

# **The Economic Importance of the Forestry Industry to Papua New Guinea**

Report for  
Rimbunan Hijau  
(PNG) Group

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## Acronyms

<b>ADB</b>	Asian Development Bank
<b>ANU</b>	Australian National University
<b>BPNG</b>	Bank of Papua New Guinea
<b>CIA</b>	Central Intelligence Agency
<b>CIF</b>	Cost Insurance and Freight
<b>DFAT</b>	Department of Foreign Affairs and Trade
<b>DFID</b>	Department for International Development (United Kingdom)
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FOB</b>	Free on board
<b>GDP</b>	Gross domestic product
<b>GST</b>	Goods and Services Tax
<b>IMF</b>	International Monetary Fund
<b>ITTO</b>	International Tropical Timber Organization
<b>IRT</b>	Independent Review Team
<b>IUCN</b>	International Union for the Conservation of Nature (World Conservation Union)
<b>K</b>	Kina
<b>NEFC</b>	National Economic and Fiscal Commission (PNG)
<b>NGO</b>	Nongovernmental organisation
<b>PDL</b>	Project Development Levy
<b>PNG</b>	Papua New Guinea
<b>PNGFA</b>	Papua New Guinea Forest Authority
<b>PNGFIA</b>	Papua New Guinea Forest Industries Association
<b>UNECE</b>	United Nations Economic Commission for Europe
<b>WTO</b>	World Trade Organization
<b>WWF</b>	World Wide Fund for Nature

## Notes

### Data and statistics

The quality and coverage of statistics in Papua New Guinea has important implications for an assessment of the actual and potential importance of the industry, nationally and regionally. Data problems have been a regular feature in International Monetary Fund, World Bank and Asian Development Bank reports on PNG. In its Statistical Capacity Indicator, the World Bank gives PNG statistics a ranking of 50 out of 100 for statistical practice but only 30 out of 100 for data collection.<sup>1</sup> This issue is addressed in Appendix I.

### Terminology

The authors of this report use the term “Green” to describe philosophies and groups which put protection or preservation of the environment ahead of all other policy objectives, including economic development and eradication of poverty. ITS Global does not consider the terms “environmentalists” and “Greens” to be synonymous.

The formal meaning of “sustainable development” is balancing protection of the environment with measures to secure growth and improve social conditions. Green groups do not mean this when they use the term.

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1 The World Bank’s Statistical Capacity Indicator gives PNG a mark of 50 out of 100 for statistical practice, but only 30 out of 100 for data collection.  
See <http://ddp-ext.worldbank.org/ext/CSIDB/getCountryStatInfoXML?id=PNG&format=CSIDB>.

## Executive summary

Forestry's contribution to the economy of Papua New Guinea (PNG) is significant. Export taxes on logs account for 3 to 6 percent of all tax. Between 1990 and 2005 such taxes represented an average of around 30 percent of all development expenditure by the national government.

World Bank figures suggest the forest industry has contributed up to 8.6 percent of PNG gross domestic product in the past. Food and Agriculture Organization (FAO) figures today suggest 5.1 percent. If world timber prices rise (they appear to be recovering following the Asian currency crisis) and prices of minerals fall (that is likely at some time in the future) forestry's contribution to gross domestic product (GDP) will increase.

PNG needs development and growth. *Per capita* GDP has fallen from US\$676 in 2000 to an estimated US\$585 in 2005. The share of population falling below the World Bank's poverty line has risen from 37.5 percent to 53.5 percent over the last decade. In rural areas only one child in five attends school. The finances of the Government are dire.

The global demand for timber (paper, softwood and hardwood) is strong. Like other developing countries, these are resources in which Papua New Guinea has a comparative advantage and can benefit from trading into the global economy. It has large reserves. Most remain unallocated and claims by Greenpeace that PNG is about lose its forestry and environmental heritage are baseless.

Nevertheless, the forest industry, a consistent contributor to growth, is under attack. In the last two years Greenpeace has spearheaded a campaign against commercial forestry in PNG. There are claims the industry devastates the environment, is illegal and practices human rights abuse. As a companion report shows, most of the assertions are exaggerated or baseless. Many also exploit weak governance which is, regrettably, a feature of the current stage of development in PNG.

There are claims as well that PNG's forestry industry is economically unsustainable and not delivering benefits to PNG. These claims rest heavily on a draft report prepared by an "Independent Review Team" (IRT) which the PNG Government established in 2003 at the behest of the World Bank to review PNG's logging industry. It produced a draft report which concluded that the commercial forestry industry in PNG was uneconomic. It also argued for greater emphasis on eco-forestry.

This supported Greenpeace's calls to replace commercial forestry in PNG with eco-forestry and subsistence forestry. The IRT drew its conclusions from a study it commissioned on the commercial viability of the forest industry. The study was prepared by an expert who had previously jointly authored a report with Greenpeace arguing that eco-forestry was superior to commercial forestry in the Solomon Islands. The economic viability of eco-forestry in PNG was not properly assessed. Even WWF concedes that eco-forestry is commercially unviable in PNG.

The Review was not completed. It lapsed when the PNG government decided the conditions required by the World Bank to support a loan to improve management forestry were unacceptable. (As well as the review of logging, the conditions included a moratorium on logging and institutionalization of NGOs in the administration of forestry in PNG).

Sustainable development requires a balance between protecting the environment and supporting growth. Environmental policies which stifle growth are of little value to countries where social indicators are worsening. It will not eradicate poverty or generate the wealth necessary to implement effective environmental policies.

This report examines the economic contribution of the forest industry to PNG, both direct and indirect. The report includes a case study of one region, which shows the extent and value of infrastructure and social services provided the forestry industry. It considerably exceeds that supplied by the provincial government.

This report also shows how the PNG forestry industry can contribute more to economic

growth. It canvasses the issues which constrain growth, and postulates scenarios which demonstrate how the industry could contribute more.

It was disappointing to find in preparing this report that the World Bank and Department for International Development (DFID, the UK aid agency) have not supported work or produced assessments of how forestry might contribute more to solving PNG's deep-seated development problems.

Instead they have supported research by Green NGOs which emphasise the non economic problems in the industry. If the Green goals of replacing commercial forestry with eco-forestry and subsistence policy were achieved, growth would fall and unemployment would increase. This is not the time for development agencies to contribute to efforts to undermine a key contributor to the PNG economy.

## Chapter 1. Introduction

ITS Global was commissioned by Rimbunan Hijau (PNG) Group (hereafter, Rimbunan Hijau) to prepare a report on the economic significance of the forestry industry in Papua New Guinea (PNG). The objective of this report was to assess the actual and potential economic significance of the forestry industry to PNG, and to assess some assertions on the industry that have been advanced by Green groups over recent years.

Over the last five years, at least six reports criticizing forest practices in Papua New Guinea have been published. In addition, a formal review of the industry by the “Independent Review Team” (IRT) has been undertaken. Its report has not been adopted by the PNG Government, but much of the material it gathered has been widely circulated.

A leading claim in that report is that the industry is not economically sustainable and contributes little to the economic development of Papua New Guinea. This contention continues to be given currency.

It was also striking that research supported by international and national development agencies paid little attention to the economic significance and potential of the industry to Papua New Guinea.

This report aims to assess the actual and potential economic significance of Papua New Guinea’s forest industries. It has some notable findings. It also demonstrates that there is a serious shortage of objective economic assessment of the importance of the sector for PNG’s development.

ITS Global visited PNG to consult with key industry players and undertook site visits to Rimbunan Hijau’s operations in Gulf and Western Provinces. The report draws on published information and information provided by Rimbunan Hijau and the PNG Forest Industries Association (PNGFIA).

The conclusions are those of the authors.

## Chapter 2. An important natural resource

Worldwide experience has demonstrated how sustainable utilisation of timber resources can contribute to national economic growth and prosperity. The forestry industry has been the subject of contention in both industrialised and developing countries.

Forestry is a classic renewable resource. In a number of industrialised economies, sustainable forestry is practiced. In those countries, the debate is about whether there should be any forestry at all. Not having a forest industry is a luxury some industrialised economies can afford if they choose to. Few developing countries have that option.

Global demand for timber products is strong. Developing countries endowed with forest resources have a comparative advantage and can achieve economic development by meeting that demand.

### A. Global demand for forest products

Global demand for forest products is expected to remain strong. The United Nations Economic Commission for Europe (UNECE) and the Food and Agriculture Organization (FAO) report that demand in forest product markets in 2004 reached record levels, and that the engine of growth in 2005 was the United States (US) housing market. China dominates the tropical timber trade and has moved increasingly to production of primary and secondary processed products, based on imported logs.<sup>2</sup>

PriceWaterhouseCoopers, quoting from the 2005 *Global Forest and Paper Industry Survey*, concluded that total global industry sales increased by 11.8 percent in 2004 (to US\$340 billion). The survey summarises the 2004 financial information of the 100 largest forest and paper companies in the world.<sup>3</sup>

A 2005 report by the US National Commission on Science for Sustainable Forestry identified global trends in the industry: ‘...global market cost competitiveness is increasingly being shaped by the low production costs of subtropical tree plantations in the Southern Hemisphere’; ‘...China will continue to be a major importer of market pulp and wood from the Asia Pacific Region and South America’; ‘...demand growth for paper and paper-board is largest in the emerging markets of Eastern Europe, China, Asia and Latin America, in the order of 3.5-4.5 percent annually’.<sup>4</sup>

The forest products market is, and will remain, a very significant global industry. PNG is well placed to supply this market, especially China (which will exert an increasingly significant impact on global demand).

### B. PNG’s development needs

After being in recession between 1996 and 2002, real growth in PNG is estimated by the World Bank to have increased by 2.8 percent in 2003 and 2004. This has been attributed to favourable commodity prices, better economic management and the removal of supply constraints.

But the overall picture is poor:

- GDP *per capita* has declined from US\$676 in 2000 to an estimated US\$585 in 2005, with a wide gap between rural and urban incomes;
- 70 percent of the population live on less than US\$2 per day. The number of people in this category rose from 3.8 million in 2002, to an estimated 4.1 million in 2005;<sup>5</sup>

2 UNECE/FAO (2005). *Forest Products Annual Market Review, 2004-2005*, pages 20, 22 and 30, at <http://www.unece.org/trade/timber/docs/fpama/2005/fpama2005a.htm>.

3 PriceWaterhouseCoopers, at <http://www.pwc.com/extweb/ncpressrelease.nsf/docid/8e2b24eab4372b8f8525703c005ad30c>

4 National Commission on Science for Sustainable Forestry (2005). *Global Markets Forum Summary Report of the National Commission on Science for Sustainable Forestry*, pages 7 and 8, at <http://ncseonline.org/ewebeditpro/items/O62F6140.pdf>.

5 World Bank (2005). *Papua New Guinea – Interim Strategy Note*, Report 31790-PG, 18 March 2005, Table 1, page 6.

- the proportion of poor people living below the World Bank's estimated national poverty line increased from 37.5 percent in 1996, to 53.5 percent in 2003;<sup>6</sup>
- average life expectancy is less than 60 years, infant mortality rates range from 50-110 deaths per 1000 live births, and nearly 75 percent of the rural population has no formal schooling;<sup>7</sup>
- there are serious health problems, especially HIV-AIDS, and poor access to medical services in rural areas;
- population growth is at least 2.3 percent *per annum*. The United Nations (UN) has noted that 'The high population momentum implies that in the future PNG will have to continue to earmark a large proportion of its resources for demographic investment in areas like health, education and employment creation' and '...national targets can only be achieved with proportionately higher increased benefits for those areas/subgroups of the population that are lagging behind in the development process';<sup>8</sup> and
- the national government deficit is unsustainable and the PNG government is reducing national savings to fund it.<sup>9</sup>

PNG can ill afford to pass up any opportunity to build sustainable growth. This is the only way it can lift living standards. Without growth, it will not be able to afford to implement the environmental policies that are necessary to underpin sustainable development.

### C. The value and potential value of PNG's forestry resources

PNG has an estimated 29.6 million hectares of forest, covering 64 percent of the country's land area.<sup>10</sup> World Bank estimates suggest that the industry has contributed up to 8.6 percent of PNG's GDP.<sup>11</sup> Australia's Department of Foreign Affairs and Trade (DFAT) notes that forestry's share of GDP has declined since the Asian Financial Crisis in the late 1990s. Its share of GDP has been relatively constant since 1999, accounting for between 3 and 5 percent of GDP.<sup>12</sup> The industry generates around 5 percent of PNG's exports. For over a decade it has contributed an average of 30 percent of PNG's expenditure on development.

Putting PNG's forest resources into global context, Brazil has around 412 million hectares of tropical hardwood, representing 20 percent of the world's total stock.<sup>13</sup> New Zealand has 6.4 million hectares of indigenous forests and 1.7 million hectares of planted production forests.<sup>14</sup>

Sweden, Finland, New Zealand and Chile are examples of countries that have successfully and sustainably developed their forestry endowments. New Zealand's experience demonstrates that, with the right resource endowment and appropriate policies, land previously earning a low economic return from farming can be converted into a profitable and sustainable log export industry. Sweden has shown how to develop plantation forestry.

As this report will show, PNG already derives important benefits from its forestry industry. Examining forestry development in other countries illustrates the potential of forestry resources.

This is further discussed in Chapter 6 and Appendix IV. Two examples illustrate the range of what might be achieved in PNG. Tim Curtin, a former Advisor to the PNG Department of the

6 Asian Development Bank (2006). *Papua New Guinea Country Information*, page 3, at <http://www.adb.org/papuanewguinea/country-info.asp>.

7 World Bank (2005). *World Development Indicators Database*, 2005, at [www.worldbank.org](http://www.worldbank.org).

8 See United Nations Development Program (2004). *Papua New Guinea Millennium Development Goals: Progress Report for Papua New Guinea 2004*, pages 14 and 51, at <http://www.undp.org.pg/documents/National%20MDG%20Progress%20Report%202004.pdf>

9 Chand, Satish (2003). *PNG Economic survey: some weak signs of recovery*, December 2003, at <http://peb.anu.edu.au/pdf/chand2003.doc>.

10 FAO (2005). *Global Forest Resources Assessment 2005: Papua New Guinea Country Report*, Country Report 097.

11 World Bank (1999) *Papua New Guinea Forestry and Conservation Project*, Report PID8284, 1999, page 1.

12 Department of Foreign Affairs and Trade (2004), *Papua New Guinea: the Road Ahead*, DFAT, Canberra, page 127.

13 See <http://www.nationsencyclopedia.com/Americas/Brazil-FORESTRY.html>.

14 See <http://www.maf.govt.nz/forestry/resources>.

Treasury, looks at development of extensive plantation forestry, supposing PNG might ultimately attain Sweden's level of output, arguing, '...there is no reason why it could not, given its equal – possibly superior – suitability for softwood pine forestry'.<sup>15</sup> To double forestry exports from plantation forestry in PNG would double average incomes to US\$1,400, and this 'could be achieved within 10-15 years if plantations were developed on the rotation basis that the World Bank's first forestry report (1990) considered feasible'.<sup>16</sup>

The second example is an estimation of what PNG is losing by not producing at the level of the sustainable potential of its natural forests. Calculations set out in Appendix IV demonstrate that PNG is only producing at around 70 percent of what the International Tropical Timber Organisation (ITTO) estimates could be produced on an annual sustainable basis from its natural forests.

In addition to lower levels of exports, landowner benefits and employment, these calculations suggest that production at this level implies that Government revenue from the industry was around US\$20 million lower in 2004 than it could have been.

It is notable that much recent discussion about PNG's forest industry has not focused on the benefits of the industry or its potential. It has been dominated by negativism. There is a widely held view that commercial forestry in PNG is not economically viable. This has been fostered by material prepared for the "Independent Review Team" (IRT) which examined logging in PNG in 2003<sup>17</sup> and groups like Forest Trends (a research organisation involving Green NGOs, which is supported by the World Bank).<sup>18</sup>

As noted in following sections of this report, the IRT does not demonstrate that the commercial forestry is economically unviable. Furthermore, it is noted that the potential economic contribution of PNG's forestry resources is not assessed in recent World Bank reports.

Tim Curtin, has commented that the potential contribution of PNG's forestry resource '...seems to be so politically incorrect that the income generating potential of plantation forestry could not be mentioned either in the World Bank's loan appraisal or in the AusAID/ANU Rural Development Handbook'.<sup>19</sup>

15 Curtin, T. (2005). *Forestry and Economic Development in Papua New Guinea*, page 3.

16 *Ibid.*, page 11.

17 Independent Forest Review Team. (2004). *Towards Sustainable Timber Production – A Review of Existing Logging Projects, Draft Observations and Recommendations Report*, report for the Government of Papua New Guinea, Volume 1 – Main Report, and Volume 2 – Appendices. Draft Report of the Independent Review Team. This Review was required by the World Bank as a condition for provision of a US\$40 million loan to improve forestry. The report was never completed. The PNG Government withdrew from the project and the Bank cancelled the loan facility because other conditions required by the World Bank, including a moratorium on logging, were unacceptable. We use the acronym IRT to refer to this report.

18 Forest Trends (2006). *Logging, Legality, and Livelihoods in Papua New Guinea: Synthesis of Official Assessments of the Large-Scale Logging Industry*, Volume 1. Further comments on this and the report of the Independent Review Team, are at Appendix 3. Neither of these reports acknowledges, let alone assesses, the potential economic value of PNG's forestry resource.

19 Curtin, T. (2005) *Forestry and Economic Development in Papua New Guinea*, at [http://archives.pireport.org/archive/2006/April/Forestry\\_development\\_PNG.pdf](http://archives.pireport.org/archive/2006/April/Forestry_development_PNG.pdf) A more extensive analysis of Curtin's thesis is set out in his article *How Poor is Papua New Guinea? How Rich Could it Be?*, Resource Management in Asia-Pacific, Working Paper No.56, ANU, Research School of Pacific Studies, 2004, (available at [http://rspas.anu.edu.au/papers/rmap/Wpapers/rmap\\_wp56.pdf](http://rspas.anu.edu.au/papers/rmap/Wpapers/rmap_wp56.pdf)).

## Chapter 3. Economic significance of forestry to PNG

### A. Contribution of forestry to the national economy

Key social and economic indicators in PNG are in decline. DFAT notes that ‘Falling real output combined with a high population growth rate has led to a rapid decline in Papua New Guinea’s *per capita* GDP. In purchasing power parity ... terms the country’s *per capita* GDP declined from a peak of US\$2,641 in 1994 to US\$2,165 by the end of 2002’.<sup>20</sup>

PNG needs growth and its forestry resources are making a major contribution to exports and government revenue for funding social and infrastructure investment. They are generating economic activity and employment, particularly in rural areas.

According to World Bank numbers, forestry in PNG contributed around 8.6 percent of GDP in 1998,<sup>21</sup> about US\$270 million. (The World Bank also observed then that the industry was capable of contributing US\$300 million<sup>22</sup>.) This translates into revenues to government and landowners in the order of US\$100 million.<sup>23</sup>

The break up of the economic contribution of the forestry industry to PNG is as follows:

- Log export tax is paid to the national government; annual payment averaged K110 million between 1999 and 2002 (see Table 1 below). These payments account for around 6 percent of Government tax receipts and about 5 percent of total government revenue.<sup>24</sup>
- Indirect tax receipts from forestry are estimated at around 16 percent of all indirect tax receipts.<sup>25</sup>
- Logging companies are required to pay royalties to local landholders. There is a fixed rate per log, but certain infrastructure and services, which companies are obliged to provide according to leases, can be deducted from the amounts. Royalties represent substantial payments; between 1997 and 2003, more than K10 million for each of the two largest logging projects (TP 10-8 Vanimo and TP 1-7 Wawoi Guavi) were paid; and
- The infrastructure provided is significant – roads, airfields, air services, health clinics, services and schools. The total value has not been officially assessed. It was concluded that such investment in the Western Province at least doubles the value of the services and infrastructure provided by the Western Province government. This is discussed further in Chapter 5, Section B.

Forestry exports and contributions to government revenue underpin and enable a very large percentage of national and provincial government spending. Without those exports and revenue, either government spending would have been proportionately lower, and/or the government would have had to increase its deficit or borrowing. Forestry exports’ share of total exports rose

**Table 1: Log exports and log export taxes: 1999-2002**

Year	1999	2000	2001	2002
FOB log exports (K, million)	385.60	383.70	283.10	367.00
Log export taxes paid (K, million)	100.10	135.75	95.77	112.69

Source: PNG Forest Industries Association, at [http://www.fiapng.com/export\\_stats\\_1997\\_2002.pdf](http://www.fiapng.com/export_stats_1997_2002.pdf)

20 Department of Foreign Affairs and Trade (2004), *op. cit.*, pages 3 and 4.

21 As noted in Appendix 6.2, securing comparable data on PNG is difficult. In the box on key macroeconomic data, we have used Bank of PNG data. Other estimates for some later data are available. The CIA *World Factbook* estimates PNG’s GDP for 2005 at US\$4.1 billion. See <http://cia.gov/cia/publications/factbook>

22 DFAT presents a figure showing that forestry’s share of GDP fell substantially after the Asian Financial Crisis in 1997. DFAT(2004), *op. cit.*, page 127.

23 World Bank, *The World Bank and the Forests in Papua New Guinea*, at <http://siteresources.worldbank.org/INTPAPUANEGUINEA/Data%20and%20Reference/20211798/NB+Forestry+Brief.pdf>.

24 Independent Forest Review Team. (2004). *Towards Sustainable Timber Production – A Review of Existing Logging Projects, Draft Observations and Recommendations Report*, *op. cit.* Volume 1, page 62, 64.

25 *Ibid.*, page 62.

**Key macroeconomic figures for PNG**

- GDP in 2002, the latest year for which data is available on the Bank of PNG website, was K11.163 billion;
- Exports were estimated at US\$2.833 billion in 2005;
- Imports were estimated at US\$1.651 billion in 2005;
- Recurrent expenditure in 2005 (on a preliminary basis), was K3.42 billion, of which K2.22 billion was by the National Government;
- Public debt is estimated to be 47 percent of GDP in 2005.

from around 7-8 percent in the early 1990s to around 20 percent at the end of the decade. Their share of revenue rose from around 1-3 percent to around 12-13 percent over the same period.

The share fell after 1998, when prices and demand for logs decreased following the Asian currency crisis, and increases in taxation collections from rising prices for minerals increased total government revenue.

Details are provided in Table 2.

Between 1990 and 1998, forestry played a major role in underpinning the PNG economy. This can be confirmed by an examination of the contribution of taxes to development expenditure.

Table 3 shows that forestry export taxes financed an average of around 30 percent of development expenditure between 1990 and 2005. Green NGOs which seek to constrain the industry should be made to explain how such a large proportion of development expenditure underpinned by the forestry industry could be undertaken without such taxes.<sup>26</sup>

**Table 2: Tax Receipts and Export Taxes: Values and percentages: 1990-2005, Kina, and percentages**

Year	Tax receipts (K, billion)	Export taxes (K, million)	Export taxes as a percentage of tax receipts
1990	0.60	12.7	2.1
1991	0.62	18.4	2.9
1992	0.76	26.1	3.4
1993	0.98	73.9	7.5
1994	1.12	138.8	12.3
1995	1.21	132.9	11.10
1996	1.53	157.2	10.30
1997	1.69	148.4	8.74
1998	1.59	40.1	2.5
1999	1.92	78.9	4.1
2000	2.13	133.9	5.78*
2001	2.29	98.1	4.27*
2002	2.37	106.7	4.5
2003	2.67	111.8	4.17
2004	3.25	101.5	3.11
2005	3.77	136.3	3.61

Source: Bank of PNG, at [http://www.bankpng.gov.pg/publications/qeb/dec05/qbdec05\\_8-1.pdf](http://www.bankpng.gov.pg/publications/qeb/dec05/qbdec05_8-1.pdf), Table 8.1, *Fiscal Operations of the Central Government, and ITS Global*.

\* The PNG Forest Industry Association considers logging taxes contributed over 7 percent of government revenue in these years.

26 It is argued in Chapter 7 that progressive export taxes are one of the issues that constrain the industry. The economic issues are not straightforward. At one level, forestry export taxes are clearly very important in enabling around a third of development expenditure. But at another level they are constraining the industry.

**Table 3: Export taxes and Development Expenditure: Values and percentages: 1990-2005**

Year	Export Taxes (K, million)	Development Expenditure (K, million)	Export taxes as a percentage of development expenditure
1990	12.7	108.9	11.66
1991	18.4	152	12.10
1992	26.1	108.1	24.1
1993	73.9	198.5	37.2
1994	138.8	117.6	118.02
1995	132.9	219.5	60.54
1996	157.2	252.8	62.18
1997	148.4	191.9	77.33
1998	40.1	177.9	22.54
1999	78.9	737.7	10.69
2000	133.9	848.8	15.77
2001	98.1	1119.3	8.76
2002	106.7	1139.8	9.36
2003	111.8	1039	10.76
2004	101.5	1329.2	5.47
2005	136.3	1849.4	7.36

Source: Bank of PNG, Table 8.1, *Fiscal Operations of the Central Government*, at [http://www.bankpng.gov.pg/publications/qeb/dec05/qbdec05\\_8-1.pdf](http://www.bankpng.gov.pg/publications/qeb/dec05/qbdec05_8-1.pdf)

Forestry's contribution to the economy is less significant now than in the past, due to both the vagaries of the international economy and policies that constrain the industry. Demand for timber slumped after the Asian currency crisis. However, growth is recovering and demand for timber products is increasing. High commodity prices have increased earning from minerals, but no one knows how long this situation will last.

Recent data on the forestry industry published by the Bank of PNG in its March 2006 *Quarterly Economic Report* is as follows:

- Forestry product exports in the March quarter accounted for 3.6 percent of total merchandise exports, compared to 5.3 percent in the March quarter of 2005;<sup>27</sup>
- the average log export price was K180 per cubic meter, an increase of 4 percent over the same period in 2005 'attributed to higher international prices, reflecting lower supply of tropical hardwoods in the world market';<sup>28</sup> but
- the volume of logs exported, at 472,000 m<sup>3</sup> was 22.4 percent lower than the corresponding quarter of 2005, 'mainly due to lower production and shipment of logs from the major logging projects as a result of unfavourable weather conditions'.<sup>29</sup>

Economic sustainability in any economy is strengthened if the economic base of the economy is broad. The foregoing indicates how forestry has a continuing role in the growth of the PNG economy.

27 Bank of Papua New Guinea (2006). *Quarterly Economic Bulletin*, March 2006, page 12, at <http://www.bankpng.gov.pg/publications/Mar06qebdoc.pdf>.

28 *Ibid.*, page 14.

29 *Ibid.*, page 15.

## Chapter 4. The IRT case against the forest industry

As noted, there is a popular myth that commercial forestry in PNG is not economically viable. The strongest support for this was provided in the draft report of the “Independent Review Team” (IRT) set up in 2003 to review logging in PNG. This review was mandated by the World Bank as one of the conditions for providing a US\$40 million loan to improve management of forestry.

The IRT produced a draft report for review by stakeholders, including Government agencies. That did not occur. The report was never finalized. The PNG Government withdrew from the project because it objected to the conditions required by the World Bank for the loan. These included a moratorium on new logging, and institutionalization of NGOs in management of forestry and biodiversity.

The IRT draft report gave currency to a wide variety of complaints about commercial forestry.<sup>30</sup> These are not considered here. On the economics and financial state of the forestry industry, the IRT concluded that forestry in PNG was neither profitable nor environmentally sustainable. It reported:

‘...logging was found to have little long term beneficial impact on landowners, although they bear the environmental cost’;

‘...the level of income under current arrangements is generally too small to impact significantly on rural living standards’;

‘...the logging industry ... is not profitable and the logging companies are not replacing their field equipment. This is not sustainable and unless the situation changes for the better it is estimated that PNG’s current logging capacity will cease to exist within 10 years.’<sup>31</sup>

The IRT nominated eight ‘...necessary inputs: all of which had to be satisfied to demonstrate that forestry in PNG was sustainable’. They require, for example, “political will” by the government to support forestry, “appropriate prices” for logs and “profitability”. This set of inputs reality. It was a test that even a forest industry in a developed country could fail at any time. The inputs also required a level of governance most low-income developing countries could not meet. The inputs are set out and discussed in Appendix II.

Appendix 8 (*Socio-Economic and Financial Impacts Report*) in Volume 2 of the IRT draft report was the source of the IRT conclusions. The IRT commissioned Christopher LaFranchi, who is described as a natural resource economist, to prepare this Appendix. This was an odd selection. He was clearly disposed to Greenpeace’s bias against commercial forestry.<sup>32</sup> It would be surprising if this were not known to the IRT when they commissioned him.

To measure possible benefits in regional areas, LaFranchi’s analysis sets nine indicators. A number of these reflect philosophical bias. For example, the value of infrastructure is lowered if there is no public control and private consumption is rated lower than public investment expenditure. The case is analysed in detail in Appendix II.

30 This included those made by Green NGOs about corruption, poor work practices, disregard of environmental standards and poor and inefficient administration by the Government of both forestry and environmental policies. They are reviewed in detail in ITS Global (2006) *Whatever it takes: Greenpeace’s anti-forestry campaign in Papua New Guinea*.

31 Independent Forest Review Team (2004). *Towards Sustainable Timber Production – A Review of Existing Logging Projects, Draft Observations and Recommendations Report op. cit.*, Volume 1, page viii.

32 IUCN refers to Mr. Lafranchi as being part of Greenpeace Pacific. See <http://www.iucn.org/themes/fcp/publications/arbortvtae/avnewsletter/arbortvtae11.pdf>. IUCN has a close working relationship with Greenpeace Pacific. He appears to have a few previously published studies. He authored one jointly with Greenpeace Pacific in 1999 – *Islands Adrift – Comparing Industrial and Small-Scale Economic Options for Marovo Lagoon Region of the Solomon Islands*. It reveals LaFranchi as an ecological economist with a strong romantic and pre-industrial bent. His perspectives are also redistributive and anti-private sector.

LaFranchi draws conclusions that are not justified. Some require detailed economic analysis, and no appropriate or convincing evidence is presented. The methodology employs accounting concepts to draw economic conclusions. Fieldwork draws quantified conclusions from impressions by villagers. Overall, the IRT draft report lacks economic credibility.

Ordinarily this type of analysis would be marginalized by comparison with more mainstream analysis on the economic value and importance of the industry. There has, however, been little recent comment by official development agencies about the economic significance of the industry. This has allowed the report to acquire an authority it does not warrant.

Official development agencies use the classical definition of sustainable development. In satisfying environmental objectives, development strategies must also ensure that goals to achieve growth are maintained. As the LaFranchi/Greenpeace Pacific work on the Solomon Islands demonstrates, Greens give priority to ecological considerations. It is clear that the IRT review bent its perspective in this direction. It is disquieting that the World Bank and Department for International Development (DFID) appear to have countenanced this.

In 2005, the World Bank produced an *Interim Strategy Note for Papua New Guinea*.<sup>33</sup> It identified industries as growth opportunities. It cited ‘food production for the domestic market; cash crops such as oil palm, vanilla and other spices; and in downstream agro-forestry’.<sup>34</sup> It does not cite the timber industry. Yet in 1998 the World Bank pointed out the industry was contributing US\$270 million per year to PNG (8.6 percent of GDP) and was capable of improving that performance by another 10 percent.<sup>35</sup>

Colin Filer, an academic at the Australian National University (ANU), argued in his 2004 paper *A Serious Case of Conditionality: The World Bank Gets Stuck in the Forests of PNG* that there was a conscious policy by the World Bank to stifle the log export industry in PNG.<sup>36</sup> This consultant also noted that since 1998, the World Bank has had a formal “partnership” with the WWF, with whom it has collaborated closely on forestry policy.<sup>37</sup> WWF is closely allied with Greenpeace on forestry issues, and only supports forestry if it follows the principles laid down by the Forest Stewardship Council (which is controlled by WWF).<sup>38</sup>

If development strategies do not encourage economic development of resources that can contribute to growth in developing countries, the capacity to eradicate poverty, improve social indicators, and improve management of the environment will be perpetually impeded.

Whatever the intent of the World Bank in forming the Forestry Alliance with WWF, the effect is represented in what happened in PNG. The research programs on forestry resulted in material which sought to discredit commercial forestry.

33 World Bank (2005). *Papua New Guinea – Interim Strategy Note*, Report No.:31790-PG.

34 *Ibid.*, page 5.

35 The World Bank has been quiet before[0]. In 1998, together with PNGFIA, it funded an independent study by reputable forestry consultants (Groome Poyry Pty Ltd) on the benefits to landholders from forestry arrangements. The study showed the gains were significant. The Bank never released the study. It was available from the PNGFIA but was not used by the IRT or its consultants who undertook the impact study. Groome Poyry Ltd (1998) *Audit of Landowner Benefits Received from Harvesting Operations under Timber Permit*, Final Report, Volume 1, April 1998.

36 Colin Filer (2004). “A Serious Case of Conditionality: The World Bank Gets Stuck in the Forests of PNG”, *Development Bulletin* 65, pages 95-99, 2004. In the paper Filer asks: ‘If Bank staff are innocent of my previous suggestion that they always intended to stifle the log export industry in a mountain of red tape, should we consider an alternative explanation of what has happened as a form of ‘analysis by paralysis’, in which each successive study generates more problems than it solves, because the implementation of its recommendations only serves to increase the complexity of the problem to which they are addressed?’

37 See <http://www.forest-alliance.org>.

38 Greenpeace is running a campaign against PNG forestry companies, claiming they practice illegal logging. It is lobbying companies in Europe, and running public relations campaigns against some, for purchasing timber products if they might contain timber from PNG. It is urging them to subscribe to the certification system of the Forest Stewardship Council. WWF is lobbying Government procurement agencies in Europe only to purchase timber and paper products from businesses which are certified by the Forest Stewardship Council. See separate report by ITS Global – *Whatever it takes: Greenpeace’s anti-forestry campaign in Papua New Guinea*.

## Chapter 5. Regional impact of the forest industry

Green critics of forestry in PNG also claim that forestry does not deliver results to benefit people in the provinces. For example, the IRT reported that of the proceeds of the sales from logs, only 7 percent went to the people; the lion's share went to the owners of the logging company and the rest to the national government.

This analysis is based on the direct distribution of taxes paid by the forestry companies on the proceeds of their sales. However, tax revenue cannot be considered as the whole economic impact of any productive activity. First, there are other economic benefits, like provision of infrastructure and other benefits flowing from the provision of hard infrastructure to support new industry (such as construction of roads and airports) and soft infrastructure (such as provision of medical facilities and schools) and payments to local labour.

Then, there is the well-known flow-on, or “multiplier”, effect. This arises from the additional economic activity that is created by follow-on spending by second parties on goods and services and employment of local people. Further, these are important ways benefits are delivered to people in the regions. The IRT ignored the direct benefits to the region and, while it formally recognised the multiplier effect, it tended to discount its potential benefits.

### A. Infrastructure investments

Infrastructure spending, especially road investments, is central to an assessment of the potential economic impact of the industry.

ACIL Tasman quotes Pradham as having estimated ‘...an average economic rate of return for World Bank maintenance works of 45 percent and 24 percent for new construction projects. Based on the analysis for representative road maintenance options in PNG reported by AusAID (Australian aid agency), a 45 percent rate of return is equivalent to a benefit to cost ratio of approximately 3’.<sup>39</sup>

Hughes notes that ‘...targeted rural road development projects have been found to have had very positive poverty reduction benefits, especially in remote villages whose road access has been improved’, but that ‘...the level of development agency investment in most rural road projects ... is very small compared with that in the rehabilitation of main trunk roads and highways deemed to be of strategic importance in the national, provincial or regional level’.<sup>40</sup>

Hughes cites four benefits for rural communities from road rehabilitation:

- more frequent and reliable services;
- improved access by rural people to markets and suppliers in larger villages and towns;
- improved access to health, education and agricultural extension services; and
- long term increases in cash incomes because of improved access to markets and suppliers.<sup>41</sup>

The state of PNG roads suggests that the economic benefits flowing from new logging roads may be even more important than has been estimated. Hughes, for example, observes that: ‘Many roads are now virtually impassable and in the highlands, for example, entire communities have again become largely isolated from the outside world, with drastic economic and social effects’.<sup>42</sup>

The World Bank has noted ‘...the overall inability to make sustainable progress in roads in the 1990s in PNG had significant negative implications for the non-mining economy and access to

39 ACIL Tasman (2005). *Op. cit.*, page 70.

40 Philip Hughes (2005) *The Difficult Problem of Measuring the Village-Level Socio-Economic Benefits of Road Rehabilitation Projects in Rural Asia and Papua New Guinea*, Working Paper No. 62, Resource Management in Asia-Pacific, 2005, at <http://rspas.anu.edu.au>.

41 *Ibid.*, Box 1, page 4.

42 *Ibid.*, page 7.

social services'.<sup>43</sup> The Asian Development Bank (ADB) observed, '...the survey data provides that half of the national roads are in poor or fair condition. ... Poor roads constrict mobility and economic growth. ... Enhanced mobility can yield significant economic benefits'.<sup>44</sup>

Anecdotal evidence supports this. *Development Options Study For The Commercial Forest Resource In the Kamula Doso Forest Area, Western Province*, prepared by the Resource Management Division of the PNG Forest Authority (PNGFA), noted that 'The majority of the landowners welcome the proposed project and insists that it commence as soon as possible. Most of the old people raised concerns that they want to benefit from this project before their times are up and demanded that project negotiations to accelerate'; and 'Most of the villages within the project area are only accessible by bush tracks', and the road should link a number of areas.<sup>45</sup>

The IRT reports simply discounted the benefit of forestry from infrastructure expenditure in rural areas.

## B. Flow-on effects

Researchers were unable to locate independent estimates of the possible size of the multipliers for forestry investments in PNG. The most recent publicly-available estimates for multipliers in PNG that are analogous are provided by ACIL Tasman in its report on the benefits of the PNG Gas Pipeline project.

The report concludes that the indirect effects of that project are likely to be greater than the direct effects.<sup>46</sup> It distinguishes between the direct and indirect production effects (or Type I multipliers) and the indirect consumption effects (or Type II multipliers). ACIL Tasman's estimates are reproduced in Table 4.<sup>47</sup>

This demonstrates that for every K0.74 spent by a private company for its own needs on the project, such as purchasing gasoline for its vehicles, the flow-on economic benefit to the PNG economy is another K1.02. For example, this comes from the extra business generated for those who supply gasoline. Where the development company supplies goods and services for government expenditure on the project, K0.90 spent generates an additional economic flow-on of K1.38. And where inputs are provided to the gas industry, the comparable figures would be between K0.79 and K1.10.

**Table 4: Estimated multipliers for the PNG Gas Pipeline project**

Activity	Type I value added multiplier	Type II value added multiplier
Industries supplying private consumption	0.74	1.02
Industries supplying government expenditure	0.90	1.38
Industries supplying inputs to the gas industry	0.79	1.10

Source: ACIL Tasman, *The PNG Gas Project*, Table 1, page 69

43 World Bank (2000), *Papua New Guinea Country Assistance Evaluation*. <http://www.worldbank.org>, accessed on 1 July 2006.

44 ADB, *Technical Assistance to Papua New Guinea for preparing the Southern Road Maintenance and Upgrading Project*, paragraph 7. <http://www.adb.org/Documents/TARS/PNG/R151-01.pdf>, accessed on 21 June 2006.

45 PNG Forest Authority. *Development Options Study for the Commercial Forest Resource in the Kamula Doso Forest Area, Western Province*, Resource Management Division of the PNG Forestry Authority, page 9.

46 ACIL Tasman (2005). *Economic Impacts of the PNG Gas Project: An assessment of direct and indirect impacts on the economy of Papua New Guinea*. Prepared for the PNG Gas Project May 2005, page 49, at [http://www.esso.com.au/pdf/esso/PNG\\_impacts\\_May\\_2005.pdf](http://www.esso.com.au/pdf/esso/PNG_impacts_May_2005.pdf).

47 *Ibid.*, page 68. ACIL Tasman's estimates are derived from an input/output table for Fiji, as 'PNG does not have an up-to-date input/output table'.

### C. Omissions by the IRT

The IRT did not seek to establish multipliers for the forestry industry. It is highly likely they would be similar to those for the PNG Gas Pipeline project. The IRT report concedes the importance of multiplier effects but argues that they are dampened ‘...to the extent that goods and services procured with logging returns are imported or sold by foreign-owned and operated entities’.<sup>48</sup> The point is correct in principle, but no effort is made to quantify this; it is simply asserted that such effects may be “non-existent”.<sup>49</sup> This is highly unlikely. For it to be the case, no further investment would be made in PNG (all profits just repatriated); no local labour would be employed; and no goods and services would be locally procured. This is clearly not the case.

The IRT concluded, ‘...the main economic impact at the local level is due to the direct financial payments by landholders...’.<sup>50</sup> In making such statement, it did not even take into account the wages paid to those working in regional areas.

The IRT also argued that, ‘...lasting infrastructure that does not accrue (schools, roads, health facilities, increased access to political processes, etc) is off-set by social and environmental costs borne primarily at the local level’.<sup>51</sup> This assessment is based on impression, by the IRT’s own admission. In Volume 2 of its draft report, the IRT notes that, ‘...rigorous treatment of these costs and benefits would require collection of scientifically credible and empirical data, something that is beyond the scope of this work’.<sup>52</sup> This did not lead the review to be judicious about its conclusions of the industry’s regional impact, or to qualify them.

The IRT draft report also contends that logging roads are not maintained and ‘therefore provide little positive impact after logging ceases’.<sup>53</sup> Whether or not these roads are maintained after logging ceases does not, as the IRT implies, mean that they deliver no economic value after they have been constructed. Such a claim is inconsistent with observed fact: local people both value and use logging roads and airstrips for commercial gain, as well as to access health and education services.

The IRT would seem to have either not been aware of, or chose to ignore, the solid body of research demonstrating the socio-economic benefits of road investments in rural areas in developing countries. Rural people in PNG clearly appreciate this point.

The socio-economic impact of the forestry industry at the regional and local level is significant. For the purposes of this report a case study was made of the regional impact. The objectives were twofold: first, to assess the size and comparative socio-economic significance of the forestry industry at the regional and local level (this is discussed in the next chapter and Appendix III); and second, to use some of the data to reach broad conclusions about the potential of the industry for PNG (discussed in Chapter 7 and Appendix IV).

48 Independent Forest Review Team (2004). *Towards Sustainable Timber Production – A Review of Existing Logging Projects, Draft Observations and Recommendations Report*, Volume 2, Appendix 8, page 11.

49 *Ibid.*, Appendix 7.2 contains more detail.

50 *Ibid.*, Volume 1, page 62.

51 *Ibid.*, Volume 1, page 63.

52 *Ibid.*, Volume 2, page 12.

53 *Ibid.*, Volume 2, page 25.

## Chapter 6. Regional impacts of forest industry – a case study

### A. Impacts in the Western Province

The Rimbunan Hijau project at Wawoi Guavi in the Western Province was selected as a case study of the regional socio-economic significance of the forestry industry. The full case study is set out in Appendix III.

In addition to presenting data on the regional socio-economic significance of the project, the intention was to compare expenditure on infrastructure, health and education by the Fly River Provincial (Western Province) Government, with that by Rimbunan Hijau at Wawoi Guavi. It would have been preferable to present comparable figures for both current and capital expenditure, but such data is not available. Therefore publicly-available material has been augmented with a considerable amount of information and advice provided by Rimbunan Hijau. This information has not been published before. It has facilitated an assessment (for the first time, as far as is known) of the regional socio-economic significance of the forestry industry in PNG.

The socio-economic importance of the Wawoi Guavi project can only be assessed in relation to conditions in Western Province, and the expenditure on health, education and transport by the Western Province Government.<sup>54</sup> Income levels are low, infrastructure is underdeveloped, and there are major challenges in meeting health and education needs. Only 22 percent of children attend school.<sup>55</sup> The Provincial Development Plan for the Fly River Provincial Government (Western Province) demonstrates that there is concern about what might replace mining when it scales down. Forestry is regarded as a key resource.

The Western Province 2006 Budget speech revealed that:

- The development budget was K14.8 million, including K1.2 million for the District Road Improvement Program, K0.3 million for the District Health Improvement Program, and K0.3 million for the District Education Improvement Program.<sup>56</sup>
- In the South Fly District K0.4 million is ‘...for the upgrading of Binaturi/Oriomo Road’. Unconditional grants are provided to the district for health (K0.58 million), education (K0.78 million) and infrastructure maintenance (K0.78 million).<sup>57</sup>
- K500,000 is provided as an air subsidy, ‘...so that government and other essential services to very remote locations are conducted’.<sup>58</sup> People in some regions can take ‘...four to eight hours to reach service centres’.<sup>59</sup>
- ‘Subsidies in some schools are not more than K5,000’.<sup>60</sup>

How much of this allocated expenditure was actually spent by the government is, however, unclear. The amounts spent may be substantially less than those allocated in the budget.

The Wawoi Guavi project includes two processing plants: Panakawa and Kamusie. The project is a substantial provider of employment, infrastructure and services in the Western Province:

- There are 900 employees at the Wawoi Guavi Timber Company Limited and 600 at the Panakawa Veneer Mill. Rimbunan Hijau has advised that there are also 300 contract workers employed for exclusive contract work for Wawoi Guavi Timber Company Limited.

54 For the purposes of this case study we have not included direct spending on health, education and transport by the national government.

55 *Western Province 2010, the Provincial Development Plan of the Fly River Provincial Government for the Plan Period 2006-2110*, page 17.

56 *Ibid.*, page 78.

57 *Ibid.*, page 79.

58 *Ibid.*, page 86.

59 *Ibid.*, page 16. Map 3 in the Plan reveals, however, a paucity of major and minor roads in the Province.

60 *Ibid.*, page 86.

- Some of these employees are locals but many are from other regions. Skilled workers earn K2.00 per hour. Most stay 3-5 months and aim to earn a target level of income. Many return within 12 months.
- Accommodation and free medical, water and electricity services are provided. Local produce is purchased.
- Around 3000 people live in the area, a high proportion of whom use the services provided for the project, including roads, schools, the airstrip and the medical facilities.
- The air services are available to, and used by, local people.<sup>61</sup>
- More than 100 children attend the school at Kamusie.<sup>62</sup>
- The medical aid posts have qualified doctors and serve both employees and local people.

The PNG Forest Authority's *Draft Individual Project Report No. 14 on Wawoi Guavi*,<sup>63</sup> '...carried out under the auspices of the Department of National Planning and Monitoring', notes that:

- '...landowners expressed support for the company to continue logging as there was no other form of development for them';<sup>64</sup> and
- 'landowners welcomed the construction of roads and bridges' and made a strong plea to the National Government to contribute part of the export tax money into developing sustainable infrastructures and social development in the project area'.<sup>65</sup>

Advice was sought from Rimbunan Hijau on its capital and recurrent spending on infrastructure, health and education for the Wawoi Guavi project. Tables 5, 6, 7 and 8 in Appendix III contain details on infrastructure development projects delivered; infrastructure, health and education spending; the cost of roads constructed; and the value of roads constructed. The tables also contain a breakdown provided by Tropic Air (which operates the air service to the project) on use of the service to Wawoi Guavi in March 2006 by employees, landowners and third parties. Table 5 in Appendix III contains a summary prepared by ITS Global from advice provided by Rimbunan Hijau, on premiums and levies, royalties, export duty, infrastructure and total spending – which is also an approximate measure of the contribution of the project to GDP.

## **B. Forestry industry expenditure compared to provincial government expenditure**

Expenditure by Rimbunan Hijau is set out in the Case Study in the Appendix III; Table 5 specifies expenditures on the Wawoi Guavi. Key data shows that:

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- 61 During the visit to Kamusie by ITS Global the aircraft flew to an adjacent town, collected a severely injured person and transported him and a carer to Port Moresby. We were advised that such events are common and that land/river transport to a hospital would have taken days rather than hours. Based on the subsidy for air travel in the 2006 Western Province budget reported above, the value of the air services associated with the Wawoi Guavi operation would appear to be more widely understood and appreciated by the Western Province Government and local people than by those who wrote the IRT report. Air services benefits are not included in the IRT report's list of potential benefits from forestry. (See for example the list presented in Volume 2, page 26 of the IRT report.)
- 62 The head teacher of the school at Kamusie told ITS Global that he had been educated at the school, but there were problems in attracting teachers to isolated schools such as this. He said there was a strong demand for education in the area but that without the present school, the prospect of the provincial government establishing, staffing or funding a school was remote. The PNG Forest Authority report (page 22, see following footnote reference) noted that the (then 2004) intake consisted of 75 percent employee's children and 25 percent from surrounding villages.
- 63 PNG Forest Authority (2004) *Review of Current Logging Projects, Draft Individual Review Report No 14*, based on a Field Review in April 2004.
- 64 *Ibid.*, pages 12 and 13.
- 65 *Ibid.*, page 12. While this draft review was written at the same time as the draft IRT report (May 2004), the IRT authors, who reviewed the Wawoi Guavi project, have reached radically different conclusions from those expressed by landowners as quoted by the PNG Forestry Authority report. There is, for example, nothing in the latter to justify the IRT conclusion that: 'A relatively small percentage of the total direct payments (and associated infrastructure benefits) reach the poorest and most remotely located communities', and 'Lasting infrastructure that does accrue (schools, roads, health facilities, increased access to political processes etc) are off-set by social and environmental costs borne primarily at the local level' (IRT, Volume 1, page 63).

- national wages paid have grown very substantially, from K1.03 million in 1993 to K7.15 million in 2005;
- export duty (K147.11 million) comprises 55.4 percent of the total contribution to GDP from the project. It is not credible to argue that the project is not making a major contribution to GDP;
- royalty and wages paid to nationals together comprise K80.1 between 1993 and 2005 – or around 30 percent of total project contributions to GDP. Local people and landowners are receiving very substantial benefits from the project – a point that they clearly understand.
- the figures for any one year are a very close approximation to the contribution from the project to GDP. This contribution had been rising steadily since 1993 and represented around K27.6 million in 2005 – compared with Unconditional Grants to the Western Government in the 2006 national budget of K34.47 million. The total contribution to GDP since 1993 would have been around K265 million.

In 2006, the Western Provincial Government's expenditure on infrastructure and services in the Fly River District was around K12 million. The total budget for expenditure on roads in the Western Province for 2006 was K1.2 million. Rimbunan Hijau spent K27.25 million at Wawoi Guavi in 2005. Average annual expenditure on roads by Rimbunan Hijau is K16 million. For the record, Rimbunan Hijau has spent K92.86 million over 12 years, with annual average expenditure being K7.74 million *per annum*.<sup>66</sup> Those are direct expenditures.

Total expenditure by the Provincial Government in the Fly River District for 2006 is likely to be K12 million. The economic welfare impact of these expenditures, if the multipliers used to assess the PNG Gas Pipeline project are applied, would be more than double the initial amount.

Based on the information provided above and in Appendix III, the following broad conclusions are warranted:

- The transport infrastructure (roads, wharf, and airstrips) installed by Rimbunan Hijau represents a very substantial investment. The figures for the value of these investments are not directly comparable with figures on similar investments by the Western Province government. However, it is clear from the Western Province 2006 budget, that the government's spending on similar transport infrastructure in the region in which the Wawoi Guavi project is considerably less than the investment by Rimbunan Hijau.
- There is no data collected on how much locals use logging roads, but some locals report that the roads are considered valuable and used extensively.
- Figures on the usage of the air strip and the air service to Wawoi Guavi demonstrate that the external benefits of this service are very significant for local people.
- The spending by Rimbunan Hijau on health and education infrastructure at Wawoi Guavi is very significant in terms of providing these services to local people. The size of the Western Province budget would not allow for provision of comparable services if Rimbunan Hijau's contributions were to cease.

When considering the multiplier effects from the infrastructure, health and education expenditure by Rimbunan Hijau in the Western Province, it is also reasonable to conclude that in addition to its overall contribution to the national economy of around 5 to 10 percent, the forestry sector is having a very significant socio-economic impact at the regional and local levels.

<sup>66</sup> Advice to ITS Global by Rimbunan Hijau.

## Chapter 7. What constrains forestry in PNG?

The forestry industry is not only significantly more important than is commonly understood, but it also has the potential to generate much more income and employment than it is doing at present. By operating at around 30 percent below the sustainable potential of PNG's natural forests (as estimated by ITTO), the government may have foregone revenue of around US\$20 million in 2004. To this loss would need to be added lower levels of exports, employment and landowner benefits.<sup>67</sup>

Some analysts argue that property rights are a major constraint on the forestry industry achieving its potential, as almost all land is communally owned. There is an extensive literature on this subject. It suggests that communal ownership of land, particularly securing agreement on arrangements for an equitable share of royalties among those who claim a right to them, will remain a challenge. The literature reviewed and consultations undertaken for this report suggest that, while important, this property rights are neither an insurmountable problem nor among the major issues constraining the industry.

Taxation arrangements are a major, if not the main, constraint. There is a respectable body of research demonstrating that taxation arrangements for the industry are deficient. PNGFIA argues that: '...the industry is financially unsustainable because the government, including previous government(s), chooses to make it so by not reviewing the forest revenue system'.<sup>68</sup>

It should be noted that this contention does not support the Green case that commercial logging is not economically viable. The point here is that government's financial regulations are inhibiting the natural economic viability of the industry.

Curtin argues that 'the effective marginal rate of the log export tax is easily as much as 110 percent of normal profits, for a normal gross profit margin on sales of K100 per cubic metre would be 30 percent, but the log tax rises to 30 percent of sales value when prices rise ... between K110 and K130 per cubic metre, 50 percent between K130 and K150, and finally 70 percent on the excess of prices above K200 (as of 2000; there have been slight adjustments since then)'.<sup>69</sup> Curtin argues that an export tax is not an effective way to encourage exports, and believes that the World Bank recognised that most Goods and Services Tax (GST) systems exempt exports by providing refunds of GST paid on exporters inputs 'but excused its progressive export tax on the grounds that the country's Internal Revenue Commission was not capable of collecting corporate taxes from the log exporters'.<sup>70</sup>

A high marginal export tax rate (which can amount to 61.75 percent when applying to FOB prices exceeding US\$50.20/m<sup>3</sup>) constitutes a major disincentive for exporters. This disincentive is compounded by the requirement to contribute additional landowner payments of 10-15 percent.

A progressive export tax is bad enough. But its impact on the economics of the industry is exacerbated by this progressivity being based on FOB prices determined in US Dollars at a fixed exchange rate. The forest revenue system was introduced in 1995 when the Kina/US Dollar exchange rate was around US\$0.76 and export taxes were in the range of 15-17 percent for FOB values between US\$55/m<sup>3</sup> and US\$75/m<sup>3</sup>. Following the subsequent depreciation of the Kina, the incidence of export taxes increased substantially – from around 15 percent in 1995 to around 33 percent in 2003 for FOB prices of US\$55/m<sup>3</sup>.

A taxation system that penalises exports as they become more valuable will not provide the

67 The calculations by which this estimate is reached are in Appendix IV.

68 Papua New Guinea Forest Industries Association, Submission, page 10.

69 Curtin, T. (2004). *How Poor is Papua New Guinea? How Rich Could it be?* pages 11 and 12.

70 *Ibid.*, page 12. Curtin describes the World Bank as being 'both cynical and dishonest', in arguing that 'the fall in log exports in 1998 and 1999 was not due to its tax but to the regional economic crisis of 1997-98. But Malaysia's strong forest product exports in those years give the lie to the World Bank's assertion'.

incentives for forestry companies to invest in and maximise the industry's potential economic contribution – bearing in mind the risk premium required to attract and retain foreign investment.<sup>71</sup>

To mitigate the depreciation in the Kina and its impact on export tax rates, a new export tax scale was introduced in 2003. The new scale applied the existing tax rate and used a fixed exchange rate of US\$0.251. There was no allowance for the impact of changes in the Kina/US\$ exchange rate. With the appreciation of the Kina from 2003 (to US\$0.345 in 2005), the export tax payable has increased from K62/m<sup>3</sup> a year in 2002 to K77m<sup>3</sup> a year in 2005 based on an equivalent FOB value of K203/m<sup>3</sup>. At those levels, only around 25 percent of revenue (or K35.75/m<sup>3</sup>) is available to the exporter to cover operating expenses and overheads.

There is clearly a risk that these taxation arrangements may prevent companies from generating sufficient profits to remain in the industry over the longer term. Rimbunan Hijau estimates that the export tax payable has increased from K62 per cubic metre of timber exported to K77 per cubic metre.

The long term economic viability was at the heart of the IRT analysis which assumed that the export tax regime ... 'would remain static'.<sup>72</sup>

An issue for further analysis is the extent to which the current taxation arrangements or other policy and institutional arrangements explain why PNG is foregoing a significant amount of government revenue and landowner benefits by not using its native forests at the maximum sustainable level.<sup>73</sup> There is a very strong case for the taxation arrangements for the forestry industry to be reconsidered.

The second constraint is a set of economic policies and institutional arrangements that are either not conducive to the industry achieving its potential or which actively inhibit it. The reasons are complex. A central theme present in the literature and the evidence obtained by ITS Global is that Green and anti-globalisation NGOs have succeeded in their efforts to exert direct and indirect influence on successive PNG governments. This has resulted in the implementation of a set of policies and institutional arrangements for the forestry industry that are substantially less than optimum.

NGOs have argued that the industry is operating illegally and is environmentally unsustainable. The illegality proposition is examined in detail in a separate report by ITS Global.<sup>74</sup> It is without foundation. The proposition that the industry is currently environmentally unsustainable is inconsistent with the evidence presented in Appendix IV, which shows that:

- the annual sustainable production from native forests is estimated by the ITTO to be 3.135 million m<sup>3</sup> *per annum*;

71 *Ibid.*, p. 13 Curtin contrasts forestry taxation arrangements with what he describes as PNG's sensible approach of a flat tax rate of 35 percent on foreign mining companies' profits 'even though it secures only a proportionately high revenue yield when profits are high'. He believes that additional profits taxes are 'inimical to profit maximisation (attainable only with flat rate corporate taxes) because of its progressive character'.

72 Independent Forest Review Team. (2004). *Towards Sustainable Timber Production – A Review of Existing Logging Projects, Draft Observations and Recommendations Report* Volume 2, Appendix 8, page 10.

73 One of the conclusions reached by the IRT was that the industry is not financially sustainable under current arrangements. For the reasons set out in Appendix IV, the analysis used by the IRT in reaching its key conclusions on financial viability is defective. Key data required to determine the profitability of forestry companies is confidential. Evidence of short term profit performances in the industry are not, *prima facie*, evidence that the companies are financially unsustainable in the terms set out in the IRT report. Even if such information was available publicly, determining whether any lack of profitability reflects the underlying economics of the industry or whether it reflects inefficient taxation, policy and/or institutional arrangements, is a separate exercise. In focusing on the depreciation in the Kina/US Dollar exchange rate and the impact on landholder payments the IRT does not give sufficient attention to the impact on profitability of a progressive export taxation system combined with a fixed exchange rate conversion factor. It purports to demonstrate that the industry is financially unsustainable and is therefore operating in an environmentally unsustainable way. It draws the wrong conclusion from the fact that taxation arrangements are sub-optimal and constraining profits: rather than the IRT argument that lack of profitability is driving companies to operate in an environmentally unsustainable way, the evidence presented in Appendix IV (using ITTO and FAO figures) is that the forestry industry is using only around 70 percent of PNG's annual sustainable production from native forests.

74 ITS Global (2006). *Whatever it takes: Greenpeace's anti-forestry campaign in Papua New Guinea*. Report for Rimbunan Hijau, Melbourne.

- in 2004 the volume harvested from natural forests was 2.171 million m<sup>3</sup>; and
- FAO data indicates that the total area under forest (excluding plantations) has been relatively stable for 30 years.

The policy and institutional reasons for this underperformance need to be understood and addressed.

A policy issue that warrants attention is how silvicultural investments should be undertaken. An objective of silvicultural investments is to ensure that, over PNG's 35 year cutting cycle, the larger trees that are harvested are replaced. It was put to us during research for this report that the Papua New Guinea Forest Authority (PNGFA) uses too much of the levies designed to fund silvicultural investments for administrative expenditure.

An alternative would be to require the forestry companies to undertake an account to a responsible entity for silvicultural investments – which could be specified by the PNGFA. This could be achieved by requiring the companies to satisfy either the PNGFA or a reputable international forestry entity that such investments had been made. In return, the forestry companies could be exempt from all or a significant proportion of their current or prospective levy obligations.

The focus should be on which option is most likely to ensure that the largest trees are regenerated over PNG's 35 year cutting cycle.

## A. Potential contribution

Curtin considers the development of extensive plantation forestry. He asks whether PNG might ultimately attain Sweden's level of output, and concludes '...there is no reason why it could not, given its equal – possibly superior – suitability for softwood pine forestry'. The potential value of production '...could be worth K13 billion, nearly double total exports in 2003, which would therefore much more than compensate for the projected decline in mineral exports after 2010'.<sup>75</sup>

Curtin argues that, based on the experiences of New Zealand (NZ) and the Solomon Islands with plantation forestry, PNG has the potential to double its total exports and thereby 'generate at least a proportionate increase in national income and GDP and thereby a doubling of average incomes from the present (2003) US\$673-760 ... to about US\$1,400'.<sup>76</sup> Curtin concludes that his '...could be achieved within 10-15 years if plantations were developed on the rotation basis that the World Bank's first forestry report (1990) considered feasible'.<sup>77</sup>

Curtin argues persuasively that it is a realistic option for PNG to develop its forest industries and increase the benefits from it, as others have:

- New Zealand produced nearly ten times as much as PNG in the 1990s, '...but from a forested area that is only seven percent of NZ's, smaller, total land area'.<sup>78</sup>
- 'If PNG produced as much pro rata (as a New Zealand project) from only 5 million hectares of its total forest area of well over 30 million hectares, its log exports would be worth US\$4 billion, or K13.5 billion, more than double its actual mineral exports in 2003'.<sup>79</sup>
- 'In 1993, 26,750 persons were engaged in timber related industries – about three times more than in the whole of PNG's mining industry'.<sup>80</sup>
- Unlike in New Zealand, which has a vibrant log export industry, PNG forestry licences are only issued for a short periods, and so '...there has been little incentive for licencees either to undertake sustainable logging of natural forest or to replant on a plantation basis'.<sup>81</sup>

75 Curtin, T. (2005) *op. cit.*, page 3.

76 *Ibid.*, page 11.

77 *Ibid.*

78 *Ibid.*, page 3.

79 *Ibid.*, page 4.

80 *Ibid.*, page 3.

81 *Ibid.*, page 8.

- Drawing on Fiji's experience with plantation forestry, he concludes that '...the potential for much larger areas to be planted in PNG, along with better soils and higher rainfall, would suggest that the Fijian model of direct landholder participation in ownership and management could be successfully transplanted'.<sup>82</sup>

Capitalising on its plantation forestry potential options therefore appears a sensible option for PNG. But it is not the only one.

In principle, using more of its native forestry resources for value adding should deliver it more benefits than exporting logs – although, as Australia's experience with minerals and New Zealand's experience with log exports demonstrate, moving further up the value adding chain is not necessarily the best option. In other words, whether to seek to move up the native forestry value adding chain is an empirical rather than a theoretical issue.

Researchers considered whether to use data from the Wavoi Guavi project to estimate the potential benefits from replicating that value adding experience at that project elsewhere in PNG. It was concluded that, in addition to methodological issues, the data was not good enough to undertake such an exercise. The reasons for this conclusion are set out in Appendix IV.

Data of sufficient quality is, however, available to estimate how much PNG is losing by not using the full sustainable potential of its natural forest endowment. Appendix IV demonstrates that in addition to lower levels of exports, employment and landowner benefits, PNG lost around US\$20 million in government revenue in 2004 by using substantially less than the annual sustainable production from its native forests.

The constraints preventing the forestry industry from maximising its potential contribution to economic growth in PNG therefore reflect both policy and institutional arrangements. Taxation and other policies, which are based on the unjustified premise that the industry is not environmentally sustainable, need to be addressed if that potential is to be realised.

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82 *Ibid.*, page 5.

## Chapter 8. Conclusions

PNG's forestry endowment constitutes one of its major assets. Notwithstanding attempts by Green and development NGOs to argue that this asset is being squandered, there is no convincing evidence that the industry is operating unsustainably. Indeed, the evidence points to the opposite conclusion.

Those arguing that the industry is either unsustainable or not delivering real benefits for PNG, landowners or rural people, have been allowed to make allegations that are not backed up by evidence. The claims put forward in the IRT report should be regarded as unjustified on the basis of the methodology and the evidence offered in the report.

There is no economic case against fostering a vibrant and productive forestry industry in PNG. The fiscal and economic policy challenges that PNG confronts are well known. It is enough to note that life expectancy in PNG is unacceptably low and infant mortality unacceptably high (as shown above). Yet there has been a persistent and continuous challenge to the forestry industry in PNG. The case is ostensibly based on environmental values and opposition to corruption. This dissension appears to have engendered analysis purporting to demonstrate that the social and economic value of the forest industry to PNG is low.

The regional socio-economic impact of the industry is significant. There is scope to use PNG's forestry resource endowment in a more ambitious way, to satisfy the interests of national and provincial governments, landowners and regional people. The first step is to understand the national and regional socio-economic importance of the industry. Hopefully this report will contribute to that understanding. The second step is to base policy on the premise that the companies involved in the industry have just as much interest in seeing it develop in a sustainable way as do landowners, rural people and the governments. The third step would be to put the arguments advanced by Green and development NGOs into some perspective, as reports by these groups are deeply flawed and should not be allowed to influence policy.

The result has been that one of PNG's primary sources of wealth has been either ignored, or subject to policies that inhibit its socio-economic potential and actively undermine the industry. The costs are not been paid in Port Moresby. They are paid by rural people, who cannot get employment, cannot connect with the market, and cannot get access to health and education services (whether provided directly by the companies or indirectly by their exports which underpin government spending). Also affected are the urban poor who have come to the cities due to the lack of access to those services in regional centres.

By not capitalising on one of its main natural resources, PNG is failing to generate the wealth and employment that are on offer. This failure to capitalise appears very substantial. In addition to exports, employment and landowner benefits being substantially less than they could have been, the failure to use the annual sustainable production from its forestry endowment is that government revenue was around US\$20 million lower in 2004 than it could have been.

The lessons learnt in New Zealand, Sweden, Finland and Chile should be studied and applied in PNG: encourage the industry, don't constrain it. If not, the chances are that an industry which has made a real and sustained contribution to wealth will continue to underperform. Development agencies need to return to their core goal of fostering development, rather than supporting the activities of those whose primary motive is not to improve the economic and social condition of the people of Papua New Guinea, but rather to denigrate the forestry industry.

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# Appendices

## I. Data sources and reliability

Both published and unpublished materials have been used in the preparation of this report. A consistent theme in reports on PNG by the World Bank and the ADB is the quality and coverage of the data. As noted in the Introduction, the World Bank's Statistical Capacity Indicator gives PNG statistics a ranking of 50 out of 100 for statistical practice but only 30 out of 100 for data collection.<sup>83</sup>

This has several implications for this report. First, when making assessments of the regional economic contribution of the forestry industry, there must clearly remain significant doubt as to whether this contribution is reflected properly in national macroeconomic numbers.

Second, it is difficult to compare data on the infrastructure, health and education spending by a specific company with similar expenditure by either the national or a provincial government. Data provided by Rimbunan Hijau is detailed and reflects attention to detail in the costs incurred to establish infrastructure at the Wawoi Guavi project. With the exception of data on infrastructure, the data from Rimbunan Hijau used in this report is from its audited financial statements. The Western Province government data used is almost certainly less reliable. It is not known what proportion of funds appropriated to specific projects or programs were spent. Care is therefore required in using the two data sets. Specifically, using this aggregate data to reach more specific microeconomic conclusions than those drawn in this report should only be done with caution. The overall conclusions as to the comparative levels of socio-economic expenditure by Rimbunan Hijau and the Western Province Government are, however, so stark that they are most unlikely to be explained by data issues alone.

Third, apparent disparities in official and private sector figures presumably reflect the problems with PNG data that have informed the World Bank's data collection rating. The PNG National Economic and Fiscal Commission (NEFC) has noted: '(Derivation Grant) calculations require nationally consistent, comparable, accurate and reliable sources of data. The NEFC is unable to rely on data that has been provided by individual provinces, since these are typically assembled using different assumptions and methods and may not be comparable across all provinces. The Organic Law on Provincial and Local Level Governments requires NEFC to include export commodities only where it is satisfied that all provinces' exports of a particular commodity have been counted and the origin determined. The NEFC prefers to use the export data provided by a relevant industry body to provide a consistent and comparable record of the exports of a particular commodity across Papua New Guinea'.<sup>84</sup>

## II. Critique of the Independent Review Team report

Appendix 8 (*Socio-Economic and Financial Impacts Report*) in Volume 2 of the IRT draft report was central to the report's conclusion that forestry in PNG was neither profitable nor environmentally sustainable. It was written by Christopher LaFranchi, who is described as a natural resource economist. His qualifications and experience, particularly his economics expertise, are not stated in the report. He has jointly authored a report with Greenpeace Pacific entitled *Islands Adrift? Comparing industrial and small-scale economic options for Morovo Lagoon region of the Solomon Islands*.<sup>85</sup> IUCN refer to him as being part of Greenpeace Pacific.<sup>86</sup> The *Islands Adrift*

83 World Bank (2006). *Country Statistical Information Papua New Guinea*. Available at: <http://ddp-ext.worldbank.org/ext/CSIDB/getCountryStatInfoXML?id=PNG&format=CSIDB>.

84 National Economic and Fiscal Commission, *Information Paper, 2005 Derivation Grant*, page 5

85 Christopher LaFranchi also co-authored a report for Greenpeace and WWF in 1998, which analysed Papua New Guinea's National Forest Plan. This is in Arentz, E., B. Brunton, A. Carothers, L. Cortesi, H. Holzknrecht and C. LaFranchi, 1998, *Sustaining Papua New Guinea's National Heritage: An analysis of Papua New Guinea's national forest plan, Boroko and Gerebu, Papua New Guinea*, World Wide Fund for Nature and Greenpeace.

86 See <http://www.iucn.org/themes/fcp/publications/arborvitae/avnewsletter/arborvitae11.pdf>.

report suggests that LaFranchi could be described as an ecological economist with a strong romantic and pre-industrial bent.<sup>87</sup> His perspectives are also redistributionist and anti-private sector. It would be surprising if this were not known to the IRT when they commissioned him.

### IRT reports: mandate and approach

The IRT draft observations and recommendations (the “report”) were published in May 2004. They note that ‘...the review is a PNG Government response to its concern to: “Ensure that the forest industry is moving satisfactorily towards a sustainable harvest yield basis, environmentally acceptable logging practices and is providing meaningful long term benefits to landowners”’. Within this framework the (Terms of Reference) specify that the overall aim of the review is to: “Assess overall compliance by existing logging projects; and to Review the standards and procedures available for the monitoring and control of the industry”.<sup>88</sup>

The key conclusions were that:

‘...logging was found to have little long term beneficial impact on landowners, although they bear the environmental cost...’;

‘...the level of income under current arrangements is generally too small to impact significantly on rural living standards...’;

‘...the logging industry ... is not profitable and the logging companies are not replacing their field equipment. This is not sustainable and unless the situation changes for the better it is estimated that PNG’s current logging capacity will cease to exist within 10 years’.<sup>89</sup>

The IRT identifies eight “necessary inputs” for the achievement of the Government’s sustainable forestry objective:

- 1) political will and support;
- 2) policies, laws and (where necessary) regulations and guidelines;
- 3) regulatory institutions with the will, power and resources to enforce the regulations and guidelines;
- 4) adequate log prices;
- 5) land suitable for forestry which the owners are willing to make available on a long term basis;
- 6) forest management;
- 7) a financially sustainable logging industry capable of replacing its equipment and earning sufficient profits to keep it engaged in the sector; and
- 8) a sustainable supply of skilled labour willing to work for the regulatory institutions and the logging industry.

87 See [http://www.greenpeace.org.nz/pdfs/marovo\\_report.pdf](http://www.greenpeace.org.nz/pdfs/marovo_report.pdf). LaFranchi purports to estimate the relative costs and benefits of logging the forests around Marovo Lagoon in the Solomon Islands or converting it to plantations, compared with the benefits derived from continued traditional practices. Consultations were held with selected groups, probabilities assigned to ‘the relative impact from industrial options on the resources and enterprises studied’ and generalised to the rest of the study area. Data is presented but it is not clear how it was derived. The key conclusions do not appear justified by the data and assumptions involved or the methodology used. Key conclusions are assumed rather than demonstrated: ‘Arguably, non-quantifiable costs and benefits are equally or more significant than what can be derived quantitatively, because subsistence income is so significant in the region, and the characteristics of Morovo lagoon life that defy quantifications, such as degrees of local control, lifestyle and social atmosphere.’ (LaFranchi (1999) *op. cit.*, pages 8 and 9.)

88 Independent Forest Review Team (2004). *Towards Sustainable Timber Production – A Review of Existing Logging Projects, Draft Observations and Recommendations Report op. cit.*, Volume 1, page 2. The fourth Term of Reference requires the IRT to ‘Conduct an assessment of environmental, social and economic impact of six case study logging operations in terms of the allocated forest, the local population and forest resource owners, and also at the wider regional and national level’. *Op cit*, Volume 1, page 3. (While the page numbers for Volume 1 are sequential, in Volume 2 each Appendix starts with page 1. We have therefore referenced Appendix 8 (and other Appendices in Volume 2), as follows: Volume 2, Appendix 8, page reference as listed in that Appendix.)

89 *Ibid.*, Volume 1, page viii.

It argues that ‘If any one of the inputs listed above is absent, or deficient, then it would be doubtful that the PNG forestry sector can be sustained in the long term’.<sup>90</sup> No case is made for the merit of these “necessary inputs”. They do not have much relationship to reality. Completing the full set of conditions is a test any forestry industry in any country of the world might fail, let alone in third world economies where poor governance is typical.

The “necessary inputs” also do not rate the economic contribution of forestry to the national economy or strategies to eradicate poverty and improve social indicators. Nor is there specific reference to underpinning development expenditure by the national or provincial governments.

Apart from the conceptual problem as to how each of the “necessary inputs” can be assessed in practice, it does not follow that failure of the industry to “pass” any or all of the IRT tests demonstrates that the industry is not sustainable. Regulatory arrangements may well be ineffective but that does not demonstrate that the industry is operating unsustainably. Nor does it follow that sustainability of the industry should be assessed in terms of the supply of skilled labour willing to work for the regulatory institutions.

The eight “necessary inputs” do not include the wider economic benefits that forestry generates. There is an accounting concept of depreciation, but it fails to include the economic benefits flowing from forestry as a specific “necessary input”. This suggests a failure to analyse the government’s concern that the industry provide meaningful benefits to landowners. At least in this sense, the report does not appear to have achieved one of its key objectives.

Apart from the way these “necessary inputs” have been defined and measured, there are some underlying assumptions in the IRT reports that inform its approach and conclusions. Unfortunately, these assumptions are not spelt out explicitly. Some of the more important underlying assumptions are identified below.

### **Some unstated assumptions – bias revealed**

Appendix 8 of the IRT draft report lists nine ‘indicators that, for the purpose of this work, constitute evidence of sustainable and beneficial socioeconomic impacts’.<sup>91</sup> These include income generation, roads and other infrastructure, health and education opportunities, improved access to markets, investment in new ventures, new public facilities, improved training, data on timber cut and payments to landowners and governments, and opportunities for remote communities to influence decisions.

An implicit but unstated assumption behind these “indicators” is that public investment is valued more highly than private investment. Indicator 6, for example, refers to ‘Investment of a significant portion of logging returns in public facilities, under the partial direction of fairly represented and credibly informed local populations’. Indicator 5 is ‘Investment of a significant portion of logging returns into alternative/new economic options’.<sup>92</sup> In other words, value flows from public investment rather than private investment.

There is nothing in the nine indicators to suggest that private sector investment is valuable in its own right – or that such investment generates direct and indirect economic and social benefits. Indicator 2, for example, seems to suggest that road infrastructure is only useful if it can ‘...clearly facilitate affordable and long term access to goods and services that were previously in short supply and that have direct connections to human welfare (e.g. professional healthcare, medicines, agricultural extension support, etc)’.<sup>93</sup> Under this definition, private sector investment in road infrastructure that delivers short-term access to goods and services is dismissed as irrelevant.

Five sustainable outputs are listed as flowing from the inputs: a flow of forest benefits; flow of benefits to landowners; the flow of logs for processing or export; a logging industry; and employment.<sup>94</sup>

<sup>90</sup> *Ibid.*, Volume 1, page 5.

<sup>91</sup> *Ibid.*, Volume 2, pages 2 and 3.

<sup>92</sup> *Ibid.*, Volume 2, page 3.

<sup>93</sup> *Ibid.*, Volume 2, page 2.

<sup>94</sup> *Ibid.*, Volume 2, page 6.

No definitions of sustainability are offered for each of these outputs. The use of the term “sustainable” for the five outputs suggests that short-term benefits from logging are to be discounted unless they can be sustained in the longer term. This is a novel concept in natural resource economics.

The IRT report uses an unusual definition of economic welfare: ‘For the purposes of this work, it is generally assumed that welfare is in relation primarily to local landholders, and secondarily to PNG nationals. Welfare is maximized when sustainable forest use and resulting economic development is delivered in the most cost-effective, expeditious and equitable fashion’.<sup>95</sup> The source to justify the primacy of landholders over PNG nationals is not cited. Nor is a definition of sustainability provided. Under this definition, the socio-economic benefits that flow to PNG nationals from the forestry sector’s role in exports and underpinning government expenditure are discounted.

An underlying assumption is that consumption spending by poor rural people engaging with the market is less economically “valid” or “useful” than investment spending. Payments from forestry companies direct to landholders are “wasted” on consumption goods.<sup>96</sup> In other words, recipients of such payments do not know how to allocate income to maximise their own utility. Economic theory and practice demonstrate that the marginal propensity to consume is higher at low income levels. This is, however, not the same thing as implying that such expenditure is economically less valuable than investment spending.

The IRT argues that ‘The incidence of poverty is linked to the ability to earn cash income and pay for non-food items, to vary and improve diets, and to permit savings for time of economic hardship. Income that is insecure and delivered primarily over the short term cannot adequately provide opportunities to alleviate poverty in the poorest and most remote locations’.<sup>97</sup> In other words, income that is variable has little or no utility. This will come as news to those who receive it.

Unsubstantiated allegations of ‘...speculation, over-reporting of production costs and transfer pricing...’,<sup>98</sup> and that ‘...recent low FOB prices critically bring into question the production costs and FOB prices reported by logging companies in PNG’,<sup>99</sup> suggest that the IRT report contains more than an element of bias against foreign investment.

### **Key IRT conclusions**

Appendix 8 of the IRT draft report is central to its conclusions. The attempt to estimate whether logging is profitable in PNG given what is known, or can be estimated, about the costs confronting the industry is particularly important. It is nevertheless conceded (in a footnote in Volume 2, rather than directly in Volume 1) that ‘This finding is based on an assessment (quantitative and non-quantitative) of average costs and benefits of logging presented in Appendix C and represents the conclusion of the resource economist as an analyst, given declared FOB prices and logging costs *that have not been independently verified by a third party*’ (italics added).<sup>100</sup> In other words, advice from independent experts on FOB prices and logging costs has not been obtained.

It is argued that ‘...profitable logging operations are a necessary condition for sustained use of forest assets and equitable economic growth at the local level. It is possible for logging companies to develop operations that are financially marginal or unfavourable during all but the best conditions – especially when minimum harvest levels stated in project agreements are not

95 *Ibid.*, Volume 2, page 17, footnote 3.

96 *Ibid.*, Volume 1, page 40 contains the following observation: ‘The flow of royalty payments in most cases resulted in an increased dependence on shop bought foods, especially rice, tinned fish and soft drinks. There is little evidence of expenditure on improved housing for example’.

97 *Ibid.*, Volume 1, page 63.

98 *Ibid.*, Volume 2, page 17

99 *Ibid.*, Volume 2, footnote 5, page 17.

100 *Ibid.*, Footnote 9, Volume 2, Appendix 8 page 22.

enforced'.<sup>101</sup> What is described as “speculation” ‘...makes landowner returns volatile and uncertain, conditions that undermine investment of logging returns that securely render lasting socioeconomic benefits’.<sup>102</sup>

The logic is suspect. The author would seem to believe that if figures purporting to demonstrate that forestry activities are not profitable can be derived, then the continued operation of forestry activities is therefore both environmentally destructive and confers little or no benefit for landholders – and is, moreover, prima facie evidence of transfer pricing.<sup>103</sup>

It is questionable whether such a proposition can be tested properly without the use of key data from firms in the industry. Such data will almost certainly be commercially sensitive and hence would not be provided. The continued presence of forestry activities if it “fails” LaFranchi’s “test” does not demonstrate that the industry is, or is likely to be, operating unsustainably.<sup>104</sup>

The long-term test of the economic viability of an industry is whether firms are willing to invest and suffer the consequences of failure. In the short term firms can (and do) run at a loss and cover those losses from retained earnings and/or borrowings.

The PNGFIA notes, ‘The industry is financially unsustainable because the government, including [the] previous government, chooses to make it so by not reviewing the forest revenue system. While the theme of the report is sustained yield management, it needs to be recognized by all stakeholders that a sustainable harvest level does not result in a sustainable economic/commercial environment’.<sup>105</sup>

The PNGFIA disputes key elements in Appendix 8 of the IRT report. Specifically, it argues that:

- wages paid to PNG nationals are not landholder benefits;<sup>106</sup>
- the ‘amount of projected returns for landowners and Government... (has) been grossly understated’;<sup>107</sup>
- ‘The figures used for 5 out of 6 projects for total Royalties paid from 1997 to 2003 are the same as the figures used for Annual Export Duty over the same period. Therefore the annual 7 year averages and the totals for 7 years for Royalty do not compute. This is an obvious error in the presentation of key data for the report’. Royalties and export duty paid by Turama Extension are understated;<sup>108</sup>
- failure to properly discuss landowner companies means that ‘...the information gained for the main report was not sourced from the Social Economic and Financial Impacts Study’;<sup>109</sup>
- the different types of benefit provided under the various logging projects are not included;<sup>110</sup> and

101 *Ibid.*, page 17.

102 *Ibid.*

103 Curtin believes that transfer pricing allegations in the industry in PNG constitute a misreading of the data. He argues that the figures used by Barnett to support the evidence of transfer pricing were false ‘mainly because he (Barnett) failed (apart from a cursory mention) to allow for freight costs when comparing CIF log import prices in Japan with FOB export prices in Papua New Guinea. Malaysian and Papua New Guinea log export prices tracked each other very closely in the 1980s and showed the same difference from Japan’s import prices. ... Duncan also found very little evidence to support Barnett’s claims of either transfer pricing or under-reporting of volumes exported prior to 1994.’ See Curtin, (2005) *Forestry and Economic Development in Papua New Guinea*, footnote 10, page 8. This paper was based on a seminar for the Research School of Pacific and Asian Studies at the Australian National University on 28 October 2004. See [http://archives.pireport.org/archive/2006/April/Forestry\\_development\\_PNG.pdf](http://archives.pireport.org/archive/2006/April/Forestry_development_PNG.pdf).

104 LaFranchi’s underlying approach is apparent from his footnote 5: ‘Such unfavourable terms would eventually drive all companies out of business. Consequently, recent low FOB prices critically bring into question the production costs and FOB prices reported by logging companies in PNG.’ *Towards Sustainable Timber Production – A Review of Existing Logging Projects* (2004) *Op. cit.*, Volume 2 page 17.

105 PNGFIA Submission. *Draft Observations and Recommendations Report, May 2004* (2004). Volume 2, page 10.

106 *Ibid.*, *Response: Socio-Economic and Financial Impacts Report*.

107 *Ibid.*, page 1.

108 *Ibid.*, pages 2, 3 and 4. (Some page numbers in the PNGFIA report may be confusing. We have numbered and quoted from pages numbered sequentially from page 1 on the response to the *Socio-Economic and Financial Impacts Report*.)

109 *Ibid.*, page 4.

110 *Ibid.*, page 5. There is, for example, no reference in LaFranchi’s report to the payments made under the Wawoi Guavi project, as cited in the case study presented in Chapter 5 of this report.

- ‘It is apparent that this report was compiled with little knowledge of individual forest projects, the forest industry or PNG generally, and no true substantiative knowledge was sought’.<sup>111</sup>

The methodology and use of data in Appendix 8 give rise to the question of whether the IRT authors are only interested in proving what they believe to be true: that the forestry industry in PNG is unsustainable, cannot deliver growth and income, and should be closed down or so overladen with regulations as to have the same effect.

### IRT economics

Appendix 8 of the IRT draft report is essentially an accounting framework purporting to reach conclusions on economic issues: it presents data that might be relevant for an assessment of the accounting viability of forestry companies’ operations. But this information is insufficient for an assessment of the economic costs and benefits for PNG flowing from the operations of the forestry industry. This is most evident in the calculations of the financial viability of the industry.<sup>112</sup>

The report uses an accounting definition of depreciation: a sustainable logging operation is one ‘...which is able to replace its equipment over seven years’.<sup>113</sup> No source is offered to justify this assumption. Whether this is common practice in the forestry industry in PNG, or whether PNG law requires such an accounting definition to be used, is not stated. Clearly, if capital equipment over seven years old is still in use, it continues to deliver economic benefits.

The treatment of multiplier effects gives rise to serious questions regarding the authors’ understanding of key economic concepts – which, in turn, are central to the main conclusions. The treatment of multipliers is dealt with first, which reflect the (Keynesian) argument that, in addition to the initial impact, spending has second, and subsequent, impacts.

Leakage of spending overseas limits the extent of the multiplier effect as such income cannot be spent in PNG. The draft report has that right. But it goes further to argue that: ‘From the PNG national perspective, benefits are created only when they impact Nationals or the companies and entities they control, own and operate. Multiplier effects are dampened to non-existent to the extent that goods and services procured with logging returns are imported or sold by foreign-owned and operated entities’.<sup>114</sup>

For the multiplier effects to be non-existent, all income earned from the forestry sector would need to be remitted overseas. Taxes and royalty payments demonstrate that this is clearly not the case. To the extent that previously unemployed, or underemployed, labour is used in the industry, the wages paid to that labour will add to local income and expenditure. The multiplier effects from such spending are unlikely to be negligible. Such payments undermine the claim that the multiplier effects from the forestry industry are minimal or non-existent.

An implicit assumption is that forestry companies do not use retained profits to fund further investment. The only condition in which forestry companies are likely to act in this way would be if they perceived all, or a large portion of, PNG’s forestry resources to be off limits. While there is certainly room for improvement in PNG’s forestry policy, there is no suggestion that the situation has reached a point where companies are not prepared to invest in the industry.

For there to be minimal or non-existent multiplier effects, the initial investment would have to involve almost no use of products from local businesses – food, transport, materials, etc. Figures were not available on the import content of the investment used in the forestry industry, but capital goods are clearly imported. But to assume, as the report appears to have done, that all goods for the initial investment in the forestry industry were imported, flies in the face of observed fact.

The IRT argues that ‘The value of infrastructure provided by the logging companies is

111 Independent Forest Review Team. (2004). *Towards Sustainable Timber Production – A Review of Existing Logging Projects, Draft Observations and Recommendations Report*, *op. cit.*, page 5.

112 See especially Tables 5-8, Volume 2, pages 13-15.

113 *Ibid.*, Volume 2, Appendix 8, page 9.

114 *Ibid.*, Volume 2, Appendix 8, page 2.

diminished due to the lack of public investment, consequently reducing the potential for significant multiplier effects'.<sup>115</sup> The assumption underpinning this claim is presumably that, by not using revenue from forestry investments, the national and provincial governments are neglecting their constituents' interests. It would obviously be better if governments maintained the infrastructure, where it made economic and social sense to do to. To the extent that such maintenance expenditure drew on previously unused labour, the multiplier effects would be greater than they would otherwise have been. The underlying premise is wrong: not maintaining infrastructure investment does not reduce the multiplier effects from the initial investment. It means that the wider socio-economic benefits from infrastructure investment by the forestry industry are not being capitalised on for the wider benefit of PNG. But that is a separate point, and not the fault of the forestry industry.

Whether the figures quoted by ACIL Tasman based on Fijian experiences are likely to be a broad approximation of what might prevail in the PNG forestry sector (see page 21) is beyond the scope of this report.

### Evidence and conclusions

Volume 1 of the IRT draft report presents conclusions allegedly based on evidence presented in Appendix 8. But the supporting evidence is not sufficient to warrant the key conclusions. An example is the claim that: 'Benefits to landowners from logging generally last less than five years, and are too small to result in any (italics added) long term improvements in socio-economic welfare, especially given the paucity of public services to augment or multiply their impact'.<sup>116</sup>

Nor is credible evidence presented to prove the assertion that '...logging projects are almost certainly a net cost to Provincial Governments'.<sup>117</sup> The evidence from our case study on the Western Province supports exactly the opposite conclusion: the forestry industry is not only generating a significant proportion of the revenue for the Western Province government to spend on infrastructure and social investments, but its own spending on infrastructure, health and education services is much more significant than comparable spending by the government.

The conclusions that little of the '...FOB income captured by PNG accrues to the central government...' and 'Little is reinvested in either community development or forest management...' are not supported by the evidence presented in Appendix 8. This suggests either a misunderstanding of, or neglect of, the fiscal facts of PNG life: the forestry industry enables a very considerable amount of social and infrastructure spending by the national and provincial governments.

It is argued that the depreciation of the Kina has undermined the benefits to PNG from the forestry industry. PNG has no option but to adjust to fluctuating commodity prices. Changing commodity prices do not undermine the contribution of the industry to PNG. They suggest, rather, that policies need to be in place to effectively and fairly facilitate that adjustment.

A major theme in the IRT draft report is that if infrastructure and social spending associated with the industry are not of a long-term nature, then somehow those benefits are to be discounted. This reflects the view, noted above, that consumption spending should be regarded as secondary to investment spending. It is argued that '...livelihood and food security is enhanced by the payments, but usually only for the period during which logging is active in a given area',<sup>119</sup> and 'Funds that reach local communities, especially the poorest and most remotely located, are managed and distributed inefficiently and non-transparently, and are primarily used for consumption rather than investment'.<sup>120</sup>

It is equally wrong to discount the socio-economic impact of infrastructure and social

115 *Ibid.*, Volume 1, page 63.

116 *Ibid.*, Volume 1, page 62.

117 *Ibid.*

118 *Ibid.*, Volume 1, page 62.

119 *Ibid.*, Volume 1, page 63.

120 *Ibid.*

expenditure, just because it is not long-lasting, as it is to regard consumption spending as of lesser economic value than investment spending.

It is argued that: ‘...relatively few opportunities are being created for PNG workers to acquire professional level training as a result of logging projects’.<sup>121</sup> No evidence is offered. Figures are not available for the aggregate spending on training from the forestry industry<sup>122</sup> but the use of the word “relatively” is instructive. No matter how much the industry spent on training, it would be criticised as being insufficient by those who are opposed to the industry.

The fact is that unskilled workers are acquiring skills in the logging industry, especially in the Wawoi Guavi project. To discount the training opportunities that can, and do, deliver higher wages to more skilled workers is to deny reality.

### **Unsupportable conclusion on costs and benefits**

The overall assessment of the costs and benefits of the industry are not supported by the evidence. Consider the following from the draft report:

‘The true economic impact at the national level is substantially less *than the benefits identified above* (italics added), in real terms, after the forestry sector costs borne by central Government are subtracted. This includes:

- K28 million *per annum* required to pay for the PNGFA, a portion of Department of Environment Conservation (DEC), and the independent log export-monitoring contract. It is anticipated that this figure would need to rise if sustainable timber production is to be achieved; and
- the draw down on the value of the national forest asset that is not being compensated for by reinvestment in forest management, or alternative sources of wood such as forestry plantations’.<sup>123</sup>

A substantive economic analysis would be required to justify such a strong conclusion. It has not been done. There is no evidence to justify this assertion. The phrase “in real terms” would normally imply that the author has corrected estimates for price changes but there is nothing to suggest that this has been done.

The first dot point gives rise to the question of how sustainability is to be assessed in the PNG forestry industry. There is an active debate in the academic literature on this point – for example the work by Curtin and Filer cited in this report. The IRT has not presented a convincing case for its conclusion that ‘Unsustainable harvesting of the natural forest estate finances about 5 percent of the central government budget’.<sup>124</sup>

Reaching such a conclusion would have required a much more detailed economic analysis than is evident in the IRT draft report. The methodology reflects accounting, rather than economic, concepts. Conclusions are offered that are not justified by the evidence. The IRT report lacks economic credibility. It should not be allowed to influence government policy towards such an important industry.

### **III. Case study on impacts in the Western Province**

The socio-economic importance of the Wawoi Guavi project in the Western Province of PNG can only be assessed in relation to existent conditions in that province. Expenditure on health, education and transport by the Western Province Government is the basis for an assessment of the socio-economic significance of the Wawoi Guavi project.<sup>125</sup> Income levels are low, infrastructure is underdeveloped, and there are major challenges in meeting health and education needs. Only

121 *Ibid.*

122 Rimbunan Hijau has, however, provided information to ITS Global on chainsaw training for 237 participants in its chainsaw training program for 2005.

123 Independent Forest Review Team. (2004). *Towards Sustainable Timber Production – A Review of Existing Logging Projects, Draft Observations and Recommendations Report* Volume 1, page 65.

124 *Ibid.*

125 Direct spending on health, education and transport by the national government have not been included in this case study. Whether the amounts allocated in the budget to specific projects and programs were fully or partially spent on those projects is beyond the scope of this case study. The figures quoted are therefore maximum amounts. Actual amounts spent could be lower.

22 percent of children attend school.<sup>126</sup> The Provincial Development Plan for the Fly River Provincial Government (Western Province) reflects concern about what might replace mining when it scales down. Forestry is regarded as a key resource.

### Western Province Government

Key features of conditions in the Western Province are set out in the long-term Development Plan for the region:

- land potential is ‘low to moderate in all areas of the province’;
- ‘Social and economic development in the province in the areas of mining, forestry, fisheries and agriculture sectors, and the manner in which current political and administrative functions perform, will contribute significantly to the province’. The emphasis is ‘directed towards increasing the number of people participating in one of more forms of economic activities’. ‘Large scale projects (for reasons of economy of scale) should take higher priority to promote valuable taxation regimes after mine closure’;<sup>127</sup>
- the importance of roads in forest development areas are ‘...not played down’;<sup>128</sup>
- only 24 percent of males and 22 percent of females over the age of 5 are currently attending school;<sup>129</sup>
- income levels (which do not include royalty payments and wage employment) in and around Wipim are very low;<sup>130</sup> and
- 9 percent of males in the rural sector are in paid employment.<sup>131</sup>

The Western Province 2006 budget indicates that resources for spending on infrastructure, education and health are seriously constrained:

- the recurrent and development budget appropriations from the national government comprise: Unconditional Grants, K34.5 million; Conditional Grants, K1.2 million; Local Level Government (LLG) Grants, K1.2 million; and Conditional Development Grants, K11 million;<sup>132</sup>
- with Tax Credit Scheme funding of K25 million and Equity Grant funding of K30 million, ‘...a potential K69.8 million would be available in 2006 for development purposes’;<sup>133</sup>
- K8 million is allocated to fund seven Selected Key Projects, which includes four road projects but the allocations to each are not specified;<sup>134</sup>
- ‘K2 million is appropriated as Special Support Grant to the Fly River Development Trust’;<sup>135</sup>
- in recognition of the importance of forestry activities, Governor Danaya noted in his budget speech that the: ‘Project Fund Committee for the Wawoi Guavi Timber Company has approved the construction of a new health centre at Kamusie. The project will be constructed in early 2006. A service centre at Kamusi is also in the pipeline, to be implemented in 2006. The Western Provincial Administration is now working closely with this developer to further develop six projects for the landowner companies. This kind of working relationship is paramount in our collective efforts to develop key social and physical infrastructure provisions so that goods and services are delivered to our people in the LLG areas’;<sup>136</sup> and
- the 2006 budget allocates K8 million to four highway/road projects but does not provide a detailed breakdown by project.<sup>137</sup>

126 *Western Province 2010, the Provincial Development Plan of the Fly River Provincial Government for the Plan Period 2006-2010*, page 17.

127 *Ibid.*, pages 24, 46 and 52 respectively.

128 *Ibid.*, page 54.

129 *Ibid.*, page 14.

130 *Ibid.*, page 16.

131 *Ibid.*, page 22.

132 *Ibid.*, page 78.

133 *Ibid.*

134 *Ibid.*, page 83.

135 *Ibid.*, page 82.

136 *Ibid.*, page 85.

137 *Ibid.*, page 83.

### Benefits to landholders

Landholders in the Western Province receive significant benefits from forestry, and they recognise this. This is reported in a study by Groome Poyry which was prepared for the PNGFIA and the World Bank in 1998. The purpose of the report was to ‘...provide the PNG Forest Authority with an independent appraisal of the Landowner Benefits, that have already been delivered by logging companies, or are being regularly delivered, and the fair and reasonable cost of delivery, as the basis for PDL (Project Development Levy) credit assessments’.<sup>138</sup> This document is important as it provides independent verification on expenditure by the logging industry. Key points made in this report are:

- ‘Of the 49 logging projects subjected to a full Landowner Benefit Audit and PDL credit assessment, 30 had delivered infrastructure which qualified as a PDL credit, 6 were not required to delivery any infrastructure (either none was specified in the legal documents, or the responsibility for delivery remained with the Landowner company), and 13 were required to deliver infrastructure but had not done so’;<sup>139</sup>
- ‘The total fair and reasonable cost of delivery is assessed to be K43 million’, made up of: airstrips, K0.6 million; bridges and culverts, K5 million; buildings, K3.2 million; public roads, K0.6 million; urban development, K5.3 million; village roads, K0.1 million; and forestry plantations, K28.1 million;<sup>140</sup>
- the total value of infrastructure and resulting PDL credit is assessed as K45.23 million;<sup>141</sup> and
- Landowner Financial Benefits from Wawoi Guavi were K23 million.<sup>142</sup>

### Expenditure by Rimbunan Hijau on the Wawoi Guavi project

ITS Global sought and obtained a considerable amount of data and information from Rimbunan Hijau on its Wawoi Guavi project. Two ITS Global staff members visited the Wawoi Guavi project and other projects operated by Rimbunan Hijau in the Western Province. The visit informed both this case study and the wider conclusions reached on the economic importance of the forestry industry to PNG.<sup>143</sup>

Some of the data was provided to ITS Global on a commercial-in-confidence basis. This data has been drawn on in reaching key conclusions. It is believed that none of the data provided on a commercial-in-confidence basis invalidates or undermines the conclusions. Indeed, requests for clarification on data and background information to enable assessment of the data provided have been acted on quickly and effectively by Rimbunan Hijau. It is believed that the data provided in this report, much of which comes from Rimbunan’s Hijau’s audited financial reports, is at least the equal of official macroeconomic data used. It is almost certainly more reliable and comprehensive than official Western Province data. It is not believed that the conclusions in this case study can legitimately be questioned on the grounds of the data being provided by Rimbunan Hijau.

Rimbunan Hijau was asked to provide information over time to enable the provision of more than a “snap shot” assessment. The information presented in tables 5, 6 and 7 has not been released publicly before.

Table 5 presents key data on the Wawoi Guavi project between 1993 and 2005. The Wawoi Guavi project involves three companies: Wawoi Guavi Timber Company Ltd, which undertakes logging and sawmilling (and which employs 900 people); Rimbunan Hijau Timber Processing

138 Groome Poyry Ltd (1998). *Audit of Landowner Benefits Received from Harvesting Operations under Timber Permit, Final Report, Volume 1, April 1998*, page 2. The Project Development Levy was imposed in 1996 and applies to all existing log export projects, but ‘...logging company expenditure on Landowner Benefits in accordance with the legal documents governing the project will qualify as a credit against the liability to pay PDL. Clearly the credit needs to be limited to reflect the payments and/or expenditure actually made’. *Op. cit.*, page 1.

139 *Ibid.*, page 21.

140 *Ibid.*, page 33.

141 *Ibid.*, Table 1, page 34. Note, however, that this is not the value of total infrastructure investment on the projects covered by the audit. It is the total value of infrastructure that qualified for PDL credit.

142 *Ibid.*, Table 2, page 37.

143 The Wawoi Guavi project

**Table 5: Wavoi Guavi project: Key data: 1993-2005: Kina, million**

YEAR													
1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Total
NATIONAL WAGES PAID													
1.03	1.69	1.3	1.39	1.17	1.88	2.93	3.99	4.64	5.48	6.68	6.86	7.15	46.19
SALARY AND TAXES EXPATRIATE/NATIONALS													
0.26	0.27	0.46	0.39	0.32	0.87	1.27	1.72	1.88	2.26	2.98	3.03	2.55	18.26
PREMIUMS & LEVIES PAID													
0.52	0.5	0.64	0.82	0.82	0.81	1.18	1.09	1.33	1.9	2.03	2.9	2.56	17.1
ROYALTY													
1.09	1.14	0.89	2.3	3.67	2.13	2.74	2.77	3.06	4.33	3.32	3.51	2.96	33.91
EXPORT DUTY													
8.42	14.54	14.46	17.36	17.93	5.93	9.18	10.81	5.82	12.42	9.44	8.93	12.03	147.27
INFRASTRUCTURE													
0.38	0.41	0.09	0.16	0.12	0.13	0.22	0.17	0.18	0.05	0.54	0.15	0.35	2.95
TOTAL													
11.7	18.55	17.84	22.42	22.03	11.75	17.52	20.55	16.91	26.44	24.99	25.38	27.6	265.68

Source: ITS Global, based on information provided by Rimbunan Hijau (rounded)<sup>144</sup>

Company Ltd, which undertakes veneer processing (and which employs 600 people, in addition to 300 contract workers employed through contract work to Wavoi Guavi Timber Company Ltd); and Strait Marine Ltd, which provides shipping services.

With the exception of the figures on infrastructure, all of the data in Table 5 is from Rimbunan Hijau's audited financial accounts and therefore accurately measures amounts spent each year.<sup>145</sup> The infrastructure figures are estimates. They are the minimum amounts spent in each year on infrastructure. They do not include the costs of materials or services which are available onsite, such as sawn timber, bulldozer hours, fuel, man-hours, food provided for the workers who construct the infrastructure, etc. Such costs are accounted for as general operational costs. The infrastructure figures therefore substantially underestimate actual expenditure.

Key points from Table 5 are:

- national wages paid have grown very substantially, from K1.03 million in 1993 to K7.15 million in 2005;
- export duty (K147.11 million) comprises 55.4 percent of the total contribution to GDP from the project. It is not credible to argue that the project is not making a major contribution to GDP;
- royalty and wages paid to nationals together comprise K80.1 million between 1993 and 2005 – or around 30 percent of total project contributions to GDP. Local people and landowners are receiving very substantial benefits from the project – a point that they clearly understand;
- infrastructure investment has been at least K2.95 million since 1993; and
- the figures for any one year are a very close approximation to the contribution from the project to GDP. This contribution had been rising steadily since 1993 and represented around K2.6 million in 2005 – compared with Unconditional Grants to the Western Government in the 2006 national budget of K34.47 million. The total contribution to GDP since 1993 would have been around K265 million.

<sup>144</sup> Rimbunan Hijau has advised that the Wavoi Guavi project has paid taxes of K11.7 million. Total taxes paid by the Group amount to K30 million.

<sup>145</sup> ITS Global met with the PNGFA and sought data which we were advised it could provide to incorporate in this case study. This data was not forthcoming.

The PNG Forest Authority's Wawoi Guavi review indicated the following additional payments:

- annual ex gratia payments to Waterways Landowners, K120,000;
- reforestation levy of K1/m<sup>3</sup> of logs harvested;
- land lease payment for land at Panakawa, K12,600 *per annum*;
- land lease for Panakawa airstrip, K3,000 *per annum*; and
- land lease at Kamusie, K2,600 *per annum*.<sup>146</sup>

### Expenditure on physical and soft infrastructure

Information relating to capital investment for the airstrip and wharf, as well as spending on health, education and roads was sought. Details provided by Rimbunan Hijau of its expenditure are set out below. Table 6 sets out payments for the airstrip and health and education. Table 7 provides details of road expenditure. All of the expenditure was incurred between 1992 and 2004.

Based on the information in the Western Province 2006 budget, spending by Rimbunan Hijau on education and medical facilities has been very substantial, compared with spending on these categories over the same period by the Western Province government. For example, in the Western Province for 2006, the District Health Improvement Program was K0.3 million. Clearly, the two sets of figures are not directly comparable: one is a stock, the other a flow.

Health spending by Rimbunan Hijau of K0.23 million (which does not include the costs of medical staff at Wawoi Guavi) constitutes a very substantial proportion of health spending by the Western Province government. Based on the size of the Western Province government's health budget, it is inconceivable that these health services could be provided by the Western Province government in the absence of Rimbunan Hijau. And it is highly unlikely that they would have been provided by the national government.

Obviously the airstrips, wharf and roads are constructed primarily for the purposes of the project. These facilities are, however, available for local people, who clearly use and value them.

The key message from Table 7 is that road investments for community purposes constitute a significant proportion of the K92.9 million in road investments by Rimbunan Hijau between 1992-2004 (the stock investment). In terms of government expenditure, K1.2 million was allocated to the Western Province District Road Improvement Program in 2006.

Three issues inform drawing conclusions from this data. First, the investment by Rimbunan Hijau is for roads for its operational purposes. Second, figures over a 12-year period cannot be compared with figures for 2006. Third, investments in roads by the Western Province Government are, presumably, done with the objective of maximising welfare for its population, whereas the primary purpose of the road investments by Rimbunan Hijau is for logging. But landowners clearly value these logging roads. They use them to access health and education services and for developing closer links with the market. It would be wrong to argue that the roads do not generate any wider socio-economic benefits, just as it would be wrong to claim that all of this investment in logging roads solely benefits Rimbunan Hijau.

There would appear not to be any credible estimates as to how these benefits might be attributed. Based on the evidence reviewed for this report, and particularly the views of

**Table 6: Wawoi Guavi: Spending on airstrip, wharf, health, education and general infrastructure: 1992-2004, K million**

Medical facilities	0.23	Wharf	1.9
Education facilities	1.11	General infrastructure	2.54
Airstrip(s)	2.16	Total	7.94

Source: PNG Forest Industries Association, at [http://www.fiapng.com/export\\_stats\\_1997\\_2002.pdf](http://www.fiapng.com/export_stats_1997_2002.pdf)

146 Groome Poyry Ltd (1998) *op. cit.*, page 2.

**Table 7: Value of roads constructed at the Wawoi Guavi project**

PROJECT	QUANTITY (km)	ESTIMATED COST (Kina)	YEAR DELIVERED	RECIPIENT
Road, Main	149.4	5,976,000	1997	Community
Road, Main	84.2	3,366,000	1998	Community
Road, Main	101.6	4,062,000	1999	Community
Road, Main	80.6	3,222,000	2000	Community
Road, Main	425.0	17,000,000	1992-96	Community
Road, Main	180.2	7,127,000	2001	Community
Road, Main	218.8	8,750,000	2003	Community
Road, Main	119.4	4,776,000	2004	Community
Road, Secondary	65.9	1,779,000	1997	Community
Road, Secondary	23.4	630,000	1998	Community
Road, Secondary	149.7	4,042,000	1998	Community
Road, Secondary	26.4	713,000	1999	Community
Road, Secondary	22.6	610,000	2000	Community
Road, Secondary	447.0	12,069,000	1992-96	Community
Road, Secondary	36.4	983,000	2001	Community
Road, Secondary	36.4	2,622,000	2003	Community
Road, Secondary	48.0	983,000	2004	Community
Road, Provincial/Village	5.3	249,000	1997	Villages
Road, Provincial/Village	5.3	249,000	1998	Block 1A, Parieme Village to New Airstrip
Road, Provincial/Village	14.2	667,000	2000	To Kapolasi
Road, Provincial/Village	10.0	470,000	1992-96	Parieme to Sipoi Village
Road, Provincial/Village	95.0	7,315,000	2001	To Kapolasi
Road, Provincial/Village	2.2	101,000	2001	Kamusie Proper to Govt. Station
Road, Provincial/Village	37.0	1,739,000	2002	Provincial Boundary of Gulf Province
Road, Provincial/Village	2.4	113,000	2002	Kasigi (Wawoi Falls)
Road, Provincial/Village	1.0	47,000	2002	Kamusie Community
Road, Provincial/Village	2.4	113,000	2003	All Villages
<b>Total Cost</b>		<b>92,877,000</b>		

Source: Rimbunan Hijau

landowners (who clearly value the construction of logging roads and want provincial governments to maintain them after logging has ceased), the only reasonable conclusion is that these roads generate evident but unquantifiable benefits for local people.

Landholders also value the air service established by Rimbunan Hijau, Tropic Air Ltd. Table 8 provides information on the usage of the service to Wawoi Guavi in March 2006.

Only one-third of the passengers carried were employees of the company. The rest were landowners and outsiders. Rimbunan Hijau has advised that while it cannot provide data on the use of this service for freight and fuel, it believes that the proportions are similar. In other words,

**Table 8: Use of Wawoi Guavi Airstrip: March 2006**

Tropic Air Ltd. Summary of WGTC March 2006 passengers & charters				
Passengers	WGTC	Others	Total	Share of total passengers
employees	52	123	175	35%
landowners	79	107	186	37%
external/others	2	136	138	28%
	<b>133</b>	<b>366</b>	<b>499</b>	
Charters				
internal	1	6	7	64%
external	0	4	4	36%

*Source: Rimbunan Hijau*

of the K2.16 million invested by Rimbunan Hijau for the airstrip, around two thirds of the benefits accrue to local people using this service.

### Comparing expenditure by RH and the Provincial Government

Annual average total expenditure by Rimbunan Hijau at the Wawoi Guavi project is around K20 million.<sup>147</sup> Annual average expenditure on infrastructure is around K0.23 million. For the reasons set out above, this figure does not include all costs. Rimbunan Hijau estimates that actual expenditure would be two to three times higher than this – between K0.46 million and K0.69 million per year.

Total appropriations by the Western Province government in its 2006 budget were K36.9 million.<sup>148</sup> The budget papers do not indicate how much of this money might actually be spent in the region in which the Wawoi Guavi project is located. Nor is it clear whether all or part of the funds allocated to projects or regions are spent. All of the expenditure undertaken by Rimbunan Hijau has been spent and audited. Whether the same confidence can be applied to the Western Province budget allocations is beyond the scope of this report. Whatever confidence is attached to spending against allocations, not all of the money in the budget against particular categories of expenditure will be spent in the South Fly District. The budget papers do not indicate how much is spent in each district. If this money is spent roughly equally between the three districts, the South Fly District might get around K12 million *per annum*.

It is therefore likely that the annual average spending by Rimbunan Hijau of around K21 million is nearly double the amount spent in the region by the Western Province Government.

Health expenditure is an interesting case study. The 2006 Western Province government budget allocates K100,000 for health improvements and maintenance in the South Fly District for 2006.<sup>149</sup> Yet, as indicated in Table 6, Rimbunan Hijau spent K230,000 between 1992 and 2004 – or an average of around K19,000 per year. As this figure does not include the cost of a doctor at the Panakawa and Kamusie sites, health spending by Rimbunan Hijau at Wawoi Guavi could have amounted to almost half of the comparable spending in that area by the Western Province Government.<sup>150</sup>

147 This figure is derived by dividing the total expenditure of K275.9 million in Table 5 by 13 to obtain an annual average figure.

148 *Western Province 2010, the Provincial Development Plan of the Fly River Provincial Government for the Plan Period 2006-2010 op.cit.*, page 78.

149 *Ibid.*, Schedule 4, page 71.

150 The Budget specifically acknowledges the critical significance of the health facilities at the Wawoi Guavi project: ‘... (the) Project Fund Committee for the Wawoi Guavi Timber Company has approved the construction of a new health centre at Kamusie. This project will be constructed in early 2006. A service centre for Kamusie is also in the pipeline to be implemented in 2006. The Western Provincial Administration is now working closely with the developer to further develop six projects for the land owner companies. This kind of working relationship is paramount in our collective efforts to develop key social and physical infrastructure provisions so that goods and services are delivered to our people in the LLG (Local Level Governments) areas’. *Ibid.*, page 85.

The Western Province 2006 budget contains details on proposed major road maintenance appropriations totalling K6.3 million.<sup>151</sup> Table 7 indicates that Rimbunan Hijau spent a total of K92.9 million on roads between 1992 and 2004 – or an average of K16 million per year. In other words, spending on roads by Rimbunan Hijau is likely to have been around 2.5 times the total road spending by the Western Province Government.

### **In summary**

In 2006, the Western Provincial Government's expenditure on infrastructure and services in the Fly River District was around K12 million. Expenditure on similar items by Rimbunan Hijau (PNG) Group was K16.25 million. Those were direct expenditures.

Total expenditure by the Provincial Government in the Fly River District was K12 million. Total expenditure by Rimbunan Hijau (PNG) Group was K21 million. The economic welfare impact of these expenditures, if the multipliers used to assess the PNG Gas Pipeline project are applied, suggest that the economic impact of this spending is likely to be more than double this amount.

### **Some broad conclusions**

The information presented above is the first time (as far as is known) that an assessment of the regional socio-economic impact of a major forestry project, such as Wawoi Guavi, has been undertaken in this way. Notwithstanding the caveats noted above about the quality of the official data, it demonstrates some interesting points:

- the transport infrastructure (roads, wharf and airstrip) represents a very substantial investment. The figures for the value of these investments are not directly comparable with figures on similar investments by the Western Province Government. However, it is clear from the Western Province 2006 budget that government spending on similar transport infrastructure in the region of the Wawoi Guavi project is a minute proportion of the investment by Rimbunan Hijau;
- figures are not available on the usage of the logging roads by local people, but anecdotal evidence suggests that these roads are used quite extensively and are valued highly;
- figures on the usage of the airstrip and the air service to Wawoi Guavi demonstrate that the external benefits of this service are very important for local people; and
- health and education infrastructure and services at Wawoi Guavi is very significant for local people. If those services were not provided by Rimbunan Hijau the size of the Western Province budget strongly suggests that they would not be provided at all.

## **IV. Potential revenue implications of non-optimal sustainable forestry production**

In principle, the more value adding that occurs using PNG's forestry resources (for example, by processing raw logs as at Wawoi Guavi), the greater the contribution the forestry sector is likely to make to growth, government revenue, income, landowner benefits and employment. Whether such outcomes are achieved in practice will depend on a range of factors. Key among these are the underlying economics of value adding (including access to and prices paid for logs, labour costs and reliability, infrastructure costs and their efficiency, taxation arrangements, policy predictability and export prospects) and the sustainable use of forestry resources. The World Trade Organization (WTO), for example, concludes that 'Downstream processing of timber is not generally economically viable in PNG.'<sup>152</sup>

It is beyond the scope of this report to provide a definitive analysis of the prospects for and challenges facing further value adding in PNG. Nevertheless, an examination was conducted as to whether anything could be inferred from publicly-available information and data on the Wawoi

<sup>151</sup> *Ibid.*, Schedule 2, page 70.

<sup>152</sup> World Trade Organization, *Trade Policy Review*, WT/TPR/S/62, para 65.

Guavi project provided to us by Rimbunan Hijau. There was interest in determining whether it would be possible to make some credible estimates as to how much PNG might stand to gain if the Wavoi Guavi value adding experience was replicated. Put in another way, how much might PNG be “losing” by not moving up the value added chain?

Estimating the value added at Wavoi Guavi and using that as a basis to estimate what PNG might stand to gain from replicating that experience elsewhere in PNG involves both data and methodological considerations. Even if data of sufficient quality was available, transposing the experience from Wavoi Guavi to other regions with different physical, social and infrastructure conditions raises some major methodological issues beyond the scope of this report. As data of sufficient quality to undertake this task is not available, such estimates have not been made.

Credible estimates can, however, be made as to how much PNG might be losing from not maximising the sustainable use of its forestry endowment. This can be done by applying current export prices to the difference between actual forestry output and the output that could be harvested sustainably from PNG’s natural forests.

The ITTO, the most credible international organisation on forestry issues along with FAO, provides an estimate of sustainable forestry production in PNG. In its 2004 report on PNG, the ITTO observes that ‘Of the annual sustainable production of 3.3 million m<sup>3</sup>, plantation wood comprises approximately 5%’.<sup>153</sup> Deducting 5 percent for plantation forestry from 3.3 million m<sup>3</sup> suggests that in 2004 the sustainable production from native forest was 3.135 m<sup>3</sup>.

Is there any corroboration for this figure? If PNG’s natural forests had been cut at an unsustainable rate over many years, the extent of natural forest cover should have declined substantially. FAO figures demonstrate that this has not happened. Table 9 presents FAO figures on the total area of forests (excluding plantations) in PNG.<sup>154</sup> The figure for 2005 is a projection.

Table 9 demonstrates that the area under forest (excluding plantations) in PNG has been relatively stable since 1990. There has been some reduction (a little over 2 million hectares, or around 6.7 percent of 1990 levels). But this is not the sort of reduction that would be consistent with Green NGO rhetoric. FAO figures (compiled on a slightly different basis) demonstrate that forest cover was 33.67 million hectares in 1975.<sup>155</sup> PNG’s forest cover has therefore been comparatively stable the past 30 years.<sup>156</sup> This suggests that the ITTO estimate is consistent with historical data.

Is PNG’s sustainable forestry production from natural forests being utilised to the full?

Round log exports in 2004, the last year for which PNGFIA figures are available, were 2.012 million m<sup>3</sup>. Of this amount, 0.25 million m<sup>3</sup> were plantation round logs.<sup>157</sup> Processed plantation

**Table 9: Total area of forest (excluding plantations)**

Millions of hectares		
1990	2000	2005
31.46	30.05	29.35

Source: ITS Global, adapted from FAO “Global Forest Resources Assessment 2005, Papua New Guinea, Country Report 097”, page 12. Figures are rounded and presented in millions of hectares rather than in hundreds of thousands of hectares as in the FAO report.

153 In the International Tropical Timber Organization, *Annual Review and Assessment of the World Timber Situation, 2004*, (page 7), it is noted that ‘As PNG’s third largest sector, the forestry industry under the guidance of the NFA is exploring ways to branch out from a log producing sector to a wood processing sector... Proposals which provide incentives to investors are being planned to attract wood processing companies.’ The ITTO notes a worrying constraint: ‘Donor funded projects often insist that all timber products used in project infrastructure meet the donor’s respective building code specifications. This has often required the import of timber products for use in project infrastructure to the detriment of PNG producers’.

154 FAO, *Global Forest Resources Assessment 2005, Papua New Guinea*, Country Report, page 12.

155 *Ibid.*, page 11.

156 The FAO figures do not necessarily imply that the nature of PNG’s forests have been static since 1975.

157 PNG Forest Industries Association (2004). *Key Indicators 1992-2004*, at <http://www.fiapng.com>

exports would likely have been around 85.5 m<sup>3</sup> in 2004.<sup>158</sup> As demonstrated in the calculations set out in the immediately preceding footnote, total processed exports in 2004 were likely to have been around 162,714 m<sup>3</sup>.

To determine how many round logs were required to generate total processed exports of 162,714 m<sup>3</sup> the rate at which round logs are converted to sawn timber and veneer needed to be known. Rimbunan Hijau has advised that 1 m<sup>3</sup> of sawn timber requires around 2.5 m<sup>3</sup> of round logs (the round wood equivalent). Applying a round wood equivalent rate of 2.5 to 162,714 m<sup>3</sup> of processed exports from natural forests (i.e., 162,714 multiplied by 2.5) suggests that the volume of processed timber from natural forests in 2004 would have been around 406,785 m<sup>3</sup>.

Total round log exports in 2004 were 2,012,135 m<sup>3</sup>. Total round log exports from plantations in 2004 were 247,214 m<sup>3</sup>.<sup>159</sup> Deducting 247,214 m<sup>3</sup> from 2,012,135 m<sup>3</sup> suggests that total round log exports from natural forests in 2004 were 1,764,921 m<sup>3</sup>.

To obtain an estimate of how much of PNG's sustainable forestry production has been used, an estimate of total round log volumes from natural forests was needed. Total round log export volumes from natural forests in 2004 can be obtained by adding 406,785 m<sup>3</sup> (the round wood equivalent volume of exports of processed products from native forests for 2004) to 1,764,921 m<sup>3</sup> (total round log exports from natural forests in 2004). The total round log export volume from natural forests in 2004 was therefore 2,171,606 m<sup>3</sup>. This figure represents the total commercial volume of timber harvested (for round logs and processing) from natural forests in 2004.

Total annual sustainable production from natural forests was estimated by the ITTO to be 3,135,000 m<sup>3</sup> in 2004. The volume actually harvested from natural forests would, according to the above calculations, have been 2,171,606 m<sup>3</sup> in 2004. The "loss" to PNG from not using to the full its sustainable annual cut is therefore around 963,295 m<sup>3</sup>.

This means that an additional volume of around 963,000 m<sup>3</sup> could have been harvested in 2004 without compromising the sustainability of natural forests. In other words, around 30 percent of what could have been sustainably harvested in 2004 has been foregone. This would be a very significant loss for a country that was not confronting severe economic and social challenges. For PNG such a loss is even more serious. Foregone forestry exports of around 30 percent in 2004 had undoubtedly resulted in lower levels of exports, employment, landowner benefits and government revenue than otherwise achievable.

Assuming the average FOB price for round logs in 2004 was \$US60 per m<sup>3</sup>, foregone exports in 2004 can be estimated by multiplying 963,295 by US\$60. This suggests that almost \$US58 million was foregone in export earnings in 2004.

The PNG government captures 34.13 percent of forest exports via export duty. 34.13 percent of \$US58 million suggests that government revenue in 2004 was almost \$US20 million less than what it could have been if the full sustainable production potential of PNG's natural forestry resources had been used.

There is another way of assessing the potential significance of this loss. As reported in Chapter 3, the World Bank has estimated that in 1998 the forestry industry generated government revenue

158 PNG Forest Industries Association figures for processed exports were 165,471 m<sup>3</sup> in the year to August 2004. (See <http://www.fiapng.com>, *Key Indicators 1992-2004* and *Processed Exports By Species 2004*.) On a pro rata basis exports of processed timber would have been around 248,206 m<sup>3</sup> for the full year. The PNGFIA figures identify processed exports by species. Export categories for balsawood, plantation, teak and wood chips amounted to 56,995 m<sup>3</sup> between January and August 2004. These species come exclusively from plantations. So plantation processed exports should have amounted to around 85.49 m<sup>3</sup> on a pro rata basis for the full year. Deducting 85,492 m<sup>3</sup> of plantation species exports from 248,206 m<sup>3</sup> of processed exports in 2004 gives a figure of around 162,714 m<sup>3</sup> in total processed exports from natural forests in 2004.

159 PNG Forest Industries Association, *op. cit.*, *Key Indicators 1992-2004*.

and landowner benefits of around US\$100 million. If the 30 percent “loss” in sustainable harvesting potential was approximately the same in 1998 as in 2004, and the basic relationships used in the calculations set out above also applied in 1998,<sup>160</sup> government revenue and landowner benefits from the industry could have been 30 percent higher, or US\$30 million, in 1998. It is emphasised that this is an approximate calculation. It is provided for illustrative purposes.

PNG needs to maximise the economic benefits generated from the sustainable use of its forestry endowment. It cannot afford government revenue and landowner benefits being 30 percent less than the sustainable potential. The reasons for this result need to be understood and policies put in place to ensure that such losses are not perpetuated. To the extent that this outcome reflects Green NGO anti-growth campaigns to undermine and constrain the forestry industry, these groups should explain to the government and landowners how PNG is to make up these losses. They should also explain to people in rural areas why they should forego economic and social dividends of this order from the sustainable use of their own resources.

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160 There is no reason to expect that the ITTO estimate of the annual sustainable cut from native forests would change significantly over time. PNGFIA figures demonstrate however that after the Asian Financial Crisis in 1997 log export volumes in 2004 (2 million m<sup>3</sup>) had not recovered from the levels attained in 1997 (3 million m<sup>3</sup>). They have risen steadily since the 1.6 million m<sup>3</sup> in 1998 but in 2004 were still 1 million m<sup>3</sup> less than in 1997. Given the expected stability in ITTO estimates of sustainable production from native forests, this suggests that the cumulative losses in government revenue since 1998 would have been substantial.

