

PNG Forest Industries Association (PNG FIA)



Economic Analysis and Potential of PNG Forestry Industry

Final Report

November 2006

Contents

1	Introduction	4
2	Context of Forestry in PNG	7
3	Defining the Industry	11
4	Economic Impact of Forestry	17
5	Royalties and Taxes	26
6	Findings	32

1 Introduction

PricewaterhouseCoopers (PwC) has been engaged by the Papua New Guinea Forest Industries Association (PNG FIA) to undertake a review of the economic contribution of the forestry industry to the PNG economy. This review has looked to analyse the key areas where the forestry industry is making a significant contribution to the PNG economy.

This review is intended to be used by PNG FIA to support its argument against the introduction of additional taxation on its members and attempts to quantify the ability of the industry to bear additional taxation. Furthermore, the review has looked to identify the additional, non monetary benefits associated with forestry throughout the PNG economy.

The PNG forestry industry is an instrumental industry in the economic development of PNG. The industry provides a number of key building blocks which should be utilised by the PNG government to encourage further economic activity. The PNG FIA is an incorporated association of companies involved in all levels of operation in the forestry industry in PNG. It has a number of objectives, including the representation of industry issues to government. It is within this context that PwC has been engaged to complete this assignment.

The PNG FIA is the main industry lobby group for the forestry industry. Its members include the majority of independent forestry producers in PNG, a list of these members can be found as attachment 1 of this report. As part of the 2006 budget process the PNG FIA was made aware of the potential increase in the royalty and taxation rates applicable to its members. The PNG FIA argued with the Government that there had been no involvement of itself nor its members in assessing the viability of such an increase in terms of the impact on the profitability of the sector. Consequentially the increase was removed from the final budget papers for 2006. However, the industry was told that these rate changes would be up for consideration as part of the 2007 budgetary process.

1.1 Project objectives and scope

Within the terms of our engagement with PNG FIA, PwC has analysed the economic activity of the forestry industry. Through this we have analysed the following areas of the industry:

- The value chain
- The profitability of the industry
- The amount of capital employed through the industry
- The employment benefits associated with the industry
- The international experience of royalty and taxation arrangements applying to other forestry industries, and
- The opportunities and challenges faced by the industry.

PwC has been engaged by the PNG FIA and its members to undertake an assessment of the economic benefits of the industry and consider whether or not the profits generated by the industry could support an increase in either the taxes or royalties paid directly to government.

The economic impact analysis is focused on measuring the production, consumption and employment effects of the industry and the current allocation model of the forestry industry, specifically the wood products industry. This covers the following activities:

- Logging
- Processing
- Sawn Timber
- Veneer Processing
- Export logs; and
- Activities by downstream entities involved in the further processing of value-added timber products.

1.2 Limitations

The findings throughout this report have been based on a combination of publicly available data and from a confidential survey conducted by PwC in conjunction with the PNG FIA. Due to confidentiality agreements we are unable to disclose the full results of the survey conducted in conjunction with the PNG FIA and PwC.

We have not endeavoured to seek any independent confirmation of the reliability, accuracy or completeness of the above information. Thus, it should not be construed that we have carried out any form of audit or other verification of the adequacy, completeness, mathematical accuracy, or reasonableness of the information on which our review has been based.

Nor have we examined the financial position or accounting policies of the forestry companies. Observations and material presented on royalties and taxes are drawn from publicly reported material. We have not undertaken any in-depth examination of any country's tax laws.

Accordingly, whilst the statements made in this report are given in good faith, we accept no responsibility for any errors in the information on which they are based, or the effect of any such errors on our comments.

This report has been prepared for the PNG FIA in accordance with the above project objective. Any other user that obtains access to this report should undertake their own research and analysis to form their own opinions and views. In no event do PricewaterhouseCoopers, nor any member or employee of the firm, accept any responsibility to any third party to which this report is disclosed or otherwise made available.

1.3 Structure of this report

The remaining sections of this report are set out as follows:

Section 2 sets the context for the report through a description of the forestry industry in PNG. In particular the market size, products and processing, major companies, financial position, and legal framework are considered.

Section 3 defines the PNG forestry industry in terms of its value chain. This definition allows for examination of costs, profitability, key drivers and opportunities for each area of activity within the chain.

Section 4 examines the economic impact of the forestry industry in PNG. The economic impacts are generated through the industries explicit contribution to gross domestic product, income, employment, impact on rural communities, and the flow on effects associated with each of these impacts. The role of Government in facilitating these outcomes is also examined. International forest industries are then examined to provide some context as to the potential economic impact of the forestry industry.

Section 5 considers the role of royalties and taxes. It first addresses the rationale for royalties and taxes. The existing situation in PNG is then considered and compared to both the forestry industries in other countries and other industries within PNG.

Section 6 presents our findings based on the outcomes and conclusions of the previous sections.

2 Context of Forestry in PNG

2.1 Background

The International Tropical Timber Organisation's 2005 report into the status of tropical forest management provides the following background to forestry in PNG”

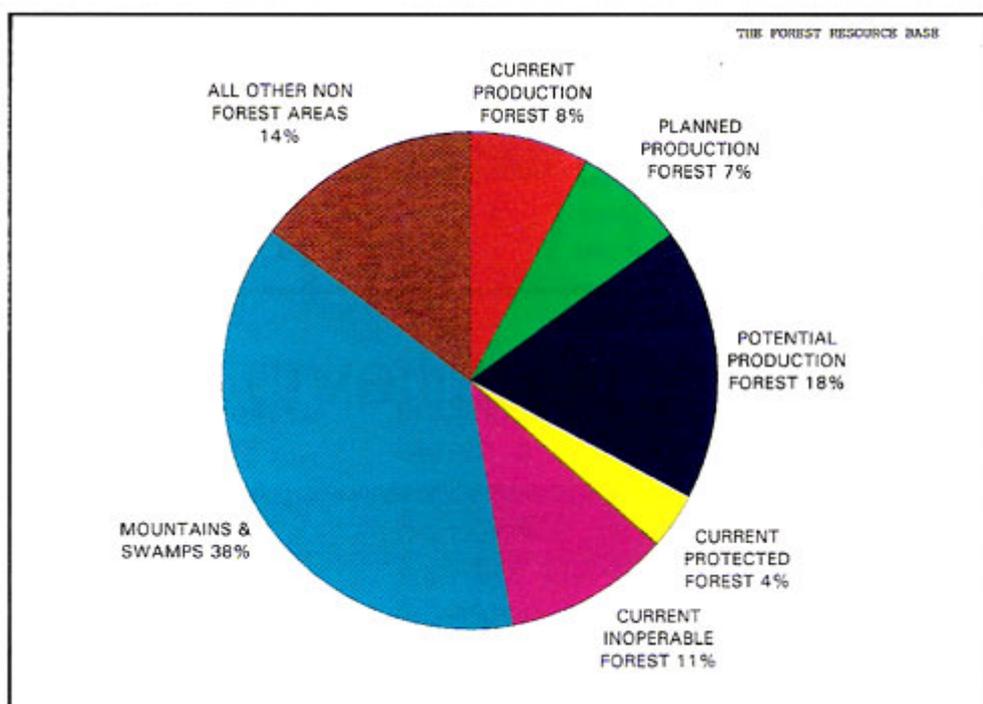
“Two-thirds of PNG is under forest cover and the official timber harvest is well below the estimated national sustainable timber yield. On average, each citizen has rights over about 6.4 hectares of forest. However, the majority of people still live in extreme poverty. The challenges are substantial if [Sustainable Forestry Management] is to be achieved. Key among them would appear to be: reducing the social and cultural disruption of logging; increasing the benefits to local development of forest management; and increasing the allocation of resources to the monitoring of logging activities and the implementation of forest policies at the national level.”

2.2 Market Size

PNG has a land footprint of approximately 45 million hectares. It is estimated that approximately 30 million hectares are forested. Due to the rugged terrain and inaccessible nature of significant areas in PNG the estimate of the potential area suitable for forestry is approximately 15 million hectares.

PNG FIA estimates of the potential market size are illustrated in figure 2.1 below:

Figure 2.1: PNG FIA Forest Use Estimates



(Source – National Forest Plan, 1996)

The yield in accessible forest areas is in the order of 18-20 cubic metres per hectare, although yields can go as high as 30 cubic metres per hectare.

Plantation activity is currently insignificant with only 62,000 hectares under production. However, the potential for plantation forestry is significant, particularly on large areas of deforested grasslands.

2.3 Products

Papua New Guinea's forest industry is focused on the harvesting of natural forest areas for round log exports. Plantation log exports account for approximately 10 percent of industry production while round wood equivalent of processed exports equates to around 30 percent of industry production. Raw logs provide most of the export volume and value, although sawn timber and veneer have become increasingly important in the last three years. There is limited plantation production and only a limited number of export oriented processing facilities. Very few finished wood products are manufactured in PNG itself.

The forestry products of PNG are:

- Raw log exports
- Sawn timber
- Veneer sheets
- Domestic log sales
- Plantation logs
- Plywood
- Processed timber exports (e.g., housing frames and furniture)
- Woodchips

2.4 Market

A majority of the timber is exported. Log exports go to eleven countries, all in the Asia region. More than 80 percent of log exports go to just three countries, China/Hong Kong, Korea and Japan.

China is the principal market for round logs from PNG; it imported over one million cubic meters of logs from PNG in 2002 rising to 1.7 million cubic meters in 2005 – accounting for 74.6 percent of PNG's log exports. The major markets for processed and semi-finished products are Australia, New Zealand and various South Pacific countries. Veneer is predominately exported to China and South Korea.

2.5 Major Companies

There are 29 forest concessions currently in production, covering a total area of 3.5 million hectares. Privately owned companies control all commercial timber production from natural forest areas. The role of the State is limited to monitoring and control and it does not play an active roll in forest management. Companies that are directly or indirectly owned or controlled by Malaysian multinational companies dominate commercial timber production. One company, Rimbunan Hijau, controls over 45 percent of log exports and 5 companies together control over 80 percent of the market.

Rimbunan Hijau has logging and processing operations in Western Province, Gulf Province, East and West New Britain, Milne Bay and Central Province.

The next three largest companies in terms of their market share are WTK, Kerawara and Innovision who together control about 25 percent of log exports (respectively 10 percent; 8 percent; and 7 percent). WTK has logging operations in West Sepik and Madang Provinces, Western and West New Britain, Kerawara in East and West New Britain and Central Provinces. Innovision has one logging operation at Makapa in Western Province.

2.6 Financials

The financial returns for logging companies in PNG are uncertain. Logging companies themselves appear to be in a contradictory position. While current official log prices indicate that the industry has been unprofitable for a number of years (2005 losses were estimated at more than K75 million - US\$25 million), logging continues and companies still seek access to new forest areas and make significant investments in other areas of the economy.

The level of industry activity suggests that the 'accounting' picture does not reflect the economics of decision making. For example operational practices such as deferring investment in equipment may make continued operations attractive at least in the short term. Without a full exploration of the companies, the market and expectations about the future it is difficult to draw firm conclusions on financial performance. At best whilst the continued level of activity is positive continued accounting losses must raise concern about the sustainability of the industry if current conditions continue. Many think that this conflicting information warrants further consideration.

In May 2005, average log prices were US\$60 per cubic meter, which, according to one of the government reviews, would generate log export revenue losses of K76 (US\$23) per cubic meter or US\$46 million per annum. Logging therefore does not appear to be economically viable in PNG at current export prices. One PNG government review (see below) also estimated that ten international buyers were responsible for the purchase of 57 percent of PNG's total log exports in 2000.

Government continues to be the primary beneficiary of the forest industry, receiving US\$30 million in cash revenues annually. These receipts go directly into consolidated revenue. Government pays for the PNG National Forest Service, the Department of Environment and Conservation and independent log export monitoring. However examination of budget papers suggests that Government provision of infrastructure and social services to the communities in the logging projects is limited.

2.7 Industry Review

Between 2000 and 2005, the PNG government commissioned five separate reviews:

- Review of Forest Harvesting Projects Being Developed Towards a Timber Permit of Timber Authority (2000-01);
- Review of the Forest Revenue System (2001-02);
- Independent Review of Disputed Timber Permits and Permit Extensions (2003);
- Review of Current Logging Projects (2004-05); and
- Compliance Audits (2004-05).

The five Reviews were initiated in response to a widely held view that forest management in PNG was not providing long-term benefits to the country or its citizens and to assess the implementation and effectiveness of the new governance regime introduced in the PNG Forestry Act of 1991.

2.8 Legal Framework

The principal relevant legal Acts are:

- Environment Act 2000
- Forestry Act 1991; and
- Forestry Regulations 1998.

Under the Forest Act 1991, the PNG FIA is identified as the body recognized to represent the interests of the industry, and has a position on the National Forest Board.

3 Defining the Industry

The objective of such an assessment is to define the forest industry value chain to form a view on the distribution of revenue, whether this matches the value of the activities performed, and the basis for any mismatches.

Step 1 – Define the industry and its value chain

Step 2 – PNG industry specific data collection

Step 3 – Collect available market data

Step 4 – Assess the efficient costs of the activities identified in the value chain

Step 5 – Understand the differences.

Step 1 – Define the industry and its value chain

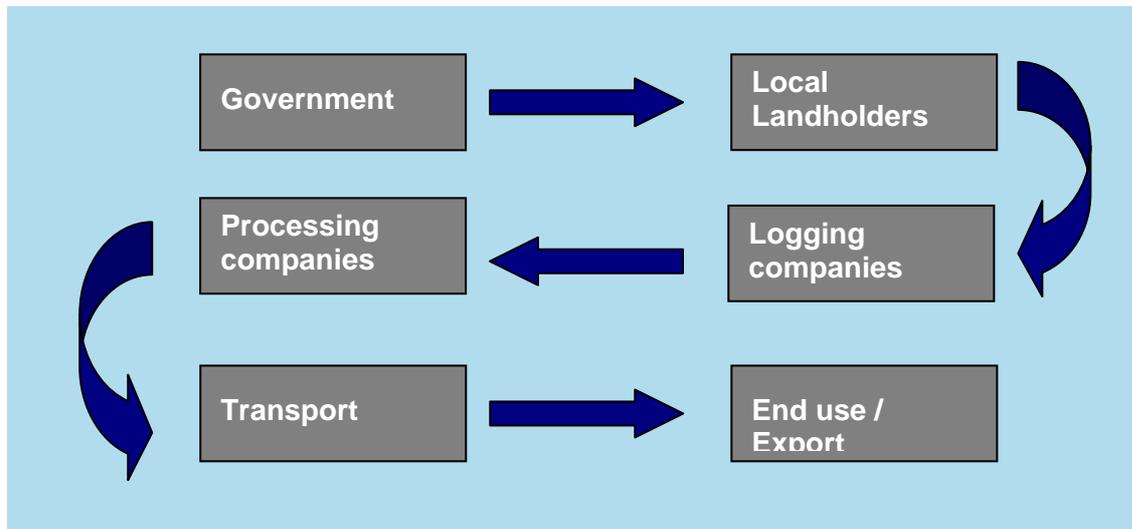
There are a number of individual stakeholders representing the value chain of forestry within the PNG economy. The economic impact of the forestry industry through the PNG economy includes the additional value that is added to the economy as a result of:

- expenditure generated by the forestry industry's own production and distribution;
- expenditure by the various domestic suppliers and distributors to facilitate the operation of the industry; and
- the flow-on or multiplier effects of expenditure by the industry and its 9,000 formal employees, its suppliers and their employees.

It is important to note that the flow-on effects associated with the forestry industry include the demand for goods and services from other sectors of the PNG economy. As such, the industry makes a greater contribution to domestic economy than simply that of its own activity and the activity of its suppliers and distributors. For example, the demand for goods and services by the employees who work for the industry and their dependants creates additional demand for goods and services which leads to greater economic activity through the economy. These effects are discussed in more detail in Section 4 Economic Impact of Forestry.

The forestry industry plays the major role in terms of the economic activity associated with the production of wood products in PNG. However, its operations are part of a value chain that includes other participants who rely upon the activities of the industry for at least part of their income, for example transport service providers and other local businesses that supply products and services to the industry and directly benefit from the activities of the industry. This value chain is expressed diagrammatically in Figure 3.1.

Figure 3.1 The industry value chain



Step 2 – PNG industry specific data collection

In order to extract information for the analysis of the PNG forestry market an independent confidential survey was circulated to all of PNG FIA members. This survey was completed and returned to us and PNG FIA and subsequently analysed by PwC. A copy of this survey template can be found in attachment 2. The respondents to the survey came from a number of businesses which represented around 80 percent of the total industry players in terms of market share. As part of our review of the data provided by some participants it was necessary to reduce the sample size as some of the information returns provided were not consistent with the approach outlined in the instructions provided. This data was ignored for the purposes of the following analysis. Our analysis suggests that we have over 70 percent market coverage in our sample of selected companies.

In addition, representatives of PwC and PNG FIA completed a tour of the operations of PNG Forest Products in Bulolo. The purpose of the Bulolo field trip was to gauge the size of the operations and to understand the processing operation. In addition, the team was able to discuss the results of PNG Forest Products' response to the survey.

To protect the identity of participants we have coded the companies used as Company A through Company F.

Step 3 – Collection of data

In addition to the primary data generation discussed in Step 2 above an extensive desktop research exercise was undertaken to identify information in relation to:

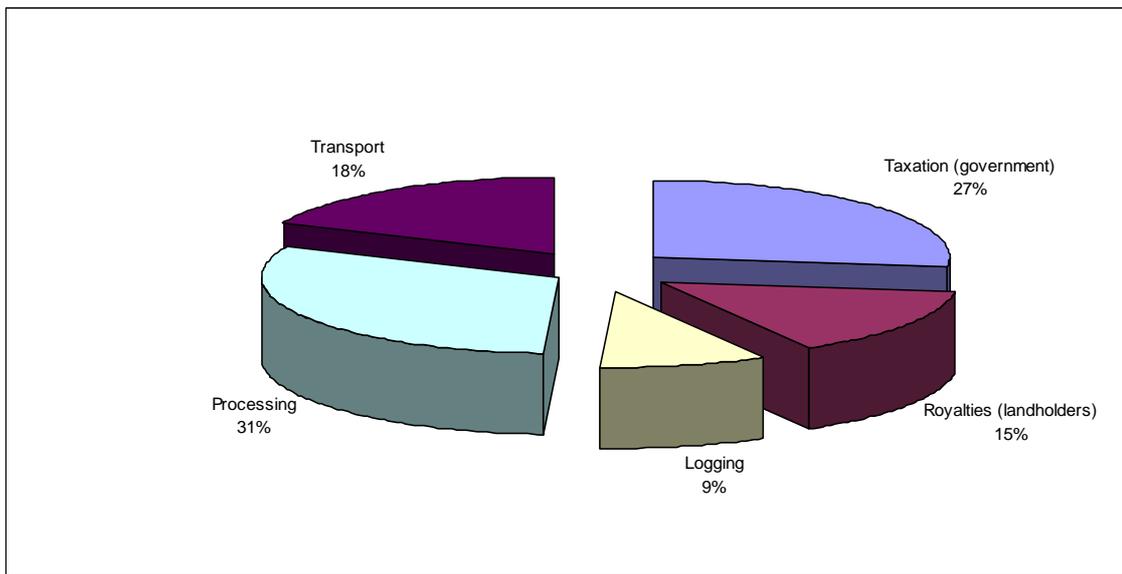
- The forestry industry in PNG and internationally.
- International royalty and tax regimes.
- Royalty and tax burdens for companies operating in PNG's resource sector.

Step 4 – Assess the efficient costs of the activities identified in the value chain

Our analysis of the data from the participants of the survey and analysis of the SGS export monitoring reports created information designed to allow evaluation of the economic value chain for the forestry industry. The information has revealed that the majority of companies operating in the forestry industry are fully integrated across the chain (i.e., logging, primary processing and semi-finished manufacturing).

Segment information within these companies is limited. Therefore the quantitative analysis is focused on the industry. The following graph provides a breakdown of the current cost structure of the industry.

Figure 3.2 Indicative cost break down.



The survey data included information from parties within the value chain that are not subjected to the collection of royalties nor the payment of taxes on wood products. Rather, these companies pay income taxes on profits. Income taxes and other miscellaneous government charges have been included in the calculation of taxation in the diagram.

Underlying Profitability of the Industry

The profitability of individual companies is very low as reflected in the returns generated from the assets employed by the individual businesses. As noted by the following table, the returns on assets are lower than the risk free rate currently prevailing in the PNG economy for all of the companies surveyed. In fact given the state of profits in 2005 all returns are negative.

Table 3.1 Individual assessment of company profitability 2005

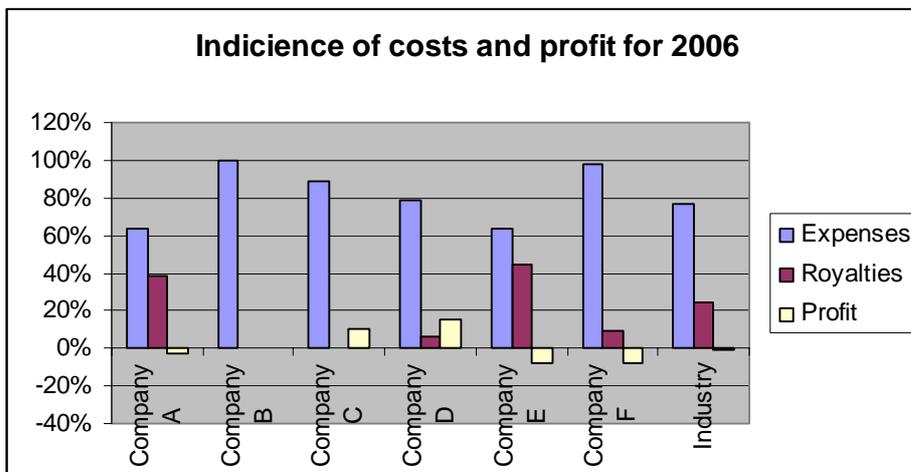
Company A	Company B	Company C	Company D	Company E	Company F	Industry
-8.0 percent	-10.7 percent	-13.6 percent	-38.8 percent	-120 percent	-38.6 percent	-14.4 percent

The identity of individual companies has been protected due to commercial reasons.

Net profit returns for individual operators vary with lower returns for operators who are less efficient. The level of return is possibly a consequence of a range of factors influencing profitability, including resource supply and prices, and the ability of individual operators to generate competitive efficiency across local and export markets. An important driver of industry profitability and longer term sustainability is the extent to which economies of scale (and scope) are achievable. Equally important is the ability to move up the industry value adding chain towards increased production of higher value-added products (i.e., processing).

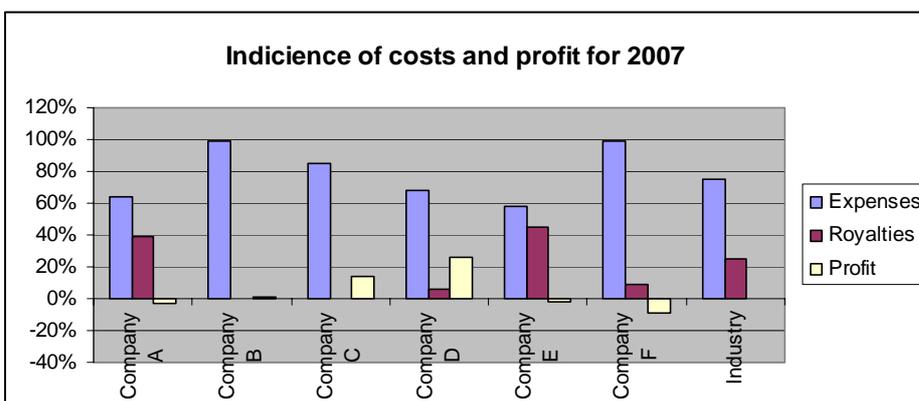
Figure 3.3 and 3.4 provide a projection on the profitability of the industry going forward.

3.3 Budgeted Profitability of forestry operations 2006



Company B does not pay royalties due to its position in the value chain.

3.4 Projected Profitability of forestry operations 2007



Company B does not pay royalties due to its position in the value chain.

Interestingly, the overall economic picture of the industry is looking more positive with expected improvements in the climatic conditions, i.e. less projected rainfall, resulting in the industry breaking even by financial year 2007 after making a small loss in 2006. It is understood that these forecasts were prepared on the assumption the operations would be conducted in a relatively stable fiscal and economic environment.

Economies of Scale and Value Adding

The concepts of scale economies and value-adding in forestry and other related wood products industries have been canvassed in a broad range of studies and in discussions with industry stakeholders and observers. A number of these studies have also documented the value improvements made in the select and appearance grade timber sector, which have led to higher market value for hardwood sawn timber. The improvements include the successful research, creation and marketing of natural feature grade timber specifically designed for niche export markets.

Economies of scale are a critical factor for sawmills investing in further processing infrastructure and equipment to increase the recovery of higher value products in Australia and overseas. Promising export markets have been developed in Japan, China and the US by some larger companies. In this context, it may be expected that asset consolidation into the hands of fewer companies in the sawmilling value chain will continue into the foreseeable future.

Key Drivers for the Industry

While mature, the PNG forestry industry is a naturally cyclical industry, with its performance dependent on general economic conditions, the property development market, and natural forces such as rainfall and bushfires. Key drivers which will influence the long term sustainability of the industry include:

- **Resource supply** – A consistent supply of resources available to operators will enable industry participants to plan annual production and processing investment. Climatic factors have restricted the amount of wood which can be logged in a given year.
- **New value markets** – Opportunities in the dried structural (e.g. furniture and flooring) markets are largely untapped.
- **Specialist domestic and exporting markets** – The industry expects to pursue/encourage the provision of more value-adding and high-grade sawn wood products for specialised domestic and export markets, which will require investment in value-adding equipment as well as amalgamations and clustering with existing operators.
- **World markets** – Competition from timber producers such as New Zealand, Russia, China, Malaysia and Indonesia provide differentiated hardwood products at lower costs of production that generate overseas import competition.
- **Low grade markets** – The emergence of new markets has raised the expectation to achieve efficient use of woods and increased utilisation of low-grade logs. A number of new markets may emerge including the processing of residual logs into merchantable material (e.g. pallet components, with remainder being chipped for export) using modern technology.
- **User industry activity** – The demand for sawn timber and saw logs is closely linked to the level of activity in user industries, including the commercial and residential building industries, carpentry and in downstream manufacturing businesses.
- **Environmental groups** – Increased pressure from environmental groups to reduce the demand for hardwood sourced from natural tropical forests.

- **Non-tariff barriers to trade** – Increasing governments, particularly in Europe, are implementing restrictive trade practises aimed at eliminating tropical hardwood imports unless there is compliance with regulations not imposed in other tropical hardwood markets.

As a result of the current supply constraints facing the industry, enhanced competition in its traditional markets and the need for increased efficiencies in the use of wood, the market can be expected to be increasingly driven to specialise, improve value-adding opportunities and build sales returns. The emergence of new specialised markets will require investment in new processing facilities.

4 Economic Impact of Forestry

4.1 Papua New Guinea

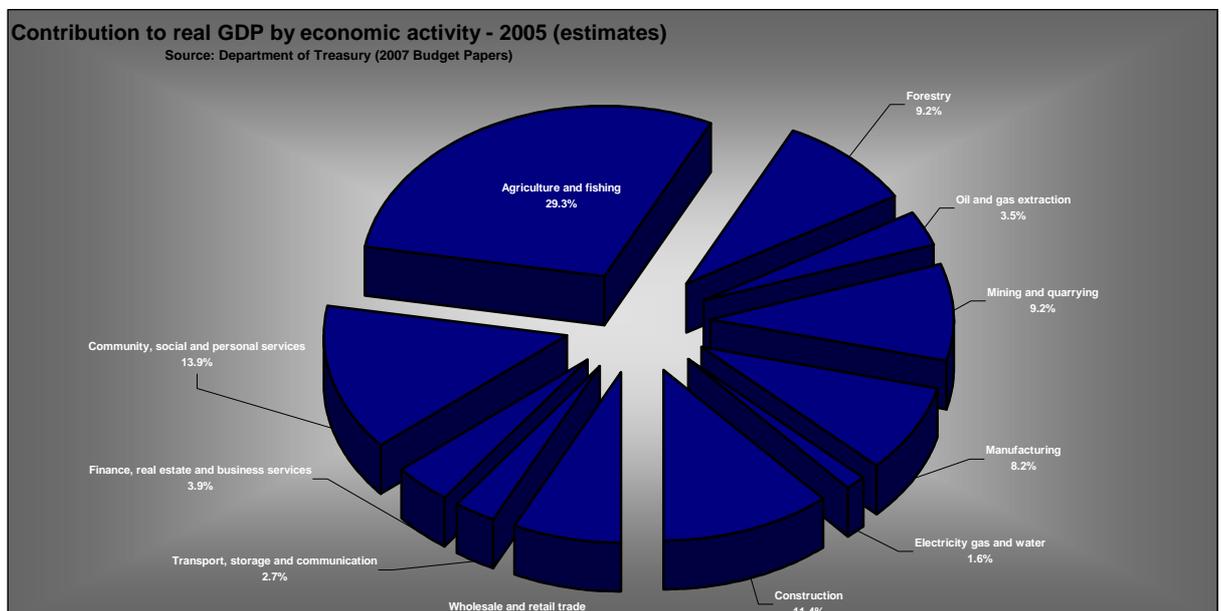
There are a number of economic impacts associated with the forestry industry. These benefits accrue across the country from the lowest levels of economic activity within villages which support forestry operations, through to coastal shippers who provide the avenue for getting the forestry products to market, and finally through to the Government which receives significant taxation revenue from the sector.

There are two main sectors of the PNG economy, formal and informal. The formal sector is a small component of the total economy and is predominantly urban. The informal sector dominates activity in rural areas and largely represents those engaged in subsistence and semi-subsistence activities.

In this section we analyse the various economic impacts created by forestry industries.

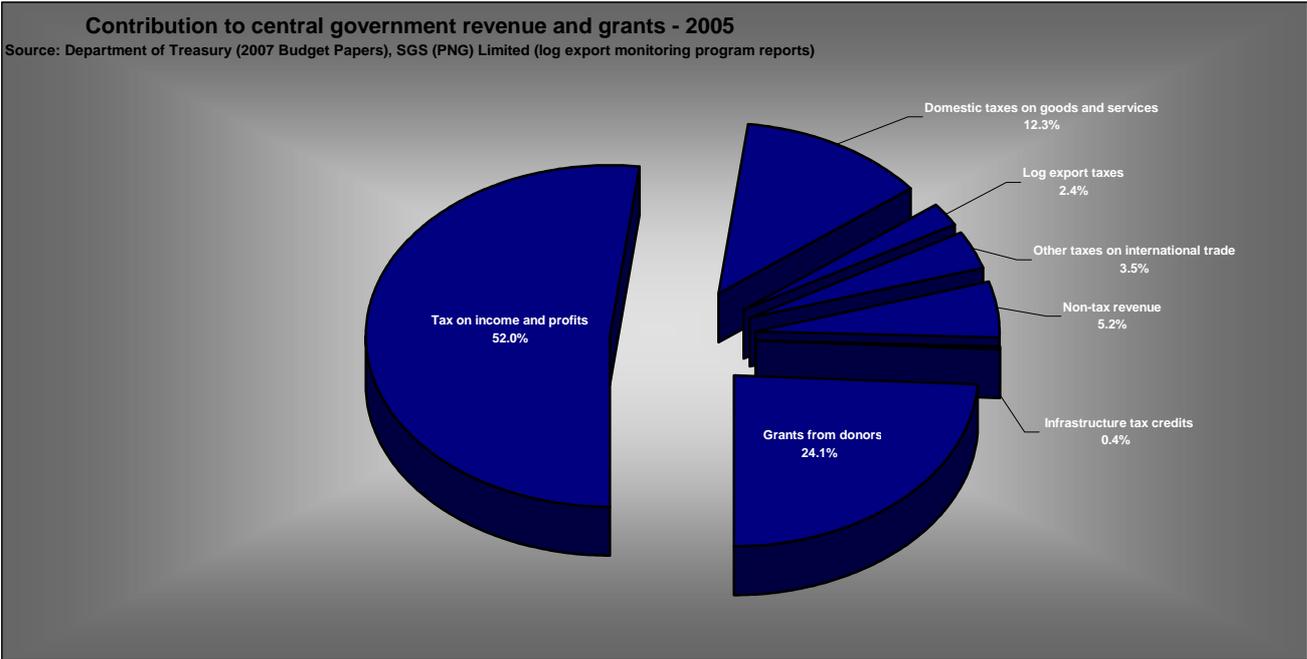
4.1.1 Financial Contribution

PNG's real Gross Domestic Product (GDP) was estimated at approximately K8,084.4 million in 2005. The contribution to this real GDP from the agriculture, forestry and fishing sector was estimated at K3,114.6 million or 38.5 percent. Using the relative values of exports generated by this sector in 2005, this suggests that forestry's contribution to real GDP in 2005 may have been as high as K742.2 million or 9.2 percent of total real GDP. This places it on a par with the importance of mining and quarrying in terms of contribution to real GDP.



4.1.2 Central government revenue contribution

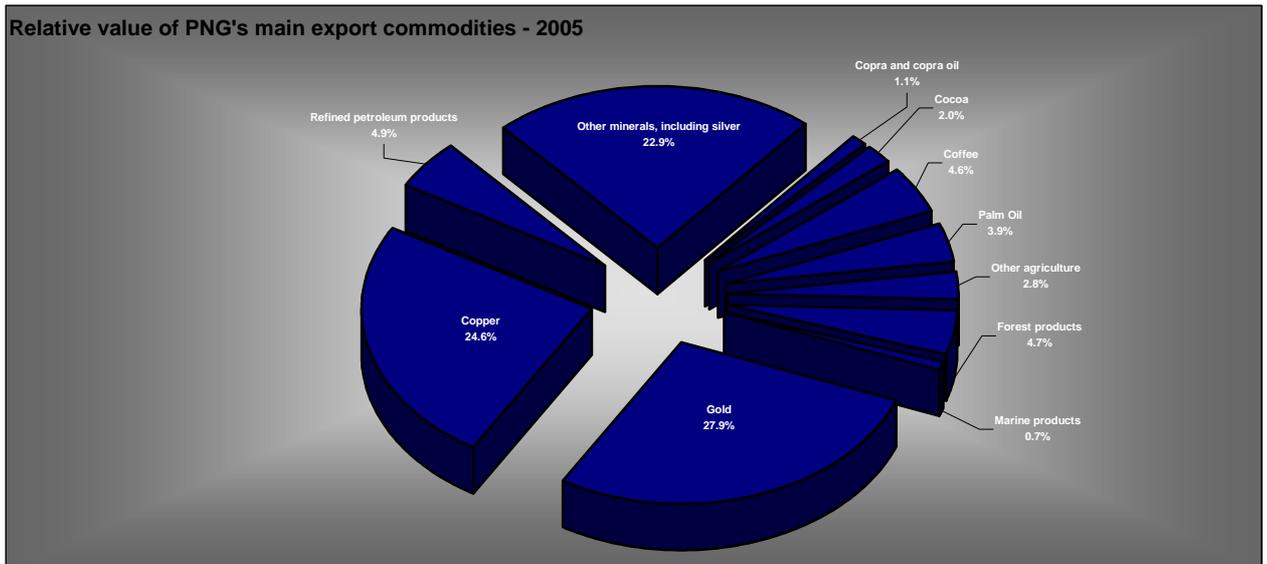
In addition to payments made directly to landowner groups and the provision of services in remote areas, the forestry industry also makes substantial contributions to State revenues in the form of both income tax payments and log export tax payments. In the year ended 31 December 2005 log export tax payments alone were K130 million which equates to 2.4 percent of total central government revenue (excluding receipts from borrowings). Insufficient data exists to determine the income tax and other tax payments made to the State by the forestry industry.



4.1.3 Export contribution

The forest industry has predominantly been based on log exports. Approximately 2 million cubic metres of tropical logs are exported annually making PNG the world’s second-largest exporter of tropical logs after Malaysia.

The following graph shows the contribution that forest products makes to the total value of PNG’s exports. In 2005, the export of forest products represented 4.7 percent (or K476.3 million) of the value of all exports from PNG (K10,147.5 million) making forest products the largest non-mineral export from PNG in terms of value. The PNG Department of Treasury’s forecasts as published in the 2007 Budget papers indicates that forest products will remain PNG’s highest value export outside the minerals sector for the next 5 years – continuing a trend over the last 5 years.



Source: Bank of Papua New Guinea (Department of Treasury 2007 Budget Papers)

4.1.4 Employment contribution

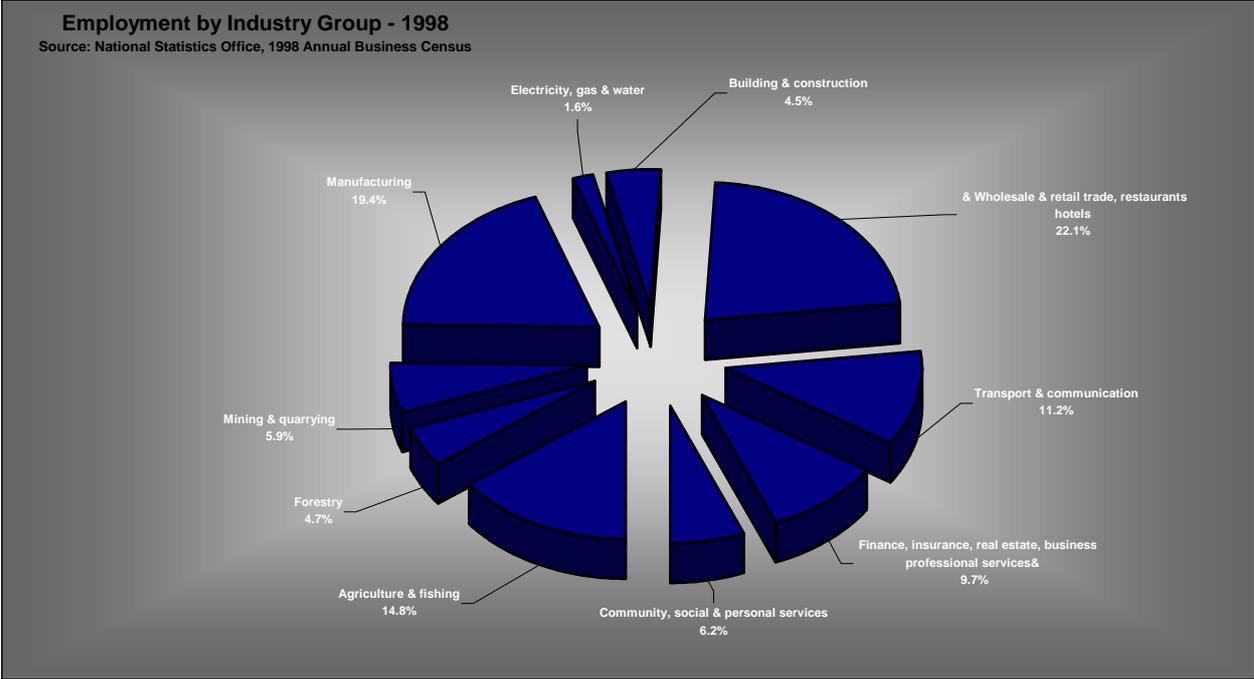
The companies surveyed reported that they employed over 6,600 staff. Less than 10 percent of these employees were expatriates meaning that over 90 percent of these staff are PNG nationals. Approximately 50 percent of staff are employed in logging operations while the remaining 50 percent are employed in value adding industries including:

- 1 Veneer processing
- 2 Timber processing
- 3 Carpentry
- 4 Supporting workshop/ engineering services.

This level of employment represents approximately 5 - 7 percent of total formal employment. The formal employment sector represents only a small fraction of total employment. It is estimated that approximately 85 percent of the population is engaged by the informal sector. The formal sector employment creates substantial benefits as it injects cash into communities through wages which enables them to access services such as education and health.

It is difficult to obtain current and reliable information on employment in PNG. The most recent comprehensive business survey conducted by the National Statistics Office was the 1998 Annual Business Census. The findings of this survey are presented below with additional work done to separate the employment of the forestry industry from that of the overall grouping of agriculture, forestry and fishing. This survey found that agriculture, forestry and fishing represented 19.5 percent of formal employment in PNG in 1998. It is assumed that most of this employment would be generated by export focused businesses. Accordingly, to determine the level of employment in the forestry industries and export based allocation method has been adopted.

Based on data from the Bank of Papua New Guinea and the Department of Treasury as published in the 2007 Budget Papers, over the years 2002 to 2006 forestry has represented an average of 24.2 percent of the total value of exports by the agriculture, forestry and fishing industries. The following graph assumes that 24.2 percent of employment in the agriculture, forestry and fishing industries was employment in the forestry industry. This suggests that forestry was responsible for 4.7 percent of total employment in 1998 and supports the finding that forestry is responsible for around 5 percent of formal employment in PNG at the current time.



4.1.5 Impact on rural communities

Papua New Guinea

The forestry industry is one of the few industries that can and does operate in remote rural areas. As such the industry creates the few opportunities for rural communities to enter the formal workforce and access the benefits identified above. The benefits from formal employment are also supplemented from royalties paid for access to the natural resources on their land.

The forest companies also create basic infrastructure such as roads and housing. Unlike the mining, petroleum and agricultural industries no targeted tax credit system exists to encourage the provision of such infrastructure.

In the absence of government support, the presence of the forestry industry in rural areas is usually seen as a proxy for government with communities becoming entirely dependent on the operation to act as the government body and the business entity to provide service to the community.

The concept of royalties and formal employment improving rural areas and communities' standard of living is sound. Unfortunately a combination of local corruption within landowner organisations, poor education and lack of government presence both in terms of meaningful development and appropriate institutional involvement does not enable the realisation of the full value of this concept.

International Observations

The potential positive impacts on rural communities can be seen by observing outcomes in other countries. Such observation also reveals some of the necessary forest management and government framework that enables the benefits to be realised.

Since the early 1990s an increasing number of governments at the local, regional or provincial levels have been taking on the role of managing national forests - an area that was once felt well left in the hands of central governments. In at least 60 developing countries, forest management responsibilities now rest in one degree or another with mayors, town councils and local authorities

According to the World Bank, 240 million people in the developing world depend partly or fully on forests for their livelihoods. For many of them, forests provide a range of subsistence and commercial livelihood opportunities. There is however a challenge to ensure neither the forests nor the rural poor are the losers when local governments start making decisions about how to use natural resources.

A Rights and Resources Initiative (RRI) has been launched. The RRI aims to encourage people and organisations to combine efforts to:

- Substantially increase the forest area under local ownership and administration, with secure rights to use and trade products and services;
- Dramatically reduce poverty in the forested areas of the world.

Thailand

There is an ongoing debate in Thailand about the rights of traditional and local communities to use and manage forests, including in protected areas.

All forests in Thailand are owned by the state, although all trees established on private lands are private property. The 1997 constitution recognizes the right and duty of traditional and other local communities to participate in natural resource management, although without changes to forest related legislation it is unclear what this means in practice for forest management. Rural people dependent on the forest and forest land have the right to collect certain non wood forest products for their consumption and rural trade. Some 'disturbed' state forests are available for long-term rent at a low charge for growing crops or planting trees. The enactment of the Community Forest Bill would help community forestry to gain new prominence in Thailand and could help resolve conflicts between the national forestry administration and local communities. However, the long-running debate over the draft bill illustrates its contentious nature.

Indonesia

In Indonesia, early in 2001, the government began moves towards decentralisation by giving Local Government greater opportunity to manage their region and natural resources. Plans have been made to revise the Forestry Acts in order to harmonise them with the Local Autonomy Act and thereby support further implementation of sustainable forest management.

Decentralisation is widely seen as a good thing, however it needs to be approached with caution since any change in governance can bring with it a measure of political, economic and environmental risk.

Mexico

Mexico provides a case study of the success of community ownership/management of forests proving that social forestry can be a development strategy that addresses poverty alleviation, economic development and environmental protection.

In Mexico a majority of forests are privately owned by indigenous and other communities. Even so, there are important barriers to effective community forestry stemming from inadequate policies, technical support and markets.

There are approximately 8,000 communities who own 44 million hectares of forest. Less than a quarter of all communities have active management plans—related to the cost of preparing such plans and encouraging illegal logging. The poor quality of original territorial surveys of community boundaries leaves many inter-community conflicts over boundaries and encourages substantial investment of community funds to police their lands and advance their claims in court. Despite these limitations, some 500 communities have developed quite successful integrated forest enterprises, generating local employment and technical expertise and providing an alternative to labour migration and deforestation. Some communities hold strong cultural values that lead them to invest profits in social services and infrastructure and conservation of biodiverse areas. The forest sector has an enormous potential to provide economic, environmental and social services, with opportunities in timber and non-timber forest products and small-scale tourism, but the sector has yet to receive equal treatment as agriculture or cattle raising.

4.1.6 Multiplier effect

The review of the value chain in the previous section of this report identified that the forestry industry, like any industry, creates flow-on effects from its economic activity. For example transport service providers and other local businesses supply products and services to the forestry industry and as a result directly benefit from forestry activity.

To understand the impact of the forestry industry on PNG's broader economy examination of the national accounts is necessary to enable the structure and inter-relationships between industries to be identified. Undertaking this level of analysis on an economy requires extensive data on the supply and use of commodities, inter-industry flows, and the application of econometric techniques. Typically such analysis is performed by governments' statistical agencies. Such analysis of PNG's national accounts has not been performed. To enable some consideration to be given to the potential flow-on effects of forestry in PNG we provide some information below on the flow-on effects of forestry in the Australian economy.

Based on the national accounts ‘multipliers’ can be calculated that provide a simple means of estimating the flow on effects of a change in output in an industry on:

- total value of production by all industries (output multiplier),
- total value of income from wages, salaries and supplements (income multiplier), and
- employment (employment multiplier).

The flow on effects themselves can be split into a number of stages. The most common groupings are described as:

- ‘Single Multipliers’ – the amount of output required by all industries to produce one additional unit of output. That is for an industry to produce one unit of output, inputs are required from other industries in the economy, these other industries require inputs from other industries and so on until equilibrium is reached.
- ‘Total Multipliers’ – the single multiplier effects plus the induced further production resulting from the spending of additional income earned by wage and salary earners in the production of the additional unit of output.

The assumptions made in estimating the multiplier effects mean that multipliers should be interpreted as a relative measure for comparison of industries within an economy at a point in time as such they should be treated with care. Economic multipliers are commonly used by Treasury officials in estimating the impact of economic decisions regarding expenditure budgets and other policy measures. However, in the PNG context there has not been sufficient analysis undertaken to develop a set of multipliers applicable to the economy. As such we have used the multipliers applied in Australia from 1989-90 as a proxy for unique PNG multipliers. While it would be inappropriate to use these in an Australian context given various economic changes in the Australia economy, with a particular emphasis on changes in Information Technology and competition policy, we have considered these appropriate in the PNG context as an indicative benchmark of the likely impact of the economic benefits which accrue from an increase in the economic activity of the forestry industry. In the context of these caveats, the greater contribution of forestry to the PNG economy compared to the Australian economy, the multiplier effect may be greater than those presented here.

Table 4.1 below presents the multipliers for the ‘forestry, fishing and hunting’ segment of the Australian economy in 1989-90.

Table 4.1: Australian Multipliers for ‘forestry, fishing and hunting’ (1989-90)

Multiplier	Single	Total
Output	1.6	2.5
Income	0.4	0.7
Employment (per AUS\$ million)	16	26

Applying these indicators to PNG implies that the demand of an additional unit of output from the forestry industry generates significant economic activity back up the supply chain. For every K1.00 of output K2.50 of production value (including the K1.00 of forestry production) occurs within the economy. Also of importance is the additional income this production produces. The initial increase in output of K1.00 ripples through the economy to generate an additional K0.70 in wages and salaries. This contribution to income is also reflected in the employment impact. For every increase in output of K2.5 million an additional 26 jobs are created reflecting the labour intense nature of the forestry industry.

Applying these multipliers to an increase in the PNG forestry industry of 25 percent in terms of output would result in a direct increase of K185.5million in terms of the 2005 level. An additional flow-on benefit in other industry segments would be K278.4million. The additional income effect of this increase throughout the economy would be K129.9million. The total economic impact, based on these economic multiplier impacts, would be a touch under K600 million or effectively an increase of 7 percent in PNG's GDP. Further it would increase employment by around 15,000 employees, 9,500 of which would be employed directly in the forestry sector (including supporting businesses to the parties surveyed for this analysis).

4.2 Potential economic contribution

The potential economic contribution of the industry can be considered from observation of forestry's economic contribution in other countries.

Indonesia

Indonesia's forest resources have been the principle engine of national economic development over the last three decades and forest resources have contributed significantly to foreign exchange revenues, employment, regional development and economic growth. The roles of forestry in stimulating the economic development have increased rapidly since the concession system was introduced in 1970. Based on investment and forestry laws, private concessionaires, both domestic and foreign, were permitted to invest in the forestry sector.

Forests contribute 20 percent of Indonesia's GDP and provide livelihoods for 100 million of Indonesia's 216 million people.

By some estimates, Indonesia is losing around \$1 billion a year in tax revenue from the illicit trade of timber. However, recent initiatives which have the support of the Indonesian Government and the international community are aimed at limiting this problem. Legal timber harvesting affects 700,000-850,000 hectares of forest per year in Indonesia, but widespread illegal logging boosts the overall logged area to at least 1.2-1.4 million hectares and possibly much higher. Despite an official ban on the export of raw logs from Indonesia, timber is regularly smuggled to Malaysia, Singapore, and other Asian countries. Illegal cutting is also hurting legitimate timber-harvesting businesses by reducing the supply of logs available for processing, and undercutting international prices for wood and wood products.

Malaysia

Timber is the primary forest product in Malaysia although other products such as rattan, bamboo and firewood are also harvested. Secondary products from the forest industries include sawn timber, plywood and veneer.

Malaysia's export of timber and timber products increased steadily over the 1990s, from US\$3.57 billion in 1990 to US\$4.65 billion in 2000. At this time the timber sector accounted for about 4.2 percent of the country's total export earnings and provided employment for 2.6 percent of the country's workforce. In terms of export volume and product range, there has been a shift from the traditional dominance of logs, sawn timber and plywood to a more varied mix including mouldings, furniture and wood-based panels. In 1990, logs contributed about 46 percent of total timber sector export earnings; by 2000 the figure had reduced to 14 percent.

Thailand

Forestry in Thailand is constrained by several factors. Coincident with Thailand's rapid economic growth in the 1980s and 1990s, its forest resources became severely depleted. Logging in natural forests has been banned, and in 1996, the government of Thailand revoked all logging licences in mangrove forests to reduce their destruction. Today, there is no official logging in natural forest; nevertheless, illegal tree-cutting remains a problem, as does encroachment; for example, an estimated 77,000 hectares were encroached upon, presumably by settlers, in the period 1993–98. The Royal Forest Department, the government agency responsible for forests, has a long history of forest management and remains reasonably well resourced. Legal forest production is based on non-forest sources and planted forest; thus there is no natural forest certified in Thailand. Timber production in Thailand has shifted from natural forests to planted forests, particularly teak and rubber wood, and non-forest sources of wood, supplemented by imports.

4.3 Summary

The forestry industry is currently making significant contributions to the PNG economy. In particular it has a significant impact on GDP, formal employment (and its associated benefits), and its ability to benefit many remote communities. International evidence suggests that with careful management of the framework for the forestry industry greater regional benefits could be easily achieved. In particular sustainable practices could be implemented and managed, integrated forest enterprises developed, local formal employment created, and technical education improved.

The inter-relationships of the forestry industry with other industries in the economy are also important. Based on measures of these inter-relationships in Australia it would appear as though the forest industry has the potential to generate significant activity in related industries with flow on benefits to PNG's overall value of output, generation of formal wages and salaries and overall level of formal employment.

The potential for the forest industry to be a foundation industry in PNG's economy is evident in the development of the industry in other countries. It is also evident that for this to occur robust management of the resource and support of value-adding downstream industries is essential.

5 Royalties and Taxes

5.1 Roles of Royalties and Taxes

Royalties

Royalties are generally defined as payments for access to a particular resource. It is generally accepted by most that developers of primary resources should pay an appropriate price to the resource owners for access to the resource. Typically these resources belong to the community as a whole and hence they should derive an appropriate benefit. Ideally the royalty should reflect the share of the assets extracted.

The sale of these resources generates economic activity. The economic activity generates employment for a range of sources such as timber contractors, saw millers, timber truck drivers, machine operators, timber clerks and gatherers of non-wood forest products. The royalties should be set to achieve the various goals and objectives of forest management one of which should be maximising the benefits from forest resources. Typical benefits include:

- Stimulation of industrial development.
- Efficiency in the utilisation of wood.
- Promotion of private sector activities in natural forest management and forest plantation development as a business.
- The enhancement of the marketing of forest products and sustaining the diversity of the forests.

Taxation

Taxation is generally defined as compulsory, unrequited payments to government. Tax collection is typically organised through a system of laws and administrative regulations. Ideally, a tax system for forestry should:

- Be a source of revenue based on an equitable value of forestry resources;
- Be able to promote a rational use of the resources;
- Allow for the renewal of potential for future generations;
- Encourage suitable growth in the industry and its exports; and
- Allow for a greater contribution to GNP from the forestry sector.

5.2 Existing Situation in PNG

The major and ongoing benefits of royalty, premium and annual benefits that are provided directly to landowners total approximately 15 percent of the gross receipts from the sale of logs. The PNG Government in addition to revenues derived from its general income tax regime currently receives approximately 34 percent of gross receipts from the sale of logs by way of the Log Export Tax. Average government receipts continue to increase. They were around 10 percent in the 1980's and 20 percent in the early 1990's.

5.3 Comparison to other PNG Industries

The following comparison excludes the payment of income tax to the PNG Government. Income taxes are a function of earnings. Comparison of income tax payments between companies and industries is not useful as the underlying driver of income tax is profitability not the unique characteristics of companies or industries. Interestingly any decrease in log export taxes that resulted in greater profits to the forest companies would in part be recovered through income tax payments. More importantly it is likely that the lower taxation will generate further investment in forestry operations. This consequentially leads to increased economic activity which in turn increases taxation revenues. Ideally, this increased investment results in a larger taxation collection through a broadening of the taxation base.

OK Tedi Mining Limited and its Subsidiaries

Based on the Statement of Cash Flows for the year ended 31 December 2005 the following can be observed:

- Royalty payments to landholders of 1.8 percent of receipts from customers.
- Mining levy payments of 1.2 percent of receipts from customers.
- Other payments to compensation trust funds, community mine continuation agreements and success scheme of 1.4 percent of receipts from customers.

OK Tedi Mining makes a significant contribution to PNG through its dividend payments. In 2005 the dividend payment was approximately 30 percent of receipts from customers. This is reflection of the ownership structure of the mine with PNG Sustainable Development Program owning 52 percent and the PNG Government a further 30 percent.

Highlands Pacific Limited

Whilst the contribution to date of Highlands Pacific cannot be determined from its most recent financial statements and its Kainantu mine has only recently been commissioned a presentation to investors in March 2006 identified:

- Landholders would receive a 5 percent shareholding in the 'Kainantu Project Company'
- There would be a 2 percent NSR royalty to landowners, provincial and local level governments.

Lihir Gold

Lihir Gold's 2005 annual report identifies:

- A new commitment to provide US\$6.2 million annual funding to the community for the next 5 years. This represents approximately 2.5 percent of receipts from operating activities based on 2005 and 2004 financial results.
- Royalties on sales in 2005 represented approximately 2.0 percent of receipts from operating activities.

- Mining levies in 2005 represented approximately 2.6 percent of receipts from operating activities.

New Britain Palm Oil Limited

NBPOL's 2005 annual report identifies donations made through its foundation of approximately 0.6 percent of receipts from customers. NBPOL has also made use of tax credit arrangements to invest in road infrastructure within its area of operations in West New Britain.

Summary

Extracting information on royalties and taxes for resource based companies is made difficult by the lower public information requirements that exist for small companies, the consolidation of results across many jurisdictions for multinationals and the project and industry specific royalty and tax arrangements. Further, many royalties payable to landowner groups impacted by resource projects are provided in mine development agreements that are specific to each project and these payments are not specifically disclosed in the financial statements or other information made publicly available by resource projects and their operators.

On the limited sample available there is no evidence of PNG's other major industries paying royalties or taxes (excluding income tax) as a percentage of gross receipts at or near the level being imposed on the forestry industry. It should be noted that a detailed review of the royalty and taxation arrangements applicable to other resource based industries has not been conducted.

5.4 Comparison to other Countries

In this section we examine the experience of a number of countries which apply various royalties and taxation regimes to their forestry products.

5.4.1 Australia

The timber industry is one of the most restricted and tightly regulated industries in Australia. The states and territories decide how forestland can be used and regulate logging. Each state has its own laws and codes of practice. Together with the Federal Government, they have prepared Regional Forestry Agreements (RFAs) that are 20-year plans for the conservation and sustainable management of Australia's native forests. These provide guidance regarding land use and timber production as well as providing certainty for forest-based industries, forest-dependent communities and conservation. 20 percent of the taxes from forest activities go to the states and territories.

Government investment in the industry has included a significant 'Structural Adjustment' program which made available up to \$101 million to assist forest industry businesses and workers who were directly affected by the provisions of the RFA.

In the late 1990s, the forest industry was costing the Government \$80m annually. There had not been a royalty return to the state since 1942. Policy initiatives include enhancing the timber industry's competitiveness through changes to Australia's tax system. The introduction of the Goods and Services Tax, the reduction of private and company tax rates, and improvements to the Capital Gains Tax have provided an equitable framework within which agricultural enterprises, including forestry, can carry out their business.

5.4.2 Indonesia

In the early 1990s, the 45 percent or so of Indonesia's forests that are open to commercial timber harvesting were very strictly regulated. The government owned the land but, with the exception of those in Java, managed its forests by way of a private concession system. Each concession was allotted an area of land and assigned the right to harvest timber as well as the responsibility of managing the forest. The average size of the concessions was approximately 100,000 ha. They were granted for a period of 20 years and it was possible to extend this on the grounds of proven sustainable management. Concessionaires would pay a levy based on two components: a forest licence fee and a forest products royalty. The amount of the licence fee was determined by the size of the concession, the period of forest exploitation and the estimated standing volume. The forest product royalty was based on the quantity of forest products traded and the operations and marketing costs.

As increased exports of non-oil products are very important to the Indonesian government, it sets export incentives. Credits equivalent to 85 percent of the value of goods exported and repayable within 12 months at an interest rate of 11.5 percent are granted for working capital.

However, the control of royalties is becoming more decentralised with the collection and use of royalties being done by States or communities. Decentralization is being used to hand over political, financial and administrative authority from central to local governments, so that local governments can improve public services. The Minister of Forestry retains the authority to issue licenses for forest product utilisation but technical recommendations from the Head of the District are required as the main reference in issuing such licenses. Revenue collected from forestry activities is divided proportionally, with 80 percent going to the respective regions and 20 percent to the central government.

5.4.3 Malaysia

A series of royalties are payable by the exporter of forest produce to the various governments. In general these royalties are based on the value of the timber being exported. However, this manner of charging royalties appears to encourage the loggers to high grade the forest (i.e. to remove only the most valuable trees as the royalty on them as a percentage of total value is much lower). Furthermore, the process of high grading extracts a lower volume per hectare, so more hectares are covered to recover a set volume.

Malaysia has traditionally not offered tax holidays to purely extractive timber companies, unlike many other countries. There has, however, been a move from the late 1970s to encourage the industrialisation of the forest industry through the use of royalty and trade policies. Manipulation of royalties has been much more successful in promoting industrialisation than the imposition of quotas. For example, until 1979 in Sabah almost all exports were in log form. The timber royalty imposed after this time provided very strong incentives for investments in sawmilling.

In Malaysia logs and sawn wood (both tropical and non tropical) attract zero export tariffs. Both tropical and non tropical veneer core have a 20 percent export tariff and tropical plywood has a 25-40 percent export tariff. No other duties are imposed on exported tropical timber products except for minimal administrative fees imposed on imported timber (irrespective of source).

Strategies incorporated in the short and medium term plan for expanding timber processing capacity are the provision of tax rebate or processing incentives to the millers and log producers, provision of land infrastructure, establishment of shipping facilities, and the set up of special areas for timber based activities so called Timber Processing Zones (TPZ). There have been signs of an upward trend in construction activities with small improvements in the global and local economic situation, notably pertaining to housing and real estate development.

5.4.4 Federal Forestry Systems around the World

United States: State governments own and manage approximately 5 percent of forests. They also have responsibility for regulating forest use on the 60 percent of forests that are under private ownership. Each state has its own forest practices legislation governing logging company practices. The Federal Government owns and manages about 35 percent of the forestland and pays county governments up to 50 percent of the revenue received from selling timber. States and the federal government each manage their own protected areas.

Brazil: Many states have their own forestry laws. The federal Ministry of Environment has given responsibility for regulating forestry activities to those states that demonstrate they have the capacity to carry out those activities. Sales taxes collected from forestry activities go to the state governments, which pass 25 percent of the money they receive to the municipal governments. Both the federal government and state governments manage their own protected areas.

India: The state government forest departments manage over 80 percent of forests. Federal laws and policies guide those activities. State government forest corporations harvest, process, and market timber, and establish plantations. Some state governments control the trade of forest products beyond state borders. A 1993 Constitutional Amendment gave local governments control over a range of natural resources management and planning functions.

Nigeria: The constitution makes state governments responsible for forests. Each state has its own forest policies, legislation and services. There is no federal forest legislation. State governments determine how forestland is classified and used, award timber concessions and receive royalties. State governments get most of the forestry revenue, and sometimes share it with local governments or traditional rulers.

Russia: Formally, the federal government still controls most forest and the decisions related to their use. But since the collapse of the Soviet Union, Russia's 89 republics and other autonomous bodies have gained increasing control over forest affairs. These regional governments strongly influence most decisions made by the forestry departments and enterprises operating within their boundaries. Regional and local governments receive 60 percent of forest taxes and royalties.

It seems essential to use methods of royalty and rent collection that dissuade loggers from the practice of high grading, rather than encouraging it. An enforcement system is needed that ensures loggers are responsible in their operations. This highlights the second very important matter, that of enforcement of the requirements of various concession regulations, and the requirements of government forestry policy. As many of these operations are found in remote locations with poor infrastructure and often poorly paid local officials, there exists considerable opportunity for "indiscretions" to go undetected at best, and ignored at worst.

5.5 Summary

Royalties and taxes have a legitimate role in PNG's economy to compensate landowners for access to their natural resource and to enable a functioning economy respectively. Excluding income tax payments which are provided across industries, albeit with complex and industry specific allowances, the royalty and tax burdens on the forestry industry in PNG appear high. These burdens would appear to be higher in PNG than in those countries with which PNG forest products compete in the international market.

The complex and often project specific nature of royalties, taxes and levies relating to resource companies make it difficult to draw specific comparisons between other countries and PNG. However, in countries with successful forestry industries it would appear that a greater proportion of taxes are returned to regional areas if not back to the forestry industry itself. It is also evident that taxes have been used at least indirectly to provide support for the industry through funding of assistance programs and infrastructure or through the creation of frameworks that create certainty around the availability of the resource in a sustainable fashion in competing countries but not in PNG. This places a restraint on the forestry industry in PNG not experienced in competitor countries and has a negative impact on the development of the industry in PNG.

6 Findings

High taxes and royalties: High taxation and royalty payments limit the ability of the industry to return profits to the local areas of production. Further, increasing taxes and royalties may result in a lessening of the profit incentive of industry participants which in turn results in less investment which in turn leads to lower economic growth. These taxes and royalties have a significant impact on the development opportunities of small economy like PNG's. Forestry production already employs a significant proportion of Nationals and can be seen as an important pillar in the emergence of PNG as a mature developed economy. However, high taxation limits the ability of producers to employ more PNG Nationals and therefore foster greater economic development.

Forest sector support: The PNG forest sector receives little support from the PNG government. By comparison to the level of support granted in other countries to forestry and the support granted to the mining industry in PNG the support is negligible. While competitors within the industry receive significant support from their local government, PNG producers have to struggle with relatively high taxation and royalty rates and limited government support by way of resource management, marketing and other assistance.

The PNG forestry industry contains a number of natural competitive advantages over other forestry industry in developed worlds. These advantages include:

Availability of wood resources: There are a number of areas throughout the PNG landscape which could facilitate the sustainable management of forest resources. Relatively high rainfall, excellent soils and growing conditions generally throughout PNG are ideal for a number of diverse species. In fact the diversity of species, while a strength, can also be seen as weakness as this diversity limits the ability of large scale monoculture forestry development seen in other forestry industries around the world.

However, it is absolutely vital that any further development of PNG's forestry resources is in identified production forest areas and managed on a sustainable yield basis. Further, it is necessary for all participants, including governments, recognise this as fundamental to the ongoing profitability of the PNG forest sector.

Labour resources: PNG faces relatively low labour costs by comparison to more developed economies. This has the potential to lead to a significant competitive advantage over other forest producing economies. In addition, there is considerable scope to mechanise the production process. However, this should only be done where the cost of the capital invested to mechanise the production process is less than the labour cost. It should be noted that while the per unit cost of labour may be comparatively lower, the limited education of a significant part of the work force in PNG, particularly in rural areas, can lead to productivity issues which may erode the competitiveness from a lower per unit labour cost. In the short term, with labour relatively cheap, it is unlikely that this will occur but it does point to the ongoing profitability of the sector in the medium term to long term. This profitability will be largely driven by the ability of producers to keep labour costs down and if these costs rise in the future to achieve considerable labour saving through improved productivity which will go hand in hand with increased mechanisation.

Proximity to world markets: PNG's proximity to world markets including most notably China, Japan, Australia and the United States ensures that as long as forest products can be produced there will be a significant market potential. China and Japan are likely to continue as a major buyer of the low end forestry products, Australia and the United States represent considerable opportunities for high value and value added forestry products from PNG. PNG ability to access each of these markets relatively cheaply will continue to drive the profitability of the sector.

There are however a number of limiting factors which constrain the profitability of the sector. These factors are generally a factor of doing business in PNG which has limited capacity to address these issues. These factors include:

Transport infrastructure: A limited road network and a non-existent rail network combined with relatively remote coastal production impose additional costs on the industry which limit its profitability. The main consequence of this is there will be limited opportunity for these profits to generate supporting industries and develop these areas organically. Increasingly the impact of limited infrastructure will result in stalled economic development as the profits made by the local producers will not be able to be ploughed back into the local economies and the multiplier effects of these profits will be limited. Without these multiplier effects forestry production will not produce the type of economic development seen in other countries.

Political Stability: While the current government has been something of a watershed in PNG politics in that the government is likely to be the first government to service its full term, the historical political stability of the country is still likely to limit the degree to which foreign investment in the industry will occur. However, continued fiscal discipline and ongoing political stability in the next electoral term will go a long way to addressing this particular issue.

Conclusion

The PNG forestry industry is one of the more heavily taxed industries in the economy. This relatively high taxation regime has led to a decrease in the incentives for companies to invest in the sector. Further, the taxation regime is suppressing the economic activity potentially available to PNG which in turn is potentially limiting the tax base of the PNG while at the same time reducing the opportunities available to PNG citizens to enter the formal economy. The taxation regime is currently suppressing the dynamic and allocative efficiencies available from a market-based economy. These losses in efficiencies arise out of the distortion of market signals in terms of investment decisions to be undertaken by forestry operators. Furthermore, increasing the royalty rate has the potential to further impact on these efficiencies as the taxation regime does not provide adequate incentives to firms to increase production as their returns are effectively taxed above any other industry. Where possible any narrowly based taxation policy should be replaced with more broadly based taxation arrangements to improve these investment signals and reduce any distortions on investment signals and subsequently increase investment in particular sectors to increase activity and therefore, all other things being equal, increase the profitability of this sector which results in greater taxation revenue for the PNG Government.

Appendix 1 PNG FIA members

Ordinary Members

CAKARA ALAM (PNG) LTD P.O BOX 297 WAIGANI PH: 325 0651 FAX: 323 9882 ATTN: MR. MEOR FADZILLAH, GM EMAIL: emily_cakara@yahoo.com.au	LOGGING & SAWMILLING	West, Central & East Arawe, West New Britain
CHINA LONG KONG (PNG) IND P.O. BOX 3213 WAIGANI PH: 325 7677	TIMBER PERMIT OPERATIONS	Vailala, Gulf Province
CLOUDY BAY TIMBER PRODUCTS PNG LTD P.O. BOX 120 PORT MORESBY PH: 328 1189 (MILL)/ 325 4865 FAX: 325 3489 (MILL)/ 325 3441 ATTN: MR. STEVE POWIESNIK, MANAGER EMAIL: spowiesnik@cloudybay.com.pg MR. HENDRY AISA, MILL MANAGER EMAIL: info@cloudybay.com.pg	LOGGING SAWMILLING, TIMBER SALES	Port Moresby
FURNITURE EXPORTS (PNG) LTD P.O. BOX 161 LAE PH: 472 4000 FAX: 472 5873 ATT: MR. JOHN SWEET, MD EMAIL: fe@lbcgroup.com.pg EMAIL: john.sweet@lbcgroup.com.pg	FURNITURE MANUFACTURE, LOGGING, SAWMILLING	Lae, Morobe Province Web Site: www.mrkwila.com
GL NIUGINI LTD P.O. BOX 393 GORDONS PH: 325 5387 FAX: 325 5389 ATTN: MR. MR LAWRENCE TIONG	HARVESTING, PROCESSING NOT YET OPERATIONAL	East Arwin, Western Province
INNOVISION (PNG) LTD P.O. BOX 1908	LOGGING	Makarpa, Western Province

PORT MORESBY
PH: 311 3111
FAX: 311 3114/323 9899
M: 686 8308
ATTN: MR. OSCAR MAMALAI

VANIMO JAYA
PH: 325 2268
FAX: 325 2269
M: 693 3368
ATTEN: MR. P.H. CHEW
EMAIL: phchew@datec.net.pg

LOGGING
CONTRACTORS

Western, W.N.B. Provinces

JANT LTD.
P.O. BOX 714
MADANG
PH: 852 2700
FAX: 852 3017
MR. CHING JUNG TSAI
EMAIL: jant@daltron.com.pg

EXPORT OF
WOODCHIPS,
PLANTATIONS

Gogol, Naru, Madang Province

KEI BESEU KAMPANI LTD
P.O. BOX 148
LORENGAU
PH: 470 9366
FAX: 470 9318
ATTN: MR. CHAWI KONABE, GM

LOGGING
SAWMILLING

Manus Province

MADANG TIMBERS LTD.
P.O. BOX 291
MADANG
PH: 852 2844
FAX: 852 2368
ATTN: MR. PETER HII
EMAIL: matim@datec.com.pg

LOGGING
SAWMILLING

Madang Province

OPEN BAY TIMBER LTD
P.O. BOX 48
NEW RABAU
PH: 982 1633/ 982 1635
FAX: 982 1220
ATTN: MR. TOSHIFUMI OHIRA
EMAIL: obtohira@global.net.pg
MR. PAUL BLAINEY,
ADMINISTRATOR
EMAIL: obtblaney@global.net.pg

EXPORT OF LOGS,
PLANTATIONS

East New Britain Province

P.I. LOGGING LTD
P.O. BOX 2217
LAE
PH: 472 4695
FAX: 472 6373

LOGGING,
SAWMILLING,
MANUFACTURERS

Lae, Morobe Province

MR. MARIO CABUCCIO
EMAIL: pilog@global.net.pg
ADMIN.
PH: 475 7584
FAX: 475 7548

PNG FOREST PRODUCTS LTD.
P.O. BOX 88
BULOLO
PH: 474 5322
FAX: 474 5365
ATTN: MR. TONY HONEY
EMAIL: pngfp.amh@global.net.pg

SAWMILLING,
PLYWOOD,
MANUFACTURERS,
PREFAB.
HOUSING

Bulolo, Morobe Province

PAC-RIM HARDWOODS (PNG) LTD
P.O. BOX 6962
BOROKO
PH: 325 5722
PH/FAX: 323 5744
ATTN: MR. JEYA YOGANATHAN
EMAIL: pacrim1@daltron.com.pg

SAWMILLING &
TIMBER EXPORTS

Port Moresby, NCD

Web site:

www.pacrimhardwoods.com

RIMBUNAN HIJAU (PNG) LTD
P.O. BOX 102
PORT MORESBY
PH: 325 6261
FAX: 323 6358
ATTN: MR. JAMES LAU, G.M.
EMAIL: jlau1@rhpng.com.au
MR. IVAN LU, Deputy G.M
isclu@rhpng.com.au
MR. BALA, CO. Secretary
jayabala@rhpng.com.au

PNG WIDE

Web Site:

www.rhpng.com.pg

RH Group Companies

FRONTIER HOLDINGS LTD

LOGGING
LFA 14-07

RABAU – E.N.B.P.

ISLAND FOREST RESOURCES

LOGGING
CONTRACTOR
TP2-16

ALIMBIT – ANDRU LFA –
W.N.B.P

MONARCH INVESTMENT LTD

EXPORT OF LOGS
LFA 18-1
LFA 14-2
LFA 14-3

JAHA, W/C MANUS
MANUS PROVINCE
LOLO BLOCK 1
LOLO BLOCK 2, W.N.B.P.

NIUGINI INT'L CORP LTD	EXPORT OF LOGS TP 14-56	
NIUGINI LUMBER MERCHANTS	EXPORT OF LOGS TP16-1 TP16-43	MATLOK – N.I.P.
RIVERGOI NO. 6 LTD	LOGGING LFA	KALI BAY, MANUS
SABAN ENTERPRISES LTD	LOGGING / SAWMILLING TP4-3	MILINE BAY PROVINCE
SAN HIN DEV. LTD	SAWMILLING TP3-34	EDEVU – CENTRAL PROVINCE
SEAL MAUNS LTD	LOGGING TP18-2	MANUS
WAWOI GUAVI TIMBER CO.	EXPORT OF LOGS, SAWMILLING TP1-5	KAMUSI, WP
WAWOI GUAVI TIMBER CO.	EXPORT OF LOGS, SAWMILLING TP1-5	KAMUSI, WP
SIPEF PACIFIC TIMBERS LTD P.O. BOX 2 PORT MORESBY PH: 323 0512 FAX: 323 0547 ATTN: MR. JULIUS YEOH EMAIL: grh@datec.com.pg	SAWMILLING, PLANTATIONS, RUBBERWOOD, MANUFACTURERS	Veimauri, Central Province
STETTIN BAY LUMBER CO. LTD. P.O. BOX 162 KIMBE PH: 985 4066 FAX: 985 4028 ATTN: MR. CHARLES SIA EMAIL: ccsia@daltron.com.pg MR. ANDREW TING andrewteb@daltron.com.pg	EXPORT OF LOGS, SAWMILLING, PLANTATIONS	West New Britain Province

TURAMA FOREST IND. LTD

P.O. BOX 184
PORT MORESBY
PH: 323 5995
FAX: 323 5998
ATTN: MR. K.S. LU
EMAIL: kslu@tfi.com.pg

EXPORT OF LOGS Gulf Province

ULAMONA SAWMILL DEV. CO.

P.O. BOX 101
BIALLA
PH: 983 1122/05872762374038
FAX: 983 1111/05872762374039
PH/FAX: 983 1041
ATTN: MR STANIS BAI
EMAIL:
manager@usdc.amosconnect.com

SAWMILLING,
LOGGING,
PLANTATIONS

Bialla, W.N.B. Province

VANIMO FOREST PRODUCTS

P.O. BOX 41
VANIMO
PH: 857 1018
FAX: 857 1203/857 1616
ATTN: MR. PHILIP TIONG
MR. ROBERT YONG
EMAIL: vfppl@online.net.pg
POM OFFICE
MR. RICHMOND LUAT, MANAGER
PH: 325 0964
FAX: 325 1627

SAWMILLING,
LOGGING

Vanimo, Sandaun Province

Associate Members**AU BADANA SAWMILL**

P.O. BOX 1442
BOROKO
PH: 325 6289 / 325 7127
HOHOLA OFFICE 323 2366
FAX: 325 4822
ATTN: MR. TONY PAVSIC,
CHAIRMAN
EMAIL: lpavisc@yahoo.com

SAWMILLING

Port Moresby

KAYWANA INVESTMENTS LTD.

P.O. BOX 6548
BOROKO
PH: 325 3519
FAX: 325 5500
ATTN: MR. LES PARKER, DIRECTOR
EMAIL: kaywana@daltron.com.pg

SAWMILLING,
TIMBER SALES,
EXPORTS

Port Moresby

TIMBER & FORESTRY TRAINING COLLEGE	EDUCATION	Lae, Morobe Province
P.O. BOX 2132		Web site: www.tftc.org
LAE		
PH: 472 4600		
FAX: 472 3586		
ATTN: MR. ANDREW TAGAMASAU		
EMAIL: tftc@global.net.pg		

TIMBERSAWS PNG LTD.	MILLING	Lae, Morobe Province
P.O. BOX 318	EQUIPMENT,	
LAE	SAWMILLING,	
PH: 472 7015	TIMBER	
FAX: 472 7673	MERCHANTS	
ATTN: MR. ATHOL SMITH-LORETZ		
EMAIL: timbersaws@global.net.pg		

Honorary Members

ASSOCIATION OF FORESTERS PNG	PROFESSIONAL	Port Moresby
P.O. BOX 714		
WAIGANI		
PH: 325 9277		
FAX: 325 9563		
ATTN: MR. GABRIEL SAMOL		
EMAIL:		
gabrielsamol@rhpng.com.pg		
ATTN: MR. KANAWI POURU		
EMAIL: pskanawi@pngsdp.com		

Service Members

ABLE ENGINEERING	STEEL	Lae, Morobe Province
P.O. BOX 1728	FABRICATION,	
LAE	TRAILER	
PH: 479 1440	MANUFACTURERS	
FAX: 479 1443		
ATTN: MR. ELLIOT HARDING		
EMAIL: ableeng@global.net.pg		

BOROKO MOTORS LTD	AUTOMOTIVE	Port Moresby
P.O. BOX 1259	DEALERS,	
BOROKO	NISSAN,	
PH: 325 5255	MITSUBISHI,	
FAX: 325 5301	MERCEDES	
ATTN: MR.GEOFF LANG, GM		
EMAIL:		
geoff@pom.borokomotors.com.pg		

ELA MOTORS
P.O. BOX 74
PORT MORESBY
PH: 322 9400
FAX: 321 7268
ATTN: MR. WALLY HAYDOK, GM
EMAIL:
whaydok@elamotors.com.pg

AUTOMOTIVE
DEALERS,
TOYOTA, HINO,
MACK

Port Moresby

TRUCK MANAGER
MR. JIM MAXWEL
EMAIL:
jmaxwel@elamotors.com.pg

FARMSET
P.O. BOX 75
GOROKA
PH: 732 1955
FAX: 732 2423
ATTN: MR. MALCOM BAKER,
INTERIM G.M.
EMAIL:
malcom.baker@farmset.com.pg
GOROKA MACHINERY SALES
ATTN: MR. ROB FOLEY
EMAIL: robfoley@farmset.com.pg
POM. OFFICE
ATTN: MR. KEVIN ZIMMERMAN
EMAIL:
Kevin.zimmerman@farmset.com.pg

MILLING,
FORESTRY
EQUIPMENT,
TIMBER
MANUFACTURERS

COUNTRY WIDE

HASTINGS DEERING LTD.
P.O. BOX 6308
BOROKO
PH: 300 8300
FAX: 325 2582
ATTN: MR. BRUCE HILL
SALES MANAGER
EMAIL: brucehill@datec.net.pg
PACIFIC AREA MGR
ATTN: MR. RAY NINNES

CATERPILLAR
SALES & SERVICE

Port Moresby

MCCARTHY & ASSOCIATES
(Forestry)
P.O. BOX 1092
WAIGANI
PHFAX: 321 0134
ATTN: MR DICK McCARTHY
EMAIL: rbmcc@datec.net.pg

FOREST
CONSULTANT

Port Moresby

OSMOSE AUSTRALIA

P.O. BOX 744
BUDERIM, 4556
QLD, AUSTRALIA
PH: +7 5445 2199
FAX: +7 5445 6933
ATTN: MR. JOHN THORPE -
REMEDIAL PRODUCTS
EMAIL: john@osmose.com.au

TIMBER
TREATMENT &
PRESERVATION,
SUPPLIES &
TECHNOLOGY

COUNTRY WIDE IN
ASSOCIATION WITH FARMSET
Web site:
www.osmose.com.au

PNG PEST CONTROL

P.O. Box 3016
BOROKO
Ph 323 0911
Fx 323 0140
ATTN: John Vere Group GM
EMAIL: jvere@daltron.com.pg

TIMBER
TREATMENT AND
RELATED
SERVICES

Country wide

UMW NIUGINI LTD

P.O. BOX 6308
BOROKO
PH: 325 5766
FAX: 323 2084
ATTN: MR. PETER LEECE
EMAIL: leecep@umw.com.pg

KOMATSU, STIHL
& SALES &
SERVICE

Port Moresby
Web site: www.umw.com.pg

WAIGANI TYRE SERVICES LTD.

P.O. BOX 7053
BOROKO
PH: 323 6050
FAX: 323 5254
ATTN: MR. ROD PEARCE
EMAIL: rod.pearce@wts.com.pg
RETAIL OFFICE
PH: 325 4463

Appendix 2 Survey Template

Production costs (operating expenses)					
Kina		Actual figures	Budget	Forecast figures	Comment
		2005	2006	2007	
	Operating Costs				
	Employment costs				
	Labour Savings				
	Net Labour cost				
	Depreciation				
	Property				
	Repairs and Maintenance				
	Motor Vehicles				
	Materials				
	Fuel				
	Administration (include all office costs)				
	Interest/Financing expense				
	Insurance				
	Transport				
	Marketing costs				
	Other costs				
	Total Expenditure				
Employee information					
	Number of employees (full time equivalent)				
	Expatriate				
	Papua New Guinea citizens				
	Total Employees				
Raw materials purchased for production (please note this only applies to downstream, secondary industry participants - not loggers)					
Kina	Veneer production				
	Logs purchased				
	Total				
Capital Invested					
	Plant - book value of assets utilised (please list)				
	Buildings				
	Plant & machinery/equipment				
	Motor Vehicles				
	Office furniture & other equipments				
	Infrastructure				
	Total				
Payments / Royalties					
	Landholders Royalties/premiums				
	Government Royalties				
	Special infrastructure payments (landholders)				
	Fire and Security				
	Income tax paid to Internal Revenue Commission				
	Goods and services tax (net payment per annum)				
	Other - Export duty				
	Total				
Ongoing Capex					
	Kina '000s				
	Plant (please list)				