage Foundation; govt. health awareness and immunisation programme; primary and elementary school; 1,000 hectares of production forest area
Kait Business Group	Kait	Coastal village, New Ireland (Namatanai district)	<ul style="list-style-type: none"> • Entry date: April 2007 • Access: 2 hours by "banana boat" from Kokopo; walking tracks to neighbouring villages • Village composition/organisation: 2 clans (including sub-clans); 2 ILG's in preparation • Development threats/opportunities: Village oil palm, logging • IGAs: Cocoa; copra, mandarins, garden produce, fish • Equipment: Privately owned Lucas Mill; Lucas Mill lent by local government; buffalo; trailer due to arrive; chainsaw provided by CMU • Certified status: FSC

Lamo Auru Development Corporation	Baikakea	Village near coast, Talasea, West New Britain	<ul style="list-style-type: none"> • Participation: village • Others: Forests along coast selectively logged to about 3km inland; FORCERT working directly with group, rather than through partners; community marine sanctuary; first aid post; previous involvement with Pacific Heritage Foundation; school; 980 hectares of production forest area • Entry date: FSC certified in June 2007 • Access: 7km by road from district town of Bialla; 3 hours from Kimbe on mostly sealed road • Village composition/organisation: 15 clans; 1 ILG • Development threats/opportunities: Past industrial logging of parts of forest, food gardening in forest area by oil palm plantation workers, village oil palm • IGAs: Village oil palm; cocoa; copra • Equipment: Lucas Mill; chainsaw; winch; buffalo and trailer • Certified status: FSC • Participation: Village • Others: Next to industrial-scale oil palm plantations; first producer to receive microfinance; primary school; 1,240 hectares of production forest area
Lagavisi Business Group	Minda	Coastal village, Willaumez Peninsula, Talasea, West New Britain	<ul style="list-style-type: none"> • Entry date: August 2006 • Access: 40 minutes by boat plus 40 minutes by road to the district town, Kimbe. • Village composition/organisation: 2 clans; 2 ILG's in preparation • Development threats/opportunities: Logging, village oil palm • IGAs: Copra; cocoa; fish; betel nut; pigs; seaweed; sea cucumbers (beche-de-mer) • Equipment: Chainsaw and Alaskan Mill; buffalo and trailer • Certified status: Pre-certified • Participation: Village • Others: No school; no permanent houses; 470 hectares of production forest area
Ngasab Business Group	Tsiatz	Inland village, Morobe Province, bank of Watut River	<ul style="list-style-type: none"> • Entry date: May 2008 • Access: 1 hour by motorised canoe from the nearest road link, plus 40 minutes by road to the provincial capital, Lae • Village composition/organisation: 1 clan • Development threats/opportunities: Gold mining; logging • IGAs: Main cash crop (betel nut) destroyed by diseases and pests; gold prospecting • Equipment: No chainsaw or mill • Certified status: CBFT • Participation: Village • Others: Gold development project planned; some previous small-scale milling; 800 hectares of production forest area

Note: ILG = Incorporated Land Group; IGAs = income generating activities

In each village the survey was conducted by one male IGES researcher and one female PNG national who were assisted by FORCERT extension foresters. On average the survey team spent two nights in each village. The village surveys consisted of:

- A formal introduction of the research to the community;
- Separate group interviews with men and women;
- Interviews with individuals participating in the eco-forestry operations;
- Interviews with the business manager and other key individuals;
- Review of all documents relevant to the eco-forestry held by the producers (digital images were taken with permission);
- Observation of all parts of the village;
- Observation of timber milling (where underway);
- Observation of the forests, set-ups, felling sites and timber transportation routes;
- Observation of monitoring, training and other activities conducted by the FORCERT extension foresters.

A checklist of questions was used to guide the data gathering (appendix). FORCERT's socio-economic and environmental baseline survey (SEEBs) form was used as a reference for constructing this checklist.

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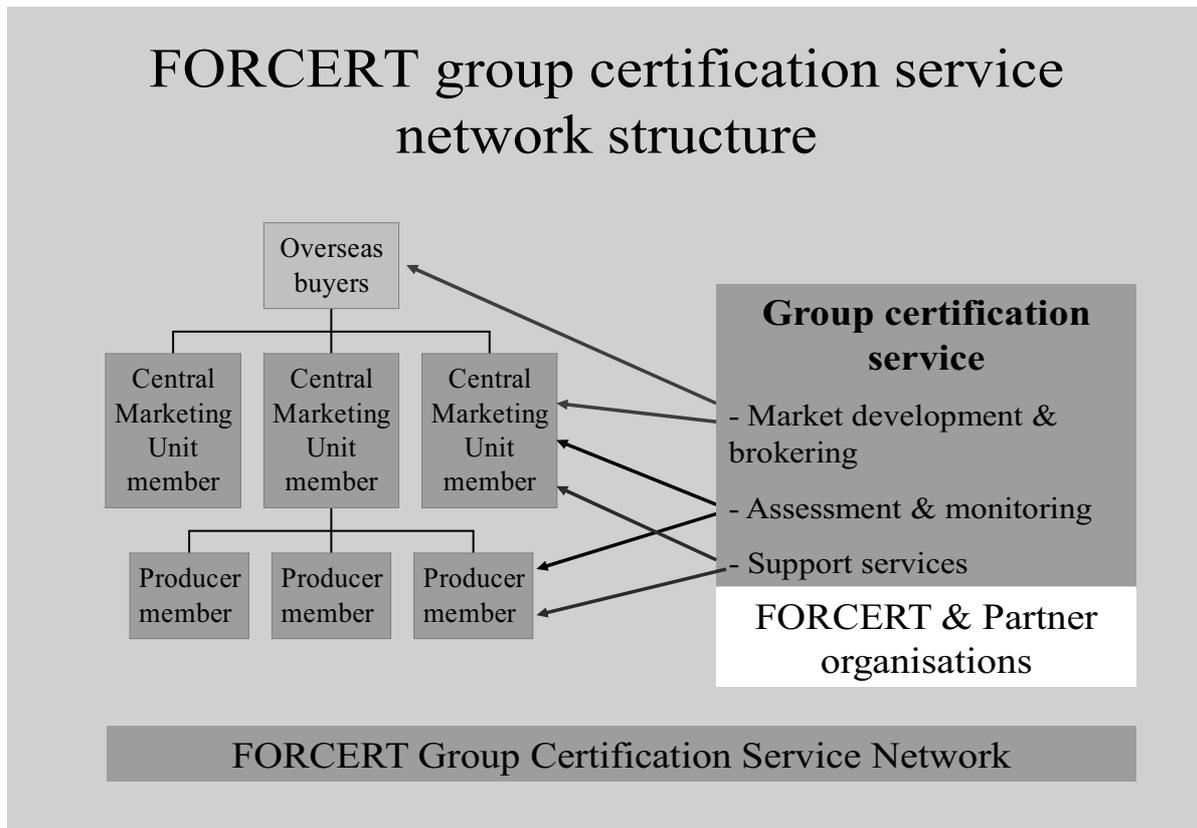
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2. The FORCERT model

2.1. Overview of Group Certification Service Network

FORCERT has developed a Group Certification Service Network to provide access to Forest Stewardship Council (FSC) certification for small-scale producers and small timber yards. FORCERT manages the network's FSC forest management group certificate and chain-of-custody certificate. As the "group entity" it is responsible for ensuring that the forest management of its producer members and chain-of-custody meet both the FSC standards and the network's additional requirements. It also certifies timber yards (known as central marketing units – CMUs) against FSC and the network's requirements. Together, the certified producers, the CMUs, FORCERT, its partners, and buyers make up the network (Figure 3).

Figure 3: FORCERT Group Certification Service Network



Each producer agrees to supply a minimum annual volume of timber to the CMU. In turn, the CMU commits itself to providing production support to the producers. FORCERT and existing service providers (e.g. NGOs, training institutions, government institutions and programmes, and local businesses), provide a range of support services to both the producers and the CMUs.

2.2. Support services and requirements as the building blocks of the model

Belying this simple explanation is a complex model. As this assessment focuses on socio-economic impacts for producers, it is best to explain the FORCERT model from the producers up in terms of how they might experience it, i.e. the support they receive and the opportunities it aims to provide.

A group (clan(s) or village) that is interested in receiving FORCERT support for a timber operation initiates the process of engagement by submitting a request to become a producer member. FORCERT first requests for a meeting at the village with all members of the group, to find out more about the history of their community and the use of the land, their ideas on future land use and community development, and their motives for approaching FORCERT. FORCERT uses a checklist to determine whether the group is suited to the model, e.g. whether it has the necessary forest resource and whether a timber operation would benefit the group, and undertakes an awareness exercise at the village to explain the FORCERT approach. If the group is considered suitable for the network, FORCERT begins an intensive process of engagement with the group to prepare them to meet the requirements of the model.

To establish and maintain the system of forest management and the timber operation, the model sets training and documentation requirements that producers must comply with. The training is conducted either by FORCERT staff (foresters and business development officer), those of its partners, the CMUs, other organisations, or by hired part-time technical staff. The training covers forest management, timber operations and enterprise development.

Understanding the FORCERT model requires an understanding of both its requirements (Table 3) and the support services. The requirements for producers can be grouped into (i) requirements associated with formal processes in PNG (e.g. land group incorporation), (ii) requirements to comply with FSC certification standards (FSC National Forest Management Standards for PNG, FSC chain-of-custody requirements) and International Fair Trade Organisation (IFAT) certification, and (iii) additional requirements of the network. The support services provided by FORCERT to assist producers in meeting these requirements can be separated into (i) support for creating a forest management system and (ii) support for establishing and operating a village-based timber enterprise.

2.3. The stepwise approach

The FORCERT model has a stepwise approach to achieving FSC certification with three levels of producer status. Producer members can enter into the stepwise approach by first meeting the criteria and requirements for Community Based Fair Trade (CBFT) status, which are the least demanding. This enables them to sell timber from within a group network system that has been certified by IFAT. The next step in this approach is Pre-Certified status, which includes a number of additional requirements, mainly the launching of processes to register customary forest tenure and to establish a timber

enterprise, and progress towards developing a forest management system.¹ The final step – FSC Certified – is FSC certification of forest management and chain-of-custody, which requires completion of the forest management system, legal processes and chain-of-custody.

It is possible for a new producer to apply for certification at any of these three levels, but timeframes apply. Producers with CBFT status must achieve Pre-Certified status within 18 months and within another 18 months must move on to FSC Certified status. This means that producers have a maximum of three years to achieve full FSC Certified status.

Table 3: Criteria and requirements for assessment of CBFT, Pre-Certified and FSC Certified status

CBFT	<p><i>Criteria</i></p> <ul style="list-style-type: none"> • Owns a good forest resource of sufficient size² • Has the management rights over the forest (no logging operation at present or expected operation and/or permit) • Works well with the clan(s) involved (no disputes, community benefits considered) <p><i>Requirements</i></p> <ul style="list-style-type: none"> • Meets CBFT criteria • Awareness of FORCERT group certification network • Supplies to a certified FORCERT CMU • Use of delivery documents stating <ul style="list-style-type: none"> ○ Producer name ○ Production area name ○ Sizes, lengths and number of pieces per species • Coding with producer name with a wide yellow paint band on one end side of all individual timber pieces (e.g. TAV.C – C indicates that the timber is from an operation with CBFT status) • Service and Production Agreement with CMU • CBFT membership agreement (commitment to FSC and progress to pre-certified/certified status) • Progresses to Pre-Certified status within 18 months of signing CBFT membership agreement
Pre-Certified status <i>additional requirements</i>	<p><i>Requirements</i></p> <ul style="list-style-type: none"> • Incorporated Land Group (ILG) process started • Company/Business Group registration lodged • 1% forest inventory • Chain of custody training including: production recording through daily and monthly tally, timber marking, use of delivery dockets • FORCERT Pre-Certified producer membership agreement • Progresses to FSC certified status within 18 months of signing CBFT membership agreement

¹ FORCERT aims to obtain FSC Controlled Wood certification for its Pre-Certified producer category and has kept this in mind when it developed the criteria for this category. FORCERT now plans to apply for FSC Controlled Wood certification during the surveillance visit by its certifier, Woodmark, in 2010. In 2010, Woodmark will also assess FORCERT for renewal of its FSC certificate for another five years.

² FORCERT has flexible minimum total forest area requirements, depending on commercial volume per hectare and accessible forest area. Small forest areas (e.g. <500 ha) could still qualify but may be given a maximum annual allowable cut as a production cut off point.

<p>Certified status <i>additional requirements</i></p>	<p><i>Requirements</i></p> <ul style="list-style-type: none"> • ILG completed and lodged • Company/Business Group registration • Forest Industry Participant (FIP) registration • Community Development Plan • Land use plan • Socio-economic and environmental baseline survey (SEEB) • 1% forest inventory • Forest management plan • 10% inventory of 5 year working area • Set-up establishment • Chain of custody: production recording through daily and monthly tally, timber marking, delivery dockets • Health and safety procedures • Meet FORCERT member training requirements within 1 year after signing FSC certified producer membership agreement • FORCERT Group Certificate FSC certified producer membership agreement
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2.4. Forest management system

Extension foresters provide guidance to the resource owners to establish a forest management system in compliance with the Principles and Criteria of the FSC National Forest Management Standards for PNG. The components of the forest management plan are:

- Land use plan map of the total management area;
- 1% survey of the forest area;
- Description of the forest operation and production area;
- Road access map;
- Determination of 5-year operational area;
- 10% survey of 5-year operational area;
- Set-up preparation reports.

FORCERT has developed guidelines for all these components and their implementation involves participation of the community assisted by field staff from FORCERT or a partner organisation. The aim is not only to prepare the forest management for certification but through the participation of the community in this process to build their capacity for forest management. For example, once the forest management system is in place, it is expected that the community will have the capacity to establish further set-ups.

Table 4: Producer documentation requirements for forest management system

Land use plan
Forest management plan, including road access plan and map indicating 5-year operational area
1% survey (copy)
10% survey (copy)
Set-up inventory list and maps

2.5. Timber operation and enterprise management

Under the model, FORCERT, the CMUs and partners provide support to producers to start-up and sustain the timber operation and to manage the operation according to “modern” business principles. Training is provided on all aspects of a timber operation. FORCERT, its partners and the CMUs provide hands-on training on felling, milling, transporting, storing, grading and marking timber. FORCERT assists producers to purchase buffalos and trailers and to receive formal training on buffalo use. All business managers and one other staff or director must undertake Start Your Timber Business (SYTB) training. The enterprise must keep records including daily tally sheets and monthly production summaries, for which FORCERT provides templates.

Table 5: Training and documentation requirements for timber operation and enterprise management

Training requirements	
Requirement	Details
Occupational Health and Safety	First Aid: Two workers – preferably manager and foreman
Chainsaw	Trained by certified trainer
Sawmill	Trained by certified trainer
Forest management	Independent set-up establishment
Chain-of-custody	Correct use of chain-of-custody
Timber quality	Repeated training by CMU Use of standards
Business management	Start Your Timber Business (SYTB) training; all managers and 1 other staff or director
Documentation requirements (additional to those listed in Table 4)	
Land Group Incorporation documents and certificate Company / Business Group registration certificate Forest Industry Participant certificate Community Development Plan Socio-economic and environment baseline report Producer specific health and safety procedures Work related accidents records Group member training records Group certificate membership agreement Service and production agreement Pre-assessment and / or Assessment report Copies of monitoring reports Copies of Corrective Action Requests	

2.5.1. Legal processes

There are various legal processes for the formal registration of customary ownership and the establishment of a timber business in PNG that the FORCERT model sets as requirements and assists the producers with. These are Incorporated Land Group (ILG) registration, Forest Industry Participant (FIP) registration³, and registration as a business group, company or cooperative society.

³ FIP registration would normally not be necessary under the Forestry Act for FORCERT producer members, as only operators harvesting more than 500m³ round logs (approximately 250m³ sawn timber) per annum are required to register as an FIP. No producer member has yet come close to this production level. However, FORCERT anticipates

2.5.2. Organisation

The clan(s)/community must organise itself for forest management and the timber operation. Under the model, they must establish a board or executive committee to govern the timber enterprise. FORCERT specifies that the governing body must have a composition that reflects the interest groups of the clan(s)/community, with at least two women's group representatives and two youth group representatives. The producer must ensure transparency in the running of its enterprise and in reporting the costs and benefits to the clan(s)/community involved. Regular meetings between the enterprise management and its workers must be held. Of the management positions (manager, secretary, treasurer) at least one shall be held by a woman and one by a youth.

2.5.3. Planning

With support from the FORCERT business development officer, the producers develop a business plan which includes a sales revenue forecast, a profit and loss plan, and a cash flow plan.

2.5.4. Chain-of-custody

The timber operations must comply with the FSC chain-of-custody requirements to enable tracking of timber back to the source. FORCERT uses a simple chain-of-custody system with a painted number on each tree, a three-letter producer code marked on each piece of timber, and a standard daily tally form, with some additional sourcing information (tree number and species, set-up name and number, FSC group certificate number, specifications) added to a standard invoice docket.

2.5.5. Harvesting locations

The overall land use plan is used as the basis for the FSC group certification membership, which limits conversion to other land uses to a maximum of 20% of the forest area, but allows producers to include timber cut from outside the production forest area as FSC certified. After reaching FSC Certified status a producer has a maximum of three years to focus its harvesting on the production forest set-ups (see Table 6 below). This allows new producers to start cutting trees in easy accessible places, e.g. garden or cash crop areas, which are normally located close to the village, and also gives them time to organise the necessary transport for working in the normally more remote forest production area.

Table 6: Allowed production ratios in the first three years of FSC Certified status

	Production forest (minimum)	Outside production forest (maximum)
First year FSC	25%	75%
Second year FSC	50%	50%
Third year FSC	75%	25%

that the Forest Authority will put new requirements in place covering small-scale operations, hence the obligation for FORCERT producers to register as an FIP.

2.5.6. Microfinance

FORCERT has organised a microfinance loan facility for producers with PNG Microfinance. The conditions are 100% finance at a fixed interest rate of 10%, with two-monthly instalments over a three-year repayment period. The maximum loan amount is based on the cost of a portable sawmill, chainsaw and winch, which is about K75,000. A recent change made to the system is to have a flexible loan amount based on the quotation of the equipment package. Loans can also be taken for constructing tracks to transport the timber. The producers must at least be of Pre-Certified status to have access to the microfinance facility and must provide 10% of the total loan amount as an equity savings.

2.6. Service and production agreements

The model aims at having producers export their high grade certified timber via the CMUs. The yards must meet the CMU member requirements and must have signed an agreement with FORCERT to be recognised as CMUs.⁴ They are held to pay a “fair price” to the producers, i.e. at least 50% of the export price, but are expected to increase this percentage as supplies increase and their average export costs per container decline (the highest percentage paid to producers is 75%).

For producers, an important element of their relationship with the CMUs are service and production agreements. These agreements specify the obligations of producers and CMUs. The producers are obligated to supply a CMU with at least 50% of their total annual production, to a minimum of 60m³/year. The CMUs must provide support to the producers to run a continuous timber operation by:

- Organising and pre-paying timber transport;
- Facilitating the acquisition of spare parts;
- Assisting in purchase and transport of fuel, oil and other supplies;
- Training producers to grade timber;
- Training producers on timber handling and storage.

The agreements include a commitment by both parties to share information on business operations.

FORCERT’s responsibilities include facilitating information exchange between producers and CMUs, marketing (including for lesser known species), and assistance to CMUs to meet obligations specified in the agreements. FORCERT provided K10,000 to each CMU as a “stock building fund” to provide spare parts to producers, and a K10,000 revolving fund for each CMU to assist producers in starting up their operations, e.g. purchasing a drum of fuel. For CMUs without sawmilling equipment, FORCERT makes two chainsaws with cutting frames (Alaskan Mills) available for the CMU to hire out to producers. FORCERT is required to assist the CMUs to market their timber and combines the output of the CMUs to meet larger orders.

⁴ As this report is concerned with socio-economic impacts in producer villages, the certification requirements for CMUs are not described.

2.7. Assessment and monitoring

As the “group manager”, FORCERT assesses producers against the requirements of the model according to the status that they are applying for. The assessment is followed by periodic monitoring, and both assessment and monitoring involve field visits. FORCERT uses a system of minor and major corrective action requests (CARs) to rectify non-compliances. The producers must close out the CARs within specified time frames and a failure to do so could result in the upgrading of minor to major CARs, suspension or expulsion. This approach is intended to promote continual improvement of forest management and the timber operation. Socio-economic and environmental impact assessment has also been introduced as part of the model to gather information at the start of the business, and is followed up with impact monitoring every two years.

2.8. Support delivery

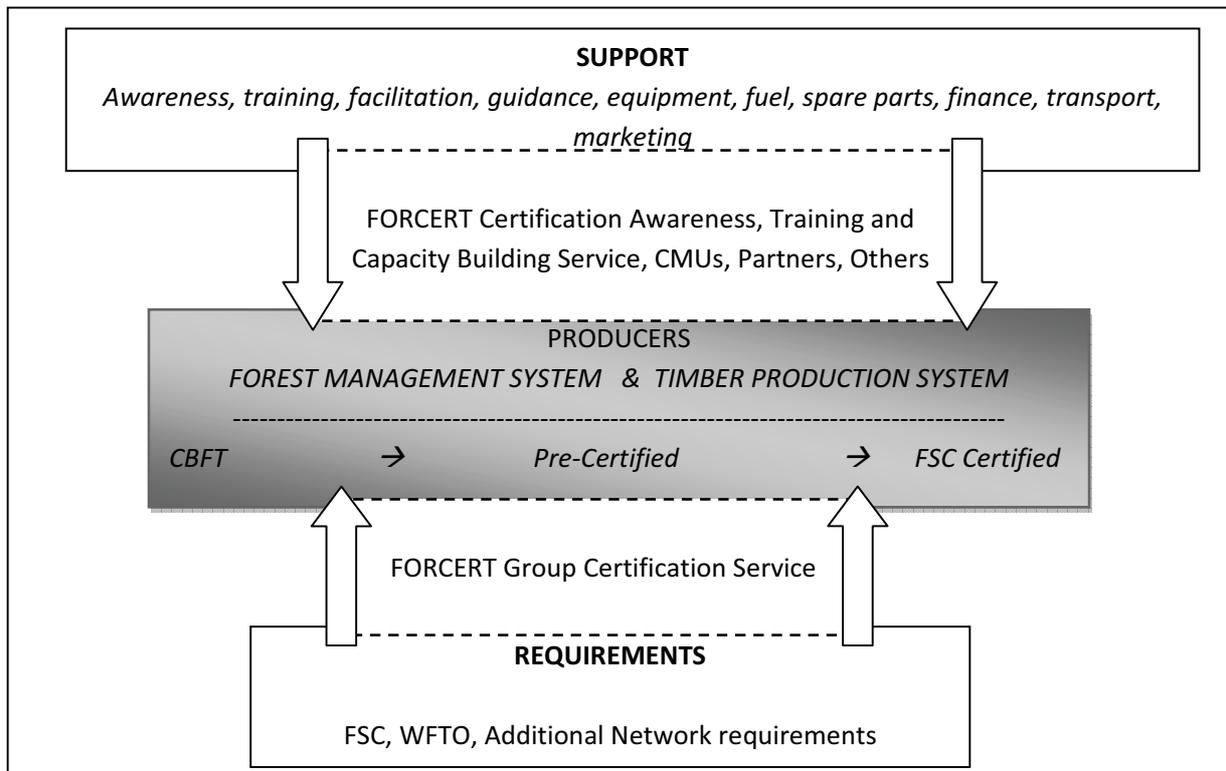
FORCERT itself has two divisions: (i) a certification awareness, training and capacity building service, (ii) a group certification service. The certification awareness, training and capacity building service delivers support services to the producers and is subsidised, whereas the group certification service manages the network and is expected to eventually be self-financing. Producers pay an annual membership fee to the network and it collects a levy on the volume of timber sold through the system to CMUs or to the overseas buyer. Annual production targets for the entire network are set according to the networks aim of eventually being self-financing.

Under the model, in addition to FORCERT and the CMUs, partners and other organisations can also provide support services to producers. Partners are organisations already involved in eco-forestry activities that are seeking “easy and affordable” access to FSC certification for the producers they support. Partners sign a working agreement with FORCERT.

2.9. Summary

The description above provides an overview of the elements of the FORCERT model that the producers directly experience. It is a complex model and many of its finer details are not described in this overview. For producers, the model can be summarised in terms of support services and requirements and in terms of a forest management system and a timber production system (Fig. 4).

Figure 4: Conceptualising the FORCERT model: Producers at the centre



3. Economic impacts

The type and extent of socio-economic impacts in producer households, clans and villages depends partly on the support they have received (i.e. how far they have progressed through the FORCERT process) and how far they have progressed with their timber operation. There is a large difference amongst the surveyed villages for both these variables. Some of the producers have only recently joined the network, while others have been part of the network for about three years. Those that have recently joined were still in the process of completing their forest management plans, while older members are much more advanced having met all the requirements for FSC certification. Two producers have not begun milling for the network and two have only milled using Alaskan Mills (chainsaw and frame). Therefore, a high degree of variation in socio-economic impacts is to be expected.

Table 7: Features of surveyed producers

Year joined	2004	2005	2006	2007	2008
No. of surveyed producers	3		1	2	2, 1 pending

Milling equipment	No. of producers
None	2
Alaskan Mill	2
Portable sawmill	5

The economic benefits from eco-forestry to the producer community and households can be in the form of cash and kind (sawn wood). They include:

- Wages;
- Sawn wood for household use and community projects;
- Honorariums paid to members of the enterprise governing body;
- Financial contributions to community.

The survey examined the disposal of timber in each village to differentiate between benefits in cash and in kind. Honorariums may be paid to the enterprise governing bodies (Board of Directors (BOD) or Enterprise Overseeing Committees (EOC)) but are typically quite small (e.g. K10/2-months) and thus were ignored.

The indicators used to understand the economic benefits of the eco-forestry for the producer communities were (i) the number of households participating in paid work under the eco-forestry operation and (ii) their income from eco-forestry. The indicators used to estimate the income of households from eco-forestry were (i) amount of income per fortnight or per m³ of timber and (ii) frequency of income (e.g. no. of weeks worked per year).

The economic impacts are determined by not only the amount of household income, but also by how this income is used. Individuals were interviewed on their use of income and their decision-making

processes. A distinction was made between productive and destructive use (e.g. excessive consumption of alcohol).

The indicators used for understanding the *significance* of the income from eco-forestry were (i) amount of income, (ii) net total income from other income generating activities (IGAs), and (iii) need for cash. For other IGAs, this required estimation of the amount and frequency of the income for each activity, including estimation and deduction of costs. The prospects for new sources of income were also considered. Providing a *quantitative* estimate of the relative importance of household income from eco-forestry (e.g. provides 50% of cash income) was not possible because (i) income flows are not consistent from year to year for both eco-forestry and other IGAs, and (ii) further fieldwork is necessary to verify figures and to provide a more complete identification and estimation of costs. Nevertheless, the quantitative and qualitative information gathered provides a good picture of the significance of income from eco-forestry to the participating households.

Table 8 records the disposal of timber in each village. There are some constants and some variations between producers in their disposal of timber. Most producers have sold timber on the local market and to the CMU. All allow villagers to collect lower grade and waste timber without controls and all have contributed timber to community projects at no cost. Some producer members sell B and A grade timber to villagers at reduced prices, or on credit, though enforcement of payment can be lax. Timber may be provided for local projects at below market prices (e.g. the Aid Post in Lau and a school in a village near Kait) and there may be considerable delay in receiving payment.

Table 8: Timber disposal, including community contribution

Village	Household use	Community use and contribution	Observations of sales records and explanation by producers
Bairaman	<ul style="list-style-type: none"> 8 permanent houses (some H/Hs paid for timber and others were given timber as part of community project). Nearly all houses constructed with some sawn timber – posts and studs. 	<ul style="list-style-type: none"> Timber provided to build church and elementary school. Money lent to H/Hs to pay school fees but not always repaid; view this loan as their share of income from the eco-forestry. Donations for church, school fees and funerals (decision by EOC). Reduced elementary school fee from K30 to K10. 	<ul style="list-style-type: none"> A-grade sold to CMU and local buyers. B-grade used by local community or sold to local market. CMU pays more for timber but producers feel that local market pays reasonable rates and buyers pay cash up front and cover freight costs. Money from sales covers costs of giving away timber. H/Hs with low income were given timber free by management. Others pay K250/m³ for 50% of the timber.
Lau	<ul style="list-style-type: none"> 7 permanent houses in 2004; 15 in 2008. 	<ul style="list-style-type: none"> Timber provided to build part of school, 4 teachers; houses, the nurse's house and the 1st aid post. 	<ul style="list-style-type: none"> Cutting for local order of 25m³; paid K4,000 in advance; claim that this was received by Chairman and never passed on to manager (not verified); another claim that for one sale the Chairman picked up the 25% outstanding, returned a small amount and told the manager to producer receipts (not verified). Local price of 700/m³ for Toun and Malas reported, but 500m³ also reported. Local buyers pay for freight. BOD decided that H/Hs could buy A-grade timber at K250/m³. B-grade timber normally donated to community projects; they may offer to pay for some of the timber. H/H given timber as payment not received for one export order.
Mauna	<ul style="list-style-type: none"> All households have received sawn timber without charge. Sawn wood used for flooring (21 houses), house frames and window frames. No permanent houses but about 6 semi-permanent houses. Timber given in lieu of 	<ul style="list-style-type: none"> Timber provided to build teacher's house, church and community hall. Cash used to pay for fuel for generator for community events. Cash used to purchase prizes for sports events. 	<ul style="list-style-type: none"> Small volumes of A-grade were sold to local buyers Some B-grade sold to Barlows Together with Bairaman and Lau, filled and exported a 20m³ container in 2007 during EFP period but were never paid full amount Sold timber to Lau Primary school on 2007 (K500/m³, A-grade) Provided timber for Sereguna Aid Post in 2006 but payment not received. Timber cut for privately owned fermenting shed in village.

	outstanding primary school fees.			<ul style="list-style-type: none"> A-grade timber recently milled to be used for one house in village. Total of 5m³ milled stored under house for 12 months. Planning on building volume to 10m³ and selling to CMU.
Tavolo				<ul style="list-style-type: none">
Arabam	<ul style="list-style-type: none"> Yet to begin timber production. No permanent or semi-permanent houses. 			
Kait		<ul style="list-style-type: none"> Price for all A and B-grade timber (all species) sold on local market was K400/m³; price was kept low as timber sold within wider community. Church donations. 	<ul style="list-style-type: none"> 12.7m³ sold to local school. Small lots of less than 1m³ each sold to buyers in local villages. 	
Baikakea	<ul style="list-style-type: none"> A grade timber sold for construction of houses in Baikakea. Sawn timber used for stairways and entrances in many houses. 	<ul style="list-style-type: none"> youths' grandstand at sports ground grandstand for school 2 teachers houses 1 classroom generator shed for church school toilets K110 donation recorded in cash book 	<ul style="list-style-type: none"> A grade timber sold for construction of 8 houses and 1 canteen in neighbouring villages – Gomu and Apupul. From March-July 2008 were contracted to supply Hargy Oil Palms, paid K 500/m³; milled 40m³ of Kamarere and Malas ; timber picked up from milling sites. During field survey were milling reject logs left in pond by Timber Services Ltd; sold to local buyers who organised pick-up for about K850/m³. 	
Minda	<ul style="list-style-type: none"> H/Hs had free access to about 3m³ lower grade timber. 			<ul style="list-style-type: none"> B –grade timber sold to local buyer who visited Minda to inspect the timber and paid in advance. A-grade timber sold by CMU to Agmark.
Tsiatz	<ul style="list-style-type: none"> Yet to begin timber production. One of their major objectives is to build permanent houses. 			

3.1. Housing

The desire for permanent houses in the surveyed villages is a strong motivation for timber milling and the supply of timber from eco-forestry for house construction is appreciated by households. The standard of housing and number of permanent/semi-permanent houses is highest for the Pomio producers (excluding Tavolo) where eco-forestry has been underway for over ten years. It is noteworthy that the number of permanent houses in Lau increased from seven in 2004 to 15 in 2008. In contrast, there are no semi-permanent or permanent houses in Minda and Arabam (at least for the sub-clan that FORCERT is working with), both new members, despite Arabam having good road access to the markets in Kokopo to trade cash crops and other produce.

A review of business records and housing suggests that there mostly has been a fairly equitable distribution of timber for local use, though further study is required to verify this. Timber has been allocated for the construction of some houses without payment, but such decisions are usually taken by the BOD/EOC and there was no indication of an unfair allocation of timber to particular households. The EOC in Lau, for example, explained that some households were charged for timber and others were not, based on the income of each household.

The timber milling is viewed as a community operation rather than a profit-driven enterprise and there is a general belief that households should have some access to the sawn wood. Social relations are such that if households have a need for sawn wood, there is an obligation for the enterprise to provide timber. A and B grade timber is sold to households in the community at below market rates and some may be given to households without charge. Bairaman explained that the money from timber sales outside the village is used to cover the costs of timber that is given away for house construction in the village.

3.2. Community facilities

In the surveyed villages the construction of community facilities is one of the most important objectives of timber milling, a fact that is reflected in the number and type of facilities that the producers have constructed, and their plans for further facilities. In Baikakea, a group of about 30 villagers identified the major benefit of eco-forestry as village projects: timber had been supplied for a youth's grandstand at the sports ground, a grandstand for the school, two teacher's houses, one classroom, one generator shed for the church, and the school toilets. The community has plans to construct further classrooms. In other communities timber has been milled for the construction of classrooms, houses for teachers and nurses, churches, a community meeting hall, and a guest house and resource centre. Communities where milling is just beginning have plans for constructing community facilities (e.g. Minda plans to construct a permanent church building and community hall). Such community facilities not only contribute to community wellbeing, their planning and construction may also play an important role in building community solidarity. This in turn builds general community support for the timber enterprise, important for its long term viability.

3.3. Assistance to households and community contributions

The table also reveals that the timber enterprises have made various contributions and provided assistance within the communities. This includes church donations, contributions towards school fees, purchase of fuel to run the generator for community events, and purchase of prizes for sporting events.

3.4. Household income

Details of wage rates and household income recorded during the survey are presented in Table 9. The FORCERT model encourages producers to pay wages for all positions associated with the eco-forestry, rather than relying on voluntary labour through social networks. In all the surveyed villages the timber enterprises have established wage rates and pay people for management and timber operations. Wages are the means by which cash flows into households from the eco-forestry business. They are viewed as a way of distributing the benefits of timber milling and as more important than the accumulation of savings by the enterprises.

The number of people in producer villages that have received payment/wages for working on the eco-forestry operation is high. For example, the Bairaman producers explained that at any one time up to 25 people may be employed for the eco-forestry. All producers have milling teams and another team to move the timber from the milling site to the timber shed. There may be more than one milling team and several teams to move timber and these rotate on a set basis (e.g. fortnightly) to allow people to attend to their other responsibilities. This increases the number of people directly participating in the eco-forestry operation.

In all the enterprises those undertaking skilled and semi-skilled work (managers, sawmill operators, etc.) receive higher wages than casuals assisting with the milling and individuals or teams employed to move the timber. The differences between wage rates for the different positions are not particularly large. They range from 75 toea⁵ – K1.5/hour for casuals through to K2-K5/hour for managers. Wage rates are similar between producers, though Baikakea provides an exception. Its wage rates are considerably higher than those of other producers (e.g. the manager is paid K5/hour, whereas none of the other surveyed producers pay more than K2/hour). This may be due to the availability of other income sources, particularly from oil palm blocks.

In some of the villages women's and youth groups exist and will hire their labour for a set daily rate. The money is retained by the group, rather than by individuals. Typically, they are paid K90-K100/day. These have been used in two producer communities to move timber, but only once or twice as production has been inconsistent. One manager stated that hiring people individually works better than hiring them as a group; with a group there are too many complaints as certain individuals from the group put in less effort or don't show up at all.

More important than the level of wages is the continuity of the work. In most of the surveyed villages production has been irregular and there have been extensive periods of non-production (see below). In

⁵ 100 toea = 1 kina.

some of the villages workers were only employed in the eco-forestry operations for a few weeks in 2007, earning only from K100-K200. With the exception of Baikakea, the milling has not been continuous as FORCERT intends. Of all possible options of increasing the economic impacts of the timber milling for producer communities, increasing wages through increasing the period of production is by far the most significant.

Because of long periods of non-production actual household income from eco-forestry is well below potential household income from a continuous milling operation. If milling was continuous and at the level of production that the FORCERT model aims for (about 15m³/month for eight months per year) eco-forestry would provide an important source of household income. This is apparent when reviewing the cash book of Lamo Auru Business Group, Biakakea. From 01 January – 31 July 2008, Lamo Auru paid out a total of K15,015.4 in wages, or 52.4% of the total income of the enterprise. For 12 days work (with hours worked ranging from 21-88), wages ranged from K52.5 to K320.⁶

⁶ NB: These are much higher wages than could be expected in remote communities and reflect the location of the village amongst oil palm plantations and its close vicinity to the town of Bialla.

Table 9: Income from eco-forestry work and management

Producer	Type of work	Payment amount/systems	Participation ⁷	Work frequency/duration - examples	
Bairaman		All positions paid according to volume	16 women and 9 men receive wages at a time		
	Milling and management	(8hr/day) Chainsaw operator and manager: K1/hour All others: 75 toea/hour	2 milling teams of 6 men	With continuous work, 1 sawmill operator earned K100/2-weeks. 1 casual labourer total earnings 2007 = K200 (4 weeks) 1 casual labourer total earnings 2007 = K150 (3 weeks)	
Lau	Moving timber	(8hr/day) 75 toea/hour Women paid K30 week for moving timber.	Teams of 6 women; 2-week shifts; 4 teams		
	Milling and management	(hourly rate)	2004	2008	
		Manager	60 toea	K1.25	5 permanent members of milling team; 14 casuals
		Foreman, chain saw operator	50 toea	K1	
	Tally clerk, yard supervisor, treasurer, secretary, buffalo driver	30 toea	90 toea		
	Casuals	30 toea	80 toea		
Tavolo	Milling		Two teams; 14 persons each	<ul style="list-style-type: none"> Only 4 weeks of production in 2007 after becoming producer member Women and youth groups can be hired to move timber; occurred only once for production during Sept.-Oct. 2007 	
	Moving timber	K90	Women and youth groups		
Arabam	Yet to begin milling				
Kait	Milling and management	(fortnightly rate) Manager		<ul style="list-style-type: none"> High participation In 2007, milling took place over 18 weeks, but wages were paid for less than 2 weeks; wages could not be 	
		Secretary and treasurer			
		Foreman			

⁷ "Participation" refers to participation in paid positions.

		Sawmill operator Casual workers	K80 K60		paid partly because the timber was sold locally within the broader community at low prices. <ul style="list-style-type: none"> • Pay in 2007 <ul style="list-style-type: none"> ○ 1 casual, K110 ○ Secretary K110 ○ Timber grader, K150 ○ Manager, K200 	
Baikakea	Milling and management	Wages range from K5/hour (manager) to K1.5/hour (casuals)			<ul style="list-style-type: none"> • Initially had two milling teams working in rotation; now only 1 as some workers are busy with other activities • Work is continuous • Wages paid 08-21/05/2008 to 9 people; hours worked from 21 – 88 hours; total wages from K52.5 – K320. 	
	Moving timber	Daily rate/K100		Women's Fellowship Group	<ul style="list-style-type: none"> • Only once. 	
Minda	Milling			Sawmill operators	Unlike some of the other surveyed villages, there appears to be no organised women's or youth groups that can be hired for community work, such as moving timber.	
				Chainsaw operators		3
				Timber graders		3
				Casuals		4 per team
	Transportation and planting of wildings			Women participate	Women paid individually, K5-K10, for moving timber	
Tsiatz	Yet to begin milling					

3.4.1. Significance of household income from eco-forestry

The relative significance of the financial benefits is determined by the need for income and income from other sources. The surveyed communities mostly rely on subsistence agriculture but expressed similar basic needs for income including school, hospital and aid post fees; basic household items such as clothes, soap, kerosene, batteries and salt; and payment of transportation fares. The importance of cash was stressed by Tavolo where girls are not schooled beyond grade ten because of difficulty in paying school fees and where deaths of women during childbirth were associated with a lack of motorised transportation to bring women to modern medical facilities (the distance to Uvol, the district town, is 20km). Cash cropping has become important in all the surveyed villages and cash is required to provide the necessary inputs such as the purchase of seedlings.

Potential sources of income outside of eco-forestry are:

- the sale of items normally used for subsistence such as garden produce, livestock, and fish;
- cash crops;
- enterprises such as trade stores;
- waged employment in and outside the village (working in towns and on plantations etc.);
- royalties from large scale logging operations.

An impression of the relative importance of income from eco-forestry was obtained in each surveyed village by:

- Listing major IGAs;
- Gathering and checking information on:
 - no. of participating households
 - the frequency and volume of sales
 - payment
 - costs.

This information is summarised in Table 10.

Table 10: Other income generating activities⁸

Village	Activity	Income	No. H/Hs or people involved	Details/observations
Bairaman	Cocoa	K70 - K90/bag wet beans K250/bag dry beans (paid by local buyer in district town of Palimalmal)		<ul style="list-style-type: none"> Cocoa introduced in 2000 and could become an important income source. Only one fermenting shed, so villages are paid for wet beans.
	Copra	K100/bag (Kokopo market); K50/bag transport costs		<ul style="list-style-type: none"> 1 H/H could produce about 3 bags/month = K150/month (not verified). No strong interest in producing copra as it is expensive to ship it to buyers in Kokopo.
	Sales at weekly village market	Max. income = K10		
Lau	Paid employment outside village		Some people working on plantations, etc.	
	Copra		8 H/Hs	<ul style="list-style-type: none"> No production
	Cocoa	2004: K50 per H/H during harvesting 9 H/Hs	9 H/Hs	<ul style="list-style-type: none"> No production in last 2 years because of weather. New trees recently planted.
	Rice	K200/harvest; 3 harvests in 2007	School project; H/Hs not growing rice.	
	Sales at weekly village market	Average income = K5		
Mauna	Cocoa	Total annual production	60-70 bags	<ul style="list-style-type: none"> Each family has block of trees;
		Payment at Palimalmal	K14,000	

⁸ Note: Further research is required to confirm some of the estimates. In particular, cost estimates for IGAs involving cash crops are underestimates as costs for transportation fares and for purchase and maintenance of inputs and equipment are mostly not deducted.

		<i>Net annual income = K11,997 (likely to be considerable overestimate)</i>			
	Copra			<ul style="list-style-type: none"> • Small amount of production but no driers in the village. 	
	Fishing			<ul style="list-style-type: none"> • Fish mainly used for barter 	
	Garden produce			<ul style="list-style-type: none"> • Only sold occasionally (a few times a year) in Uvol (20km walk) 	
	Guest House and Resource Centre	Rates: Use of Resource Centre: K300/day Accommodation: K25/night Meals: K30/day	Has been used for several training programmes	<ul style="list-style-type: none"> • 	
Arabam	Cocoa	<i>Per family annual income estimate</i>		<ul style="list-style-type: none"> • Holdings per household = 100 – 500 trees. 	
		Bags dried beans/year	16	<ul style="list-style-type: none"> • Many fermenting sheds 	
		Price per bag	K300	<ul style="list-style-type: none"> • Cocoa introduced in 1990s; 	
		Transport cost per bag	K20	<ul style="list-style-type: none"> • production has been consistent; price fluctuation = K190-K500. 	
		<i>Net annual income</i>	<i>K4,480⁹</i>	<ul style="list-style-type: none"> • Recently introduced by several families 	
	Coffee				
	Paid employment outside village		5 men		
Kait	Copra	<i>Per family annual income estimate</i>		Holdings range from 25-500 trees	
		Holdings	25 trees		
		Estimated no. of bags	30	500 trees	
		Price per bag	K150	600	
		Transport cost per bag	K12		
		Net annual income	K4,140	K82,800	
		<i>Per family annual income estimate</i>		12 H/Hs	
		Estimated average holdings	1,400 trees		
		Cocoa			Holdings range from 800 – more than 2,000 trees. Poor production in 2007 due to weather.

⁹ This figure is likely to be a gross overestimate. Figures from other villages suggest that about 2,000 trees are required to produce this many bags. If 300 trees/family is taken as the average, the annual net income might be about K630.

		Estimated production	10 bags		
		Transport cost	K50/bag		
		Drying cost	K20/bag		
		Estimated price	K300/bag		
		Net annual income	K2,300		Of the 40 H/Hs, 36 have cocoa trees.
	Mandarins	-			All H/Hs
	Paid employment				about 30 people
Biakakea	Village oil palm (VOP)	holdings	7 H/Hs 2has Others 1has		All H/Hs
		production	1.5-2 tonnes/fortnight – all year		
		Price (fresh fruit bunch) as of Sept. 08	K306/tonne		
		Gross income/H/H	K11934 – 15,912		
		Net fortnightly income estimated by 1 H/H with 1ha block	K160		
	Cocoa	Holdings	100-300 trees		Most H/Hs
	Local market sales	garden products, coconuts, sago leaves, betel nut, pepper fruit, lime, seafood			<ul style="list-style-type: none"> No fermenting sheds Interest is low as there is no market in the provincial capital, Kimbe 1 woman stated that she can earn K100-200/month selling at local market
	Paid employment outside village	K120-K2,000/fortnight			At least 10 people
Minda		Fortnightly income			
	Sea cucumber	K150			All estimates are from the Socio-Economic and Environmental Baseline Survey
	Copra	K100			34 H/Hs
	Fish	K200			34 H/Hs
	Lobster/crayfish	K320			34 people
	Trochus shell	K80			12 people
	Seaweed	K60			34 H/Hs
	Betel nut	K120			33 people
	Pepper fruit	K40			34 H/Hs

Tsiatz	Tobacco	K200	19 people		<ul style="list-style-type: none"> • Largest source of income. • Can only be conducted for 6 months of year outside rainy season.
	Alluvial gold prospecting	<i>Fortnightly income</i>			
		Size of team	3-4 people		
		Hours of work per day	5-6		
		Weight of gold collected	4-6 grams		
		Sale price per gram	K35-40 (after treatment with mercury)		
		Gross fortnightly income per person (assume 3 in team)	K47 – K80		

Based on the information in the previous two tables the relative importance of eco-forestry as a source of income in each of the surveyed villages can be summarised as follows.

Bairaman

The income from eco-forestry for households in Bairaman is significant. Copra provides income for some households but interest had been low because of the high transportation costs. Rising international prices have rejuvenated interest in copra production. Cocoa was recently introduced (2000) and could become an important income source. Some people are working outside the village on plantations and this provides another source of cash.

Lau

Eco-forestry was described as the main source of income for the community; however, milling has been irregular and there have been long periods of non-production, with two casual male labourers stating that they only worked three and four weeks, respectively, in 2007. Copra and Cocoa have recently been introduced and some people are in paid employment outside the village. Cocoa production has partly been funded by the eco-forestry operation. The cocoa seedlings were bought by the timber business, whereas the cocoa fermentary is a small local private business.

Mauna

Cocoa is the largest source of income for the community with all households having cocoa blocks and even school children having cocoa trees. With new seedlings being planted and young trees still to mature, a significant increase in production is expected. Seven people work outside the village and some send money back to their families. The eco-forestry is the second largest source of income and spin-off benefits include construction of the community cocoa fermenting shed and the purchase of cocoa seedlings.

Tavolo

Tavolo has very difficult access, being further from Kokopo, the provincial capital, than the other Pomio producers. It is connected by a mostly unsealed road to West New Britain that is impassable in the wet season. Because of its difficult access very little cash income flows into the community. The main income is from the sale of betel nut, described as "green gold", to buyers from the Sepik and the Highlands. Traders from Kimbe exchange various goods such as bush knives, clothes kerosene, soap, spades and kitchen utensils for the betel nut. Cash crops include coffee, vanilla, copra and cocoa, but none of these provide a significant income flow for the community. There is no coconut drier and of the two cocoa fermenting sheds in the village, one is dilapidated. As with the other Pomio producers, income from the sale of garden produce, fishing and pigs is small. Tavolo is the only producer village with a Wildlife Management Area and a guest house (Guest House and Resource Centre), which is mainly used for meetings, training and awareness-raising by government departments and NGOs. Income from the guest house has funded other village projects. A problem expressed by Tavolo is that the Wildlife Management Area does not provide them any income – "nil economic opportunities for the forest resources". Timber sales could provide an important source of employment and income for the community.

Arabam

Arabam were yet to begin timber production at the time of the survey. Arabam has reasonable access from the forest to the road end (a buffalo and trailer could be used), good road access to the CMU and a potentially large area of production forest, all of which are advantageous for a village-based timber operation. The clan involved in eco-forestry expects that this will be their largest source of income, but this is unlikely in the short term. All households have reasonable holdings of cocoa and fermenting sheds, and transportation to the provincial market is relatively easy. In addition, five members of the sub-clan are in paid employment outside the village and women are able to earn a significant income from the sales of their garden and other produce at the provincial market (a much greater income than women of the Pomio villages).

Kait

Production of timber has been low and irregular, though enthusiasm for timber production is boosted by strong demand for timber from the local market which has limited supply. Eco-forestry is not a significant source of income for the community as yet. Because timber was sold locally at a low price, e.g. to build a school, most of the wages for 2007 for all positions were not paid. Community members are interested in further eco-forestry work, if wages are paid and are reasonable. Kait already has several strong sources of income and eco-forestry may not become the most important income generating activity. Indicators of cash flowing into the community are fibreboard cladding and glass windows in some houses, one house with a solar power system, and six generator sets.

Minda

Lagavisi Business Group have only been milling for a short period. They lost interest in using an Alaskan Mill and were planning on purchasing a portable sawmill, with the equity provided by a local businessman (the new FORCERT CMU for West New Britain). They have found transporting the timber to the CMU (by banana boat and truck) to be challenging and are interested in selling to local buyers, from which there is strong demand. The change of CMU might stimulate their interest in exporting timber. They have a variety of other IGAs due to their relative proximity to the provincial capital, Kimbe. The timber enterprise could yet become a significant IGA and it could be very important in building capacity and motivation for other community enterprises.

Baikakea

In terms of its contribution to household economic wellbeing, eco-forestry is not so critical for Baikakea. This is evidenced by the fact that of the two initial milling teams only one remains because of other income earning opportunities. There are a number of other significant IGAs that the village participates in including paid labour, village oil palm and marketing of produce. Nevertheless, the eco-forestry generates a good income for workers and management as the operation has been continuous, production has been reasonable, and wage rates are high compared with wages paid elsewhere for semi-skilled employment (e.g. in retail outlets in Kimbe). Enthusiasm for timber milling is strong.

Tsiatz

Until recently, the main cash crop was betel nut, but because of disease and pests the palms no longer bear fruit. Alluvial gold prospecting is now the major source of cash but only provides an income of K47-K80/fortnight/person and is only possible six months of the year. All households have cocoa holdings but only sell wet beans. There is no fermenting shed in the village and there are no plans to construct one as a village project. The government is negotiating a gold mining project on behalf of Tsiatz and other affected villages. The community expects to receive royalties as part of an integrated development package that is being negotiated, but they have no investment plan and have not received external support to ensure that benefits are sustained. The only awareness raising provided on this venture was by “community relations officers” sent by the gold mining company (Harmony) involved in the development. Small-scale timber milling could be an important source of income to contribute to the payment of school fees and for travel along the river to transport goods to the market in Lae, for medical treatment, and for buying basic food stuffs and household necessities. Tsiatz has a large forest resource and transport of timber to the CMU should not present a problem (the terrain from the forest to the Watut River is flat, the distance from the river edge to the forest is only 500 meters, and timber can be floated down the river).

The eco-forestry business has provided an important source of income in Bairaman, Lau, Mauna and Baikakea. It has not been significant as a source of income in Arabam, Tsiatz, Tavolo and Minda as the first two have yet to begin milling and the latter two have only milled small volumes using Alaskan Mills. Since joining the FORCERT network, income from eco-forestry in Kait has also not been significant partly because the wood has been sold for a low price (K400/m³), hence wages could not be paid. A strong desire was expressed by workers (whether involved in the felling, milling or transport of timber) in the surveyed villages for further work, which reflects positively on the value they place on their income from eco-forestry. In Kait, some workers were interested in more work but felt that low wages were a disincentive for them.

The more remote the village, the more challenging it is to establish a viable timber enterprise. The costs of transporting timber to the CMU are higher, there are delays in securing spare parts and fuel, and it is more difficult for the CMU and the producers to communicate. However, the more remote the village, the less opportunity there is to earn cash and thus the greater the importance of eco-forestry as an income generating activity. A comparison of opportunities for women to earn income in communities with good market access (Baikakea and Yalu) and poor market access (the Pomio communities) provides a useful illustration. In Baikakea, one woman can earn K100-K200 /month selling produce at the local markets in Bialla, whereas in Tavolo women’s income is a few Kina a few times a year from selling garden produce at Uvol. In Bairaman, Lau and Mauna, women earn at most a few Kina per week by selling produce at their village markets; the communities set limits on the amount that can be charged for items.

Yalu was the most affluent village visited during the survey. Many of the houses are built of modern materials and Yalu was the only village with electricity supply. About 3% of its population works in the provincial capital, Lae. In Yalu, the “Mamas’ Group” receives K200 /day for moving timber, which they do 4-5 times/year. They explained that this is not a significant source of income and that they can earn more by selling garden produce, cocoa and copra. Yet, in remote villages this would be a very large income for such groups.

Even when timber milling has been irregular and production low, in the remote villages the household income generated through wages is valued. If continuous production is achieved, eco-forestry would provide the most or second most important source of income in all the remote villages surveyed.

3.4.2. Income use

Both individuals and groups were questioned on their use of income and their decision-making process. The results are reported in Table 11 which shows that income has mostly been used constructively according to the needs for cash described earlier. Neither men nor women described destructive uses or complained about the way income had been used. Small amounts were spent by some male workers on tobacco and alcohol, but this was never raised as excessive (either by men or women) and leading to social problems.

Unmarried men and women usually take the decision on use by themselves. Married men and women may take the decision by themselves or may consult with their spouses. One practice described is for a man to keep half the income and to give half to his wife.

Table 11: Income use and decision process

Gender/group	Decision process	Description of use
male	-	<ul style="list-style-type: none"> Food, soap, batteries, school fees
male	-	<ul style="list-style-type: none"> School fees, household items, kerosene, batteries, rice, fishing line, soap
female	-	<ul style="list-style-type: none"> Transport to hospital, goods from the market, clothing, boat fares, school fees Husbands may spend some income on socialising, but this does not occur often as alcohol is expensive
male	Decides by himself	<ul style="list-style-type: none"> Half given to family, half spent on himself (may give some to relatives) Saucepan, knife, plate, spoon, kerosene
male	Decides by himself	<ul style="list-style-type: none"> Gives 50% to his wife, half spent on himself (may give some to relatives)
male	Discusses with wife	<ul style="list-style-type: none"> Saves in bank; school fees, soap, rice, head tax, yearly hospital fee (K10/family/year)
male youth	Decides by himself	<ul style="list-style-type: none"> Spends with his girlfriend Soap, fishing line, books
male	Decides by himself	<ul style="list-style-type: none"> Gives 50% to his wife, half spent on himself Used for school fees, saving to buy timber, hospital fee, soap, rice, tobacco
single male	Decides by himself	<ul style="list-style-type: none"> Store goods
male	-	<ul style="list-style-type: none"> K50 deposited in savings account; K50 donated to church; K50 for consumption including some beer
male	Decides by himself	<ul style="list-style-type: none"> K50 donated to church; kerosene, rice, tobacco, some beer
male	Discusses with wife	<ul style="list-style-type: none"> Clothes, cocoa seedlings, food (no tobacco or beer)
Women's Fellowship Group	-	<ul style="list-style-type: none"> Banked the money in their account which they use for activities such as transport to the clinic and church activities
women's group	-	<ul style="list-style-type: none"> Kept by their treasurer with intention to contribute towards the purchase of a sewing machine or another investment

male	-	<ul style="list-style-type: none"> • Some given to family and some for alcohol and cigarettes
women in Lau	<ul style="list-style-type: none"> --Some married women decided by themselves --Some plan with their husbands --Unmarried girls decided by themselves 	<ul style="list-style-type: none"> • Clothing • School fees • Transportation fares • Medical treatment • Customs' activities/events
women in Mauna	<ul style="list-style-type: none"> --Often, both husband and wife decided together --Sometimes men and women decided by themselves --Teenage girls decided by themselves 	<ul style="list-style-type: none"> • School fees • Aid post fees • Boat fare • Feasts • Donation to church • Clothing • Food • Medical treatment • Savings in commercial bank • Men may purchase alcohol, but not often.
women in Bairaman	<ul style="list-style-type: none"> --Women decided by themselves --Both women and men plan on how to use money 	<ul style="list-style-type: none"> • School fees • Medical treatment • Boat fare

3.4.3. Distribution of income

To determine whether there has been any unfair distribution of benefits from the eco-forestry business would require further study. As noted above, there has been high participation in paid positions in the timber operation which equates with a broad distribution of benefits. During the survey it was noted that the standard of living of households in the producer communities surveyed is similar. There are a few examples where the managers have large permanent houses, but the reasons for and implications of this were not clear. The survey found no examples of unfair practices in deciding wage rates or positions. The decision on wage rates is taken by the enterprise management/governing body, whereas the positions appear mostly to be decided according to people's skills and experience and their interest in the work. In Minda, positions are partly decided by responsibilities for "customs work".

3.4.4. Household income security

An important concern for rural households is not only their amount of income, but also the reliability of income flows. It is highly desirable that households have several income sources because climatic variations and events can impact their gardening and cash cropping, and because international prices for commodities can vary greatly.

The survey indicated that eco-forestry is important to livelihoods as it adds to the diversity of income sources. Timber milling for export has several comparative advantages over some of the other sources of income that households usually rely upon. It is less vulnerable to the vagaries of climate and able to produce an income for much of the year (outside the wet season). Moreover, there is strong international demand for tropical hardwood and niche markets for certified wood products. Nevertheless, timber is not exempt from the volatilities of international trade. The global financial crisis

resulted in a relatively strong Kina against the Australian dollar, which FORCERT found meant at one stage a 20% loss in the value of export timber. However, prices have recovered and because the supply of internationally traded natural tropical timber is expected to decline as the global area of forests diminishes, prices are likely to strengthen over the long term. In contrast, international prices for common cash crops such as copra, cocoa, vanilla, are not so certain. The impacts can be seen in some of the surveyed villages where certain cash crops, especially vanilla, have been abandoned.

Another important consideration is the sustainability of income generating activities. Unlike the milling of timber under the FORCERT eco-forestry model, the exploitation of natural resources (including marine resources) to generate income may not be based on sustainable harvest estimates and production levels may thus decline over time. For example, in Minda sea cucumber provides an important source of income, but stocks could decline as a result of overharvesting, as has been experienced elsewhere in PNG.

Whether income from eco-forestry is invested in other IGAs was also considered in the survey. The only spin-off businesses noted were (i) in Lau, the purchase of 1,500 cocoa seedlings that were distributed evenly to each clan, (ii) in Mauna, the purchase of cocoa seedlings and the construction of the community cocoa fermenting shed, and (iii) in Bairaman, the purchase of cocoa seedlings. More spin-off businesses can be expected as milling proceeds and the knowledge and skills gained from the timber enterprises could be important to their success.

4. Impacts on social and human capital

When examining the impacts of the FORCERT model on social and human capital, the survey found (i) awareness and attitudes, (ii) participation, (iii) transparency, (iv) capacity building, and (v) gender to be critical issues. Impacts are discussed under these headings

4.1. Awareness and attitudes

4.1.1. Support for eco-forestry

Women as well as men have a good understanding of the objectives of eco-forestry and during group interviews expressed strong support for this form of forest management. Eco-forestry is clearly not a foreign concept being imposed on village communities; a strong sense of ownership is evident.

The producers observe the impacts of eco-forestry on their forests, their communities and their households. They have also observed the impacts of industrial-scale logging, either through the logging of parts of their forests (e.g. Kait and Baikakea), the participation of some of their men in logging operations (e.g. Tavolo and Lau), or logging that is taking place in nearby forests (e.g. Arabam). Men and women support eco-forestry over industrial-scale logging, explaining that with eco-forestry they are in control of forest management, it results in better management of their forests and conserves their natural resources outside forests, it provides new knowledge, skills and employment opportunities, and it generates income in cash and kind for households and the community. They perceive some comparative advantages of industrial-scale logging over eco-forestry, but they do not want their forests to be managed and logged by companies. The women of Kait, where forests were selectively logged along the coastal strip, do not want to see the logging companies return. The Baikakea resource owners successfully opposed logging in their forest by the Malaysian company Technical Services Limited, which they argued was not complying with forest regulations, nor the logging and marketing agreement. The Tsiatz landowners explained that plans for the Watut Ongga Waffa Forest Management Agreement included their forest, but that the village took action and had this removed, claiming that there was insufficient consultation. Tavolo reported that they are being assisted by the Centre for Environmental Law and Community Rights (CELCOR) in a case against Active Forest Limited, which is logging in a Timber Rights Purchase area close to the village. The case is over the use of sands by the logging company for road maintenance without seeking rights from the resource owners for the removal of the sand.

Women provide additional reasons to men for supporting eco-forestry over industrial-scale logging (Table 12). They stress their concern for the safety and wellbeing of young girls, unwanted pregnancies, migrants, and having their sons finding paid work in the village. The following table lists the views of women that were recorded in some of the surveyed villages.

Table 12: Women’s views of eco-forestry under the FORCERT model and industrial-scale logging

<p>Lau</p>	<p>Views of eco-forestry</p> <ul style="list-style-type: none"> • Provides employment; • Provides timber for housing (not all benefited); • Income for clothing, school fees, transport, medical treatment and customs’ activities/events; • Forest and its resources continues to exist; • Does not impact fish in river or sea; • No migrants; • Management of forest by community; • Community owns the forest = no interference.
<p>Mauna</p>	<p>Views of eco-forestry</p> <p>Advantages</p> <ul style="list-style-type: none"> • Land use plan for good management of forest; • Contributes a little to meeting household needs (satisfied with this); • Timber for house, schools, church, etc.; • No destruction of forest, rivers, lakes, creeks, sea and village = healthy village life; • No destruction of ancestors’ burial places; • No unwanted pregnancies; no social problems; • Spiritual beliefs of women are strong and remain strong; • Received training on use of sawmill; • Buffalo reduces their workload; • Has involved all other organisations. <p>Disadvantages/problems</p> <ul style="list-style-type: none"> • Not enough buffalos; • No tractor. <hr/> <p>Views of industrial-scale logging</p> <p>Advantages</p> <ul style="list-style-type: none"> • Royalties; • Access for marketing garden produce and cash crops; • Opportunities for transport (sea and road); • Bridges and roads; • Timber for houses and schools. <p>Disadvantages</p> <ul style="list-style-type: none"> • Large logging companies would bring destruction to our forests and leave; • Landowners stopped logging operations because it spread pornography; • Social problems: <i>raskols</i> (criminals), alcoholism, prostitution; • Pollution of environment; • Affects community spiritual and religious interests and beliefs.
<p>Tavolo</p>	<p>Views of eco-forestry</p> <ul style="list-style-type: none"> • Major expectations from eco-forestry are (i) housing improvements and (ii) income to pay for their children’s school fees; • Expect income from eco-forestry to be significant as transportation difficulties reduces prospects for cocoa and copra, and while eco-tourism could be lucrative, it is unproven; • “FORCERT brings new knowledge about learning to take care of our resources/and improves our village standards. Our young men can stay back at home to work on the timber milling”; • Are happy that the eco-forestry provides new opportunities and knowledge to them as they do not have other significant means of income; • Want to work with the timber project. <hr/> <p>Views of industrial-scale logging</p> <ul style="list-style-type: none"> • Has destroyed the forest and damaged the rivers and sacred sites;

	<ul style="list-style-type: none"> • Some men in the village work for the logging company, but women don't see benefits from this; • The men spend their money on drink which leads to fights.
Arabam	<p>Views of eco-forestry</p> <ul style="list-style-type: none"> • Protects the environment; • Receive education on forest management; • Involves women; • Manage our own business; • No migrants.
Kait	<p>Views of eco-forestry</p> <p>Advantages</p> <ul style="list-style-type: none"> • Youths would work within the community (encouraged and engaged youths in eco-forestry); • Earning opportunities for the men; • Buffalos; • Awareness of environmental conservation issues; • Registering of clans as ILG; • Good forest management; • Ability to sell own timber; • Establishment of safety rules; • Education and skills enhancement; • Engaged three women in specific roles in the business; • The boys learn the different species of trees and their numbering; • Permanent buildings for the community; • Provided timber for schools. <p>Disadvantages and problems</p> <ul style="list-style-type: none"> • People carried the timber when the buffalos were not available; • More management training and sawmilling operators needed. <p>Observations of industrial-scale logging of their forests</p> <p>Advantages</p> <ul style="list-style-type: none"> • Permanent houses for landowners; • One classroom constructed with cement; • Women received loans based on the royalties which they used for trade stores, etc. (but were not able to repay); • Roads (these are now impassable by vehicle but are used as walking tracks); • Easy access for gardening; • Work opportunities; • New experiences with diet. <p>Disadvantages</p> <ul style="list-style-type: none"> • Destruction of rivers and river ecology; • Destruction of forests; • Destruction of sea; • Not conducted according to the agreements between the landowners and the company (e.g. no operations on Sundays); • No reforestation; • Roads quickly deteriorated; • Floods destroyed gardens; • Fatherless children, unwanted pregnancies; • Forest used as dumping sites; • Alteration of ecosystems: invasive species, snails, karapa, vines and weeds with thorns; • Not all the community benefits in terms of royalties and permanent houses; • Oil spills.

A few examples of disagreement over aspects of the eco-forestry were recorded and indeed are to be expected. No examples of eco-forestry leading to use of the village court were recorded.

4.1.2. Understanding of the FORCERT model

Concerns have been raised that forest certification is a rigid and complex instrument that does not reflect local specifics and needs of communities. NGOs and other proponents could be forcing forest certification on communities who do not understand its full implications and costs. The findings of the survey do not support this contention. Producers were able to describe eco-forestry and the FORCERT processes that they had been involved in well. During observations of the set-ups individuals were able to explain why particular trees would not be felled and showed interest in checking trees against those listed in their inventories. Producers also provided good explanations of their land use maps and forest management plans. The following passage from a funding proposal developed by Tavolo indicates good understanding of the FORCERT model, especially for a new member.

There are collectively groups of men, women and youth who have attended sawmill operation courses and who work with small sawmills and receive full SYTB [start your timber business] and IYTB [improve your timber business] and eco-forestry sawmill and forest management training from FORCERT of Walindi . . . Further interest was boosted when the feasibility survey was conducted from July 2008 by FORCERT Walindi . . . The support of survey of forest was cooperatively done by FORCERT, Greenpeace, and FPCD [Foundation for People and Community Development] with the selected men and youths in Tavolo ward. . . FORCERT has assisted us to form the directors, registered the Business Group and open up an account at microbank in Kimbe. They will give advice and provide assistance from time to time until we are fully established . . . FORCERT extension officer . . . will carry out field supervision for all operations of the sawmill project. The project management fund will be managed by the project management committee and finance officer. They will be audited annually by FORCERT . . . the project is for the community as we got enough technical and managerial know how from the FORCERT project officers.

4.1.3. Attitudes to development

A proactive attitude towards development is essential for the creation of self-reliance. For landowners that hold a commercially valuable resource, there is always the risk that their attitude towards development will be passive, i.e. they place their development hopes on royalties and other benefits from the exploitation of their resource by external commercial interests. The history of development in PNG is replete with examples of resource exploitation projects that provided short-lived benefits to the resource owners, who, dissatisfied with the outcomes, are left complaining that the holders of the exploitation rights failed to uphold their contractual obligations.

FORCERT appears very sensitive to this issue and has taken care to ensure that its support services are not viewed as charity. Under the model, the producers must either purchase or lease equipment and are required to purchase fuel and spare parts. FORCERT is not directly involved in financing the producers; rather, it provides finance for the CMUs to provide production support to producers and has organised a credit line through PNG Microfinance for producers to purchase equipment or construct access tracks.

Isolating the impacts of the model from other influences on the attitudes of communities was beyond the survey. Nevertheless, a proactive attitude towards village development was apparent in most of the surveyed villages (Mauna and Tavolo, in particular; Arabam, Minda and Tsiatz, less so) and no examples of communities expecting or requesting charity from FORCERT were recorded.

4.2. Participation

Participation is important for (i) building a sense of community ownership for the eco-forestry, (ii) ensuring that benefits are shared amongst the community rather than being captured by a few individuals, (iii) building capacity for eco-forestry and other forms of enterprise across the community, (iv) building enthusiasm for other community development activities and projects, and (v) ensuring transparency.

Overall, the survey found participation to be high both directly and indirectly in the timber operation as well as the processes to establish the land use map and forest management plan (including set-ups and inventories), the legal processes for the timber operation, particularly landowner group incorporation, and the governance of the timber enterprise. Strengths of the FORCERT model are its requirements for broad participation and agreement.

4.2.1. Land use map and forest management plan

FORCERT's land use mapping guidelines stress the importance of participation and ownership. The guidelines state that the process must begin with a village meeting to explain and discuss the purpose of forest management and land use mapping. The mapping exercise starts with the landowners listing what the land provides to them as well as its other values. They then draw a map on the ground, which includes zones (gardens, production forests, conservation forest, etc.) and the location of sites important to them, e.g. hunting areas and religious sites. They next transfer this on to a topographic map, which is discussed at a second village meeting. If there is general agreement on the map, it is put on public display in the village and the agreement is sealed with a feast. The guidelines require the map to be reviewed after one year at a general meeting and provide instruction for revisions if the landowners consider these necessary.

All of the surveyed villages have land use maps and it appears that the FORCERT guidelines were followed in creating the maps. As intended, participation in the mapping appears to have been high and there is a strong sense of ownership. The Baikakea producers explained that by using sticks and leaves on the ground everyone could participate in developing their land use map; in Kait, where society is matrilineal, women described the tracing of genealogy as their contribution to the land use mapping; in Arabam, the producers explained their first draft of the land use map and its need for further elaboration.

The land use map, as a product, has become quite an important tool for the communities. It may take on special value in communities with expanding populations that do not have customary rules to mitigate increasing human pressure on land and resources. In the process of drafting their land use map,

the Tavolo producers decided to reduce their garden area as gardening had resulted in extensive forest clearance. The Arabam producers explained that they have no customary rules to control the expansion of garden areas and that their land use map would be used for this purpose. In Kait, the producers explained that FORCERT has various guidelines for the land use mapping and acknowledged that they were establishing gardens too close to streams and rivers.

The land use map also provides a tool for responding to external threats and opportunities. During the survey in Mauna, the Memalo movement had organised a regional meeting to promote the development of a logging concession and some *wantoks* (kin) living in neighbouring villages travelling to the meeting were staying overnight in the village. There was pressure on Mauna to agree to the concession as some of their *wantoks* in other villages wanted the road that the concession promised. However, the Mauna community told the Memalo representative that they would not sign any agreement unless assurance was first given that their land use plan would be respected; the representative had not returned. In Kait, the resource owners took a similar position when they informed government officers promoting village oil palm that they would refer to their land use map.

Participation in other elements of the forest management plans, such as forest surveys, has also generally been high, though some variation was observed (Table 13). Indirect participation is also important as the community must organise itself to cover the regular responsibilities of people involved in the surveys and must provide them, as well as the extension foresters, with food.

Table 13: Participation in forest surveys

Kait	10 men; 4 women
Arabam	4 men (1% survey); explained as undertaken during a busy period, hence not many people could participate
Tavolo	About 22 men (set-up establishment)
Baikakea	15 men
Minda	Most men
Tsiaz	9 men (1% survey)

4.2.2. Landowner group incorporation

The Land Groups Incorporation Act 1974 provides a process for the legal recognition of customary landowning groups. The process involves describing the customary qualification for and determination of membership, recording of group members, and membership of the controlling body of the land group and its responsibilities and actions. It gives legal recognition to customary claims and in doing so gives the customary landowners the power to:

- Acquire, hold and deal with user rights over the land, in a customary manner;
- Use and manage its land and enter into agreements to use and manage its land;
- Borrow money for its land development; and
- Distribute or apply any products, profits or income from its land.

To be carried out properly the process can take a long time as it requires the participation of all those with customary resource claims, which can include people outside the village. If conducted properly, as

a process and a product ILG could make a critical contribution to social capital with benefits that extend well beyond eco-forestry. No indication of FORCERT rushing this process was observed.

4.2.3. Governance of the timber enterprise

FORCERT specifies that the governing body must have a composition that reflects the interest groups of the clan(s)/community, with at least one women's group representative and one youth group representative. This is an important requirement with implications for participation, transparency, and benefit sharing. The survey noted how this requirement is translated to reflect the interest groups of each community, for example:

- Kait: the Board of Directors consists of representatives from church, youth, and women's groups, and from the ward and each clan, plus the councillor as its chairperson, to give a total of seven directors;
- Tavolo: the directors are representatives from each of the eight landowning clans and include several women;
- Mauna: the Enterprise Overseeing Committee has 15 members consisting of representatives of all nine clans, the community representatives, the women's representative and the education representative.

In terms of village social capital, the governing body of the timber enterprise could be important as it gives the village experience with a representative body for organising village-level enterprises and projects. This experience could be particularly important to villages that have not organised themselves for village projects. Eco-forestry could provide large development dividends in Arabam, Minda and Tsiatz, where producers explained that eco-forestry is their first experience of a community-wide development initiative.

4.3. Transparency

Transparency is important to constructing social capital and is especially critical in community settings where more than one clan participates in a business venture. When operations are not transparent, there is always a risk that individuals will direct benefits towards themselves or their clans. Transparency is particularly important to timber enterprises established under the FORCERT model as these often involve the participation of more than one clan. Moreover, the timber enterprises have experienced various problems that affect those directly involved, such as the delayed payment of wages, and all affected by the timber operation need to have a clear understanding of the nature of such problems.

The FORCERT model includes a number of elements to promote transparency. As part of its agreement on joining the network, the producer commits to ensuring transparency in the running of its enterprise and in reporting the costs and benefits to the clan(s)/community involved in and affected by its operation. The producer commits to holding regular meetings between management and workers. The producer monitoring forms used by the extension foresters include checks on directors meetings and meeting minutes; work-management meetings; general village/clan meetings related to the enterprise

and meeting minutes; whether book keeping is complete and up-to-date; sales records; and financial reporting to the community.

Due to the limited duration of the survey it was not possible to gauge the degree of information exchange between enterprise management and others in the community. The following observations suggest that transparency is reasonable:

- No complaints were heard during the survey about the operation of the timber enterprises, except in Lau.
- The enterprises books are checked by the FORCERT foresters during their monitoring visits. Others involved in the enterprise sometimes use this occasion to look through some of the records.
- FORCERT foresters point out problems with book keeping and assist with making the necessary corrections.

Lau provides a useful illustration of what can happen when operations are not transparent. The Chairman was not calling meetings of the Enterprise Overseeing Committee and the Gogomate Development Corporation was not holding regular meetings with workers to report on the business. Consequently, there appeared to be insufficient awareness amongst the community of the activities of the enterprise and its financial performance. During the survey in Lau one women's group delivered a letter to the manager of Gogomate Development Corporation requesting that he stop the milling operations. This was the second such letter received by the manager.

FORCERT had already picked up on this lack of transparency during monitoring and issued a CAR, which was not dealt with, and together with another Major CAR on non-supply to the CMU became reasons for suspending Gogomate Development Corporation from the certification network. The manager in Bairaman was also given a Major CAR on inadequate reporting to Board and community as well in 2007 but closed this out. These examples indicate that FORCERT takes the issue of transparency seriously and will take action when its requirements for transparency are being ignored.

4.4. Capacity building (human capital)

Capacity building must be integrated into any programme that seeks to build village self-reliance through livelihood creation using non-traditional production methods or services. Capacity building is a central element of the FORCERT model as can be seen in the training requirements set for CBFT, Pre-Certified and FSC Certified status. A strength of the FORCERT model is that the training is provided by experts from specialist organisations.

A number of observations suggest that capacity building through FORCERT support services is having an impact. First, the timber operations are ongoing and equipment is being used for its full life and beyond. The producers are competent in using and maintaining the equipment (chainsaws, portable sawmills and buffalos) and are able to mill to the specifications ordered by international buyers. When quality has been raised as an issue by buyers, FORCERT has organised further training. Second, though the standard

of record keeping differs between producers, the records of each enterprise contain a wealth of information on production, costs and sales.

Although with/without analysis was not part of the survey design, it is likely that production would not be sustainable without the training support provided. A major problem of the agreements negotiated for logging concessions in PNG is that they provide benefits to local communities in various forms (what may be viewed as a type of “cargo”), but usually no capacity building to sustain these benefits. During the survey, an example noted was the “gifting” of four vehicles by a logging company in the Cape Orford Concession to four villages. One of these was observed in a state of serious disrepair in the village of Maskikilir and the other three were also reported to be in a similar state, despite only being a few years old. A contrasting example under the FORCERT model was an initiative taken by the Kait producers to repair a portable sawmill owned by the local government and unused because of inadequate maintenance. The Kait producers procured the necessary parts, successfully repaired the sawmill and were using the mill at the time of the survey.

4.5. Gender

Gender is an important consideration when assessing the impacts of any development intervention as (i) there can be significant differences in impacts on men and women and (ii) the performance of the intervention depends on the way in which it engages with men and women. In undertaking an assessment of gender impacts under the FORCERT model two points must be kept in mind. First, while development interventions should be sensitised to the disadvantaged social position of women, any attempt to suddenly transform gender norms is likely to be met with hostility. Second, expectations of how the FORCERT model can assist women in promoting their interests must be realistic as it is a model directed at the promotion of eco-forestry, not at the emancipation of women.

Nevertheless, it is desirable that the FORCERT model reflects the needs and aspirations of women within its limitations for at least two reasons. First, the eco-forestry operations could place further burden on women or impact negatively on their activities (e.g. in Lau, some women complained of buffaloes damaging their gardens). Second, full participation of women in the eco-forestry would provide them with new types of opportunities and could improve forest management and strengthen the timber enterprise by drawing on their ideas, energy and talents. Some effort to reflect gender concerns in the FORCERT eco-forestry model has been made. There must be two women’s group representatives in the governing body of the timber enterprise, one amongst the management executives, and one as a signatory of the business account(s), and the socio-economic and baseline survey considers women’s involvement in the eco-forestry and whether it has opened up new opportunities for them.

4.5.1. Differences and commonalities observed between the study villages

The survey recorded significant differences in the position of women and in how women view their position between the study villages. In some villages women were keen to assert that they are involved in community decision-making. They explain that a women’s representative is elected as part of the village governance body and is required to attend various community meetings. They consider that

women's participation in decision-making is important for events in their religious calendar, customary ceremonies, managing deaths, and bride-price payment. They do not appear to view themselves as disempowered, though it would be misleading to suggest that there is gender equity in terms of opportunities, personal security and participation in all community decision-making processes. In other communities women view themselves as somewhat powerless to deal with social ills (e.g. women in Arabam and Kait felt powerless in dealing with reports of incest and rape).

4.5.2. Women's awareness and support for eco-forestry

As explained above, women in the surveyed villagers are strong supporters of eco-forestry and perceive additional benefits to men, such as providing employment for young men in the village. Understanding their awareness of all aspects of the eco-forestry would require further research, but it is likely not to be high in activities that they do not directly participate in (e.g. depending on the village this could be planning the set-ups, tree felling and milling, and financial management of the timber enterprise).

4.5.3. Participation

Women's participation in the various activities under eco-forestry differs between the surveyed villages (Table 14) but a general sexual division of labour and management can be observed. Men are mostly responsible for the forest surveys and establishing the set-ups, as well as tree felling and timber milling, and men hold most of the executive positions in the business groups and in their governing bodies. The involvement of women is most apparent in the carrying, stacking and loading of timber, though some women explained that they participated in the land use planning and ILG processes and four women in Kait participated in forest surveys.

In the surveyed villages almost all the enterprise management positions are held by men and in all cases men are the managers. In two of the villages young women held the positions of treasurer (Kait) and secretary (Baikakea), but worked under the instruction of strong male managers.

The FORCERT model requires two women's group representatives in the governing body of the timber enterprise. An external FORCERT evaluation termed these "token positions", without providing any evidence to support this statement. While this issue requires further empirical research, observations made during the village surveys suggest that these are not all merely token positions. One of the two women who sit on the Board of Directors of Tavolo Timbers Business Group stated that they have a good chance to speak at board meetings. In other cases, women may not have the confidence to express their views (e.g. the two women in the governing body of Kait Business Group explained that at meetings they have ideas to express but do not always speak out). While representation is not sufficient in itself to achieve empowerment, it is a necessary step towards empowerment.

Table 14: Women’s description of their participation in eco-forestry

Village	Activities
Bairaman	<ul style="list-style-type: none"> • Move the logs for milling. • Stack timber for export. • Women representative to be shortly established.
Lau	<ul style="list-style-type: none"> • Women sometimes take part in the eco-forestry meetings, but not often (a CAR that Lau faced was a failure to hold regular meetings). • Moving timber from set-up to storage shed. • Moving portable sawmill to set-ups. • Clearing buffalo tracks. • Clearing for tree felling. • Some women selected to fetch spare parts from Mauna or Kokopo.
Mauna	<ul style="list-style-type: none"> • Two women with children and a teenage girl were selected and trained in sawmilling. Women operate the sawmill and one manages the buffalo during the loading and unloading of timber from the trailer. • Move timber to the shed with the aid of buffalos. • Stack the timber. • Mover timber from shed to boat. • Cook for the workers.
Tavolo	<ul style="list-style-type: none"> • Women were not involved in the 1% forest survey. • Two women are directors of Tavolo Timbers Business Group. • The “Mama’s Group” was hired to carry timber on one occasion.
Arabam	<ul style="list-style-type: none"> • Women did not participate in the forest survey.
Kait	<ul style="list-style-type: none"> • Carrying timber. • Discussions on business, ILG and land use plan. • Tracing genealogy (<i>stori tumbuna</i>). • Two women representatives are often involved in the governance of the timber enterprise. They have things to say in their minds but do not always express their views. • One women is an executive member of the enterprise (treasurer). • One teenage girl will be trained to operate the sawmill.
Baikakea	<ul style="list-style-type: none"> • Only men participated directly in establishing the one set up. • Women participated indirectly by cooking for FORCERT staff during their visits. • One young woman is the Secretary of Lamo Auru. • The Women’s Fellowship Group was hired for one day to move Kwila and Walnut sawn wood. • There are three women on the BOD: the chair of the Women’s Fellowship, a teacher and an employee of the Fisheries Department.
Minda	<ul style="list-style-type: none"> • Moved timber. • Prepared lunches.

While men are usually responsible for milling, Suli Timbers in Mauna presents an exception. Initially, women were only clearing the tracks and carrying the timber, however Suli Timbers decided to provide other opportunities to women as the introduction of the buffalo and trailer reduced the amount of work available to them. At the milling site women were initially only moving the freshly cut timber from the log to the pile, but they were given the task of operating and setting the mill. In Kait, one young woman is now also being trained in sawmilling.

Two other points that need to be considered are indirect participation and the additional burden that eco-forestry could place on women (Table 15). Women contribute directly to the eco-forestry and indirectly by cooking for workers and taking on some of the regular responsibilities of men. Women did

not describe this work in terms of an additional burden, but instead explained these activities as their contribution to the eco-forestry and they wanted this to be recognised.

Table 15: Women’s statements on their workload resulting from the eco-forestry

Bairaman	<ul style="list-style-type: none"> • Still have enough time to fulfill traditional responsibilities
Lau	<ul style="list-style-type: none"> • Difficult to move timber. • Women (young and old) are spending less time on their traditional work duties because of the eco-forestry; women work on the timber operation in teams of 6 and rotate each week to spread the workload.
Mauna	<ul style="list-style-type: none"> • The amount of work for women in eco-forestry declined after the introduction of the buffalo and trailer. • Have sufficient time for traditional responsibilities
Tavolo	<ul style="list-style-type: none"> • As certain days are organised for various activities in the village, e.g. for gardening, fishing, church activities etc., women have a system for working on eco-forestry. • Do not view the eco-forestry as a burden. • Did not find the transportation of timber to be so difficult as they could float it down the river.
Baikakea	<ul style="list-style-type: none"> • Carrying timber is hard work.

4.5.4. Financial benefits

In all communities women have their own informal economies and women usually sell produce on their local village market. In remote villages, their weekly income is very small (a few kina), whereas in villages with good access to larger centres (district/regional towns), this income can be quite significant. Buying produce in bulk from central markets and then reselling locally in smaller lots is an important part of the informal economy of women in Kait and was also described in Mauna. The income of women from eco-forestry adds to their total income and adds to the diversity of their income sources. The amount that women have earned through eco-forestry is small because of long periods of non-production, but in remote villages they value this income and in the surveyed villages women stated that they mostly have control over how this income is spent.

5. Discussion

The FORCERT model to meet certification requirements by eco-forestry businesses supports communities to take command of their development, in striking contrast to the popular attitude of waiting and hoping for benefits from government negotiated logging and mining projects. Through awareness raising, practical training, expert guidance, and tailored inputs and services, the model builds the capacity of communities to manage their forests according to internationally recognised standards, and to plan, manage and operate a sustainable timber business. This approach builds on the experiences of earlier eco-forestry programmes but has taken large steps forward from these, particularly towards establishing self-reliant village-based timber enterprises. The model contains a number of innovations – service and production agreements, stepwise approach, microfinance, national application of one FSC group certificate – that offer important instruction for how forest certification can be made more accessible to communities in ways that build their capacity to manage forest for multiple purposes, including production, and to establish and manage village enterprises based on “modern” business principles. While the model has underperformed with regards to the projected production volumes and the volumes of exported timber, total annual production and export volumes are increasing and are in fact much larger than volumes produced under other FSC certified eco-forestry models applied to natural tropical forests in the Asia-Pacific region.

Positive economic impacts recorded were the use of wood by households for housing etc., community projects and income through wages. Even when timber milling has been irregular and production low, in the remote villages the household income generated through wages is valued. If continuous production is achieved, eco-forestry would provide the most or second most important source of income in all of the remote villages surveyed. Of all possible options of increasing the economic impacts of the timber milling for producer communities, increasing wages through increasing the period of production is by far the most significant.

In terms of development outcomes, the model has implications that extend well beyond eco-forestry for the development of self-reliant, vibrant villages. There are various processes within the model that make an important contribution to social capital, including community capacity to explore further business options, and capacity and solidarity to respond to external threats. The FORCERT approach to building community self-reliance through awareness, capacity and institutions, could be particularly important for communities that have not organised themselves to undertake village projects or to plan at the village level for their future development.

FORCERT is a young organisation with experienced and dedicated staff. The model is facing a number of challenges and the discussion below presents some reflections and suggestions that could be useful for FORCERT staff, donors and other stakeholders in developing strategies to meet these challenges.

5.1. Patience needed

Time is required for both the FORCERT model to be fully tested and for the producers to test and strengthen their timber operations. The FORCERT approach introduces modern business thinking and practices into a village context in which economic relationships are defined in terms of subsistence livelihoods, some trading, social networks and cultural obligations, rather than a motivation for profit. Introducing a modern business instrument in the form of a contract with an outside party which the village had no former relationship with is proving to be challenging, though should be viewed as important to capacity building. The service and production agreements are a very innovative feature of the model and deserve further testing and refinement.

Even though the performance of the timber enterprises may be below expectations in some areas, the long term development outcomes that are derived from the slow process of developing, testing and improving a village enterprise could be significant. Mistakes and failures are to be expected. Not only should the ongoing refinement of the FORCERT model be based on a learning approach, but the management and operation of the timber enterprises by the producers should also be viewed as integral to their learning. A key strength regarding the implementation process is that FORCERT takes the attitude that it should allow producers to learn from their mistakes and should limit its intervention. What appears to an outsider as a simple problem with a simple solution may in fact be intractable and require solutions to be developed through local processes at local speeds. Long-term guidance from FORCERT through monitoring and its facilitation of support delivery under the service and production agreements is critical.

The key message is that the targets set by the network to achieve financial self-reliance should reflect the fact that the model emphasises learning and that learning involves mistakes and takes time. The annual production targets and target year for achieving financial self-reliance need to be reasonable.

5.2. Monitoring ability of producers to secure equity for microfinance

Microfinance is an important innovation of the FORCERT model that could significantly increase total annual production of the network and build a sense of self-reliance amongst the producers. A condition of the microfinance is that the producers provide 10% of the equity and this is understandable as a means to ensure commitment. The model assumes that during the CBFT stage the communities without portable mills or the means to secure one will be willing to mill using a chainsaw and frame and will be able to save the equity required to access microfinance to purchase a portable sawmill. This assumption may need to be reconsidered as none of the surveyed producers are enthusiastic about using a chainsaw and frame. Tavolo is a particularly striking example as the producers stated that they were not prepared to return to using a chainsaw and frame yet, despite their enthusiasm for eco-forestry, and could not see how they could secure the 10% equity.

The FORCERT business development officer should monitor closely the time it is taking for producers to secure equity and any reasons for long delays. FORCERT could consider an alternative approach for producers who cannot secure the equity through no fault of their own.

5.3. Providing further incentive for international sales

Communities sell much of their timber locally because of social obligations, their need for quick turnaround of cash, and because the costs borne by the community for exporting timber can be numerous and considerable. One option to secure timber for export is to establish a third pool of funds within the CMUs to pay a deposit on the timber once notification of production from the village is received. The deposit would be paid to producers once they have stacked the timber in their sheds for drying. Problems that can be foreseen are the difficulty of verifying that the timber has been milled, the likelihood that regrading by the CMU will result in a lower timber value than the producers estimate, and the risk that producers cannot keep the timber secure or will ignore any agreement and sell the timber to another buyer. Nevertheless, this option is worth testing as paying a deposit could satisfy the need of producers for a quick cash turnaround to pay wages and to purchase inputs, which is one of their major reasons for selling locally. This option could first be tested with one CMU that is performing well but is not receiving supplies. It would also have to be applied very judiciously only to producers that appear likely to uphold an agreement with the CMU.

This option could also encourage air drying, which would further increase returns to producers. Air drying is mostly not practiced, despite some of the producers having constructed well-built sheds for air drying and storage, because of their need for cash.

Another observation that deserves reflection is that fact that Lamo Auru does not air dry timber because of its need for cash to service its microfinance loan. The FORCERT business development officer should closely monitor how the servicing of microfinance is impacting on various aspects of production, such as milling sites and sales. The microfinance is only a recent addition to the model but it will be important to monitor whether (i) in servicing their loans the producers are able to meet the network's requirements for the percentage of timber from set-ups, and (ii) the turnaround of cash from sales through the CMU is quick enough to meet the 2-monthly repayments.

5.4. Closing meetings for monitoring

FORCERT requires the extension foresters to share the tentative outcomes of the certification monitoring at a "small closing meeting" at the end of monitoring visits. However, because near the end of the monitoring visits the extension foresters are usually busy writing their reports, which they must handwrite in duplicate, proper closing meetings are not always organised. The forester sometimes only discusses the monitoring outcomes with the business manager and at small closing meetings only men are sometimes present.

To promote transparency and participation, FORCERT should stress the importance of holding a closing meeting to its foresters and encouraging participation of men and women in this meeting. It could be particularly worthwhile calling the community together (not just a "small closing meeting") to discuss major CARs when a producer is heading towards suspension. This is an opportunity for the forester to explain that the situation is becoming critical and that to stay in the system the community will have to make changes. The meeting would promote transparency and understanding of the problems that the

enterprise is facing, though must be handled carefully as tensions could arise. The FORCERT guidelines advise the foresters to “Bring nicely what was wrong and praise what was good” should be kept in mind.

One pragmatic way to reduce the time that the foresters spend on writing the CARs would be for them to take digital images of the CARs, rather than requiring that they be written in duplicate. If there are concerns about losing the digital images, the foresters could carry an extra memory card and save two electronic copies on separate cards, or carbon copies could be produced. Reports would still have to be drafted on return to the office and the typed version of report would still have to be sent to the FORCERT manager for comments and final approval. As the main results of the monitoring, the written CARs are given to the producer at the end of the monitoring visit, whereas there is less urgency in getting a copy of the monitoring report back to the producer.

5.5. Producers as CMUs

Another option to increase exports and returns to producers is to support producers with the interest and capacity to establish themselves as CMUs. This was only noted in one case, Lamo Auru, and therefore a major revision of the model is not being suggested.

Lamo Auru’s business management structure diagram shows its current structure as well as its planned CMU structure. The three main business strategies of Lamo Auru are to purchase a truck for timber delivery, become a CMU, and buy one or two more mills. Given performance problems of the CMU that Lamo Auru has supplied, the experience of the Lamo Auru manager, and support for milling within the community, FORCERT could explore the feasibility of Lamo Auru becoming a CMU. However, a cautious approach needs to be taken. Lamo Auru is experiencing some difficulties, with four outstanding repayments, and community support may have declined because of issues with wage setting and the payment of wages.

5.6. Gender

The views of women towards eco-forestry are mostly very positive. They describe their participation as meaningful and want it to be recognised, whether it is carrying timber, sitting on the board of directors or preparing food for workers. They see important benefits for their communities and particularly in remote villages value any income that they earn from the eco-forestry. Most want more eco-forestry work.

The direct participation of women in the eco-forestry work is mostly restricted to the laborious and monotonous work of carrying timber, but there are a few examples of new spaces opening for women that could be used to encourage other producers to consider new roles for women. A striking example is the milling of timber by women in Mauna. Photos of women involved in the timber milling, and of new roles for women in other producer communities, could be used as visual aids when discussing gender issues with producers.

Another option to provide encouragement to village women is to employ a confident female forester to assist with the provision of support services and to participate in the monitoring. The survey noted that while no women in Tavolo were directly involved in FORCERT's 1% forest survey, six participated in a forest survey by the Community Carbon Forestry (CCF) project¹⁰, which involved both a male and a female forester. Another option would be to have female sawmill trainers/mechanics working with the existing casual trainers FORCERT uses. There is a pool of female sawmill trainers/mechanics available, as NZAID sponsored them to be trained by the Timber and Forestry Training College in Lae. Employing female foresters and/or sawmill trainers/mechanics would raise overheads, but one of FORCERT's funders could consider budgeting for this as part of their support package to FORCERT.

5.7. Transparency

FORCERT recognises transparency as critical to eco-forestry and observations during the survey suggest that this is generally satisfactory, which is quite an achievement. One option for increasing transparency and to build capacity is to require that entries into the records of the timber enterprise are done by someone other than the manager.

5.8. Recognising development dividends

The results of FORCERT support services should not just be judged in terms of production levels, but also in terms of the development dividends for the producers. Eco-forestry makes the greatest contribution to community development in the more remote villages, which have with few government services and small cash flows. Because of poor access, raising export volumes is difficult, but large volumes are not needed to bring significant impacts. FORCERT should not give up on producers in remote villages that are struggling with volumes because of access issues. In contrast, the development dividend is lower for producers located near large regional centres and there is less reason for FORCERT to continue supporting older producers that are not upholding their obligations under the service and production agreements. In particular, FORCERT's investment in the VDT producers has not borne fruit, nor are the VDT foresters making regular visits to the three VDT producers, leaving the local FORCERT forester to do almost all the extension work.¹¹

5.9. Working with partners

The working agreement between FORCERT and a partner states that FORCERT aims to strengthen the eco-forestry activities of the partner organisation through providing easy and affordable access to FSC certification for the producers. In none of the surveyed villages were FORCERT activities limited to strengthening the eco-forestry activities of the partner organisations, as it seems was originally envisioned. In most of the surveyed villages FORCERT undertook the eco-forestry activities, though there

¹⁰ CCF PNG is a trial project which looks at the possibilities of involving and preparing local communities to enter the emerging market for payment for environmental services, in particular REDD. The project collaborates with FORCERT.

¹¹ FORCERT recently informed that it had suspended two of the VDT producers.

were some examples of collaboration which could be viewed as contributing to the capacity building of partners. A review of the partnership approach would be useful to redefine roles in line with realities.

There are needs for greater awareness raising and support services in the surveyed villages that cannot be met by eco-forestry alone. Further networking between FORCERT, its partners and other NGOs could be explored to organise support outside of eco-forestry activities. A particular concern noted was that Tsiatz has allowed a gold mining project on its land with no independent awareness raising provided and no support to develop an investment plan or for capacity building to ensure wise use of any income.

Sharing of information and analysis with other NGOs could be useful and here FORCERT has a lot to offer. FORCERT's partners should also be invited to participate in the SEEBs as these cover a broad range of development issues that are not specific to eco-forestry. A councillor in one village found that the SEEBs provide a useful process for the community to reflect on a wide range of issues.

5.10. Using SEEBs for community reflection and planning

It could also be very useful for the communities as part of their own reflection and planning processes to compare the changes that are recorded in the 2-yearly impact monitoring. FORCERT could facilitate this process at a community meeting held every two years to discuss the impact monitoring report, the performance of the eco-forestry operations over the past two years and plans – set-ups, investment in new equipment, further training, etc. – for the next two years.

6. Appendix: Question checklist for producers

BASELINE INFORMATION

Social structure and geography of the village

- When was the village established?
- How many households does it have?
- What is the political structure of the village?
- What are the neighbouring villages?
- How far is the village from the nearest market?

Sources of livelihood

Livelihood strategy

- To what extent does the village rely on subsistence and cash, respectively, for its livelihood?
- What are the main subsistence activities of the village?
- Do these differ throughout the year? Are there any particularly difficult periods?

Cash flow size and frequency

- What are the cash needs of the villagers?
- What are the main income generating activities (paid labour, business)?
- What is the net income of these?
- What is the frequency of the income flows?
- How is this money spent and who decides this?

Forests and livelihoods

- What value does the forest have for the village?
 - NTFPs
 - timber
 - water supply
 - cultural

Assets

- What types of assets do each household possess?
- Are these distributed fairly evenly between households or are there significant differences in wealth?

Forest management

- What is the size and state of the forest?
- What are the forest tenure arrangements?
- Have there been any disputes over tenure, access and use?
- Has the use of the forest changed?

Threats to forests

- Has the size/quality of the forest decreased?
- Has the village been approached by commercial loggers, miners or developers?
- Has any of the forest been logged by commercial loggers or cleared by developers?

- If so, what benefits were promised to the village?
- What benefits did the village receive?
- If royalty was received, how was this spent?
- Were there other developmental benefits (e.g. infrastructure)?
- What were the costs of logging/development?
- Do you know of forests owned by other villages that were logged or developed?
- What impacts have you observed (good and bad)?

Enterprise

- What enterprise experience and expertise did you have before timber milling under FORCERT guidance?

Gender

- What are the traditional respective roles of women and men?
- Do women have input into decision-making within their households, clans and villages?
- Do you observe any significant changes in the roles and opportunities of girls/women?

Development programmes

- Have there been any village development projects (govt/NGO) or other outside support from politicians/wantoks/outsideers?
- If so, what has been the reaction from the community/clans involved?

Solidarity of the village

- How often do disputes arise in the village?
- How are these dealt with?
- Is the village able to deal with these in a manner that satisfies everyone?
- Are there outstanding disputes?
- Have any community-initiated projects been undertaken?

Involvement with FORCERT

- When and how did you first hear of FORCERT?
- Why did you decide to accept FORCERT assistance/guidance for forest management?
- What were your other alternatives?

IMPACTS

Forest management

- What assistance/inputs did FORCERT provide?
- Were you involved in the following activities?
 - Land use planning
 - Tree inventory
 - Set-ups
 - Harvesting plans
- If so, how?
- At what level did you request your management to be certified?
- At what level are you actually certified - Community-Based FairTrade Certification (CBFT), pre-certified status, FSC certification?
- When was the certification conducted?

- Were there any CARs?
- Were you able to meet these?

Institutional impacts

Land group incorporation

- When were you incorporated as a land group?
- Who are the members of this group?
- What are the functions of the ILG and how are decisions made?
- What types of decisions been taken?

Timber enterprise

- What positions exist and how were people selected for these (Management executives - Manager, Secretary, Treasurer; Board of Directors / Management Committee)?
- What are the main elements/objectives of your business plan?
- What is the production plan of the enterprises and what are its predicted net income flows?
- What does the enterprise intending doing with future income?
- If it plans purchasing expensive equipment such as a sawmill, where does it intend getting the money from?
- What decisions has your enterprise taken?
- How were they made?
- Has there been any conflict over the eco-forestry business and, if so, what were its consequences and was it resolved satisfactorily?
- How sustainable is the enterprise from the perspective of equipment maintenance and condition? Are any significant expenses foreseen in the near future?

Timber milling

- What % of the community are involved in the village sawmilling enterprise?
- What positions exist in the milling operation and how many people hold each position (milling, felling, grading, other)?
- How were people selected for these positions?
- How is the sawmilling conducted (community mills the timber using its own sawmill; community leases a sawmill; community hires a team to conduct the operation)?
- Did your capacity to undertake sustainable small-scale milling change significantly after receiving guidance and training from FORCERT (e.g. sawmill and felling training; provision of equipment and financial assistance)?
- Has the CMU assisted you with the production and transportation of timber?
- Has the enterprise used a chainsaw supplied by the CMU, purchased spare parts from the CMU or been provided with fuel etc. by the CMU which it has paid for after supplying timber to the CMU? (this question is related to the revolving fund and stock building fund and 2 chainsaws provided by FORCERT to each CMU)
- What % of timber sales is retained by the CMU?
- Did you take a loan from the PNG micro-credit programme?
- Do you add value to the timber (e.g. air drying)?
- Do you face any constraints in adding value?

Production of certified timber

Details of production

- Dates/years
- Species

- Volumes
- Grade
- Specifications
- Means of transportation
- How much of this timber was sold to the CMU and how much of this was sold to local buyers?
- What reasons do you have for selling to local buyers rather than the CMU?

Technical issues of production

- Were there any problems with the portable sawmill or other equipment (breakdowns, cutting to specification, tree felling, injuries, transportation)?
- Were there any causes for delay?
- How do customary obligations and other responsibilities affect the business?

Financial costs and benefits of production

Costs

- Capital costs:
 - chainsaws
 - frames
 - sawmills
 - vehicle for transportation
 - chains and pulleys
 - road construction
 - tools
- Variable costs
 - Labour
 - Fuel
 - Bar oil
 - Chain
 - Equipment maintenance
 - Medical care and medicine
 - Transportation
 - Loan repayment
- Are there any inputs that are not paid for (e.g. labour).

Benefits

- How much were you paid for the timber (differentiate according to grades, species and buyers)? How much was retained by the CMU?
- Was there any delay in receiving this payment?
- Was any of the timber used by the village that you did not receive payment for (building housing, the school etc.)? How were these uses decided?

Distribution of the income within the enterprise

- How was the income distributed amongst the households?
- Are there any paid positions within the enterprise? If so, what are the rates per position and how much was paid?
- Has the eco-forestry business met its Community Needs allocation in its Business plan?

Use of the income by households

- Who decides on how the money is spent, and who actually spends the money?
- What did they spend it on?
 - Constructive consumption (improved diet, medicine etc)
 - Destructive consumption (alcohol, buai, impoverished diet, etc)
 - Investment (education, other business, housing etc)
- Who decided this?

Significance of the income

- How significant was the net income relative to local needs and other income sources?
 - Has there been change in other income earning activities or people with paid jobs within the community?
 - Is this money spent the same way as the income from the eco-forestry business?
 - Who decides on how this money is spent, and who actually spends the money?
- Is the effort involved in producing the certified timber justified by the net benefits?
- Could you earn a similar income from other sources (gardening etc.) that would involve less effort?

Gender impacts

- How are women involved in the enterprise?
- Is the enterprise providing new opportunities for women compared with their traditional roles?
- Has the production of the certified timber increasing the burden on women?

Ability to fulfil other responsibilities

- Does work for the eco-forestry business conflict with other village work (loss of other income, ability to do customs work etc.)? If so, how do people deal with this?

Demonstration effect

- Have government officials or other resource owners visited the certified forest?
- If so, what were their comments?
- Have any other villages expressed interest in eco-forestry?

Overall social and economic development within the village

Social relationships

- How many cases does the village court handle per month?
- What are the main issues handled by the court?
- Has the number changed over time?

Economic development

- Are there any changes in:
 - number of trade stores
 - number of other businesses
 - number of vehicles / boats + outboard motors
 - other means of transport used
 - housing, staffing and equipment of the school
 - no. of children attending school
 - new people that have completed school (grade) and/or formal training (type, diploma)
 - housing, staffing and equipment of the health clinic now
 - level of HIV/Aids awareness

- presence of denominations
- presence & state of church buildings/community hall
- number of permanent houses in the village
- infrastructure/service supply, e.g. water supply, electricity, communication
- road connection

Environmental indicators

- Are there any changes in plant and animal species collected/hunted from the forest production area?
 - Are there any changes in presence or population of rare, endangered and local PNG endemic species, in the area covered by the Land Use Plan?
 - Have any (new/other) species gone extinct? If so, when?
 - Is there a change in effort (time) needed to collect/hunt species?
 - Are the existing customary rules on gathering/hunting/protection of these species being followed/enforced?
 - Have any new customary rules on gathering/hunting/protecting of species been put in place?
 - Are there changes in presence of / problems with invasive species?
 - Are there environmental changes related to outside influences (e.g. mining, logging, large scale agriculture, climate change)?
 - Are tambu or culturally significant sites identified and respected (by the operation)?
 - Are water resources and coastal areas affected (by the operation)?
 - Are fuel, oil, chemicals, preservatives and non-organic waste stored, used and disposed off properly (by the operation)?
 - Has there been pressure on the forest resource from within the community (conversion for gardens/cash crops)?
 - Has there been pressure on the forest resource from outside (logging, palm oil developments, etc)?
 - Has the management considered any changes identified above in implementation of, or adjustments to their plans or operations?
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