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**The contribution of forestry to development in selected
Pacific island countries**

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Forestry in the economy

Forest industries are very important to the economies of the Solomons and Vanuatu. In the former, log exports contributed no less than 64% of total merchandise exports (see Table 1). However, given the relatively low tax rate (compared with PNG) imposed by the Solomons government on log exports, log taxes only contribute about 6% of the total tax revenues of the Solomons government. In the PNG economy, the importance of the log exports declined from 18% of total merchandise exports in 1994 to 7% in year 2000, while the industry's contribution to total taxes is 6%. In Vanuatu forestry has traditionally been a major, if not the largest, single source of export income, contributing around 14% of the total. In contrast to the other two countries, where log exports are by far the most important, Vanuatu's exports are all in the form of processed timber.

Table 1: Forestry in the economy

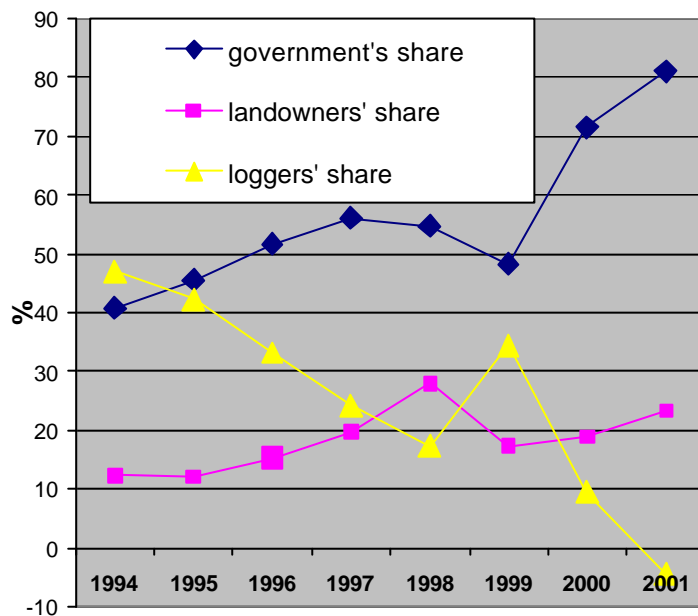
	1994	1995	1996	1997	1998	1999	2000
PNG							
log export value, K,m	483	437	453	496	218	386	384
total merchandise exports, K,m	2662	3400	3314	3059	3688	4983	5793
log exports as % of total merchandise exports	18	13	14	16	6	8	7
duty or export tax, K,m	137	133	145	154	47	101	136
total taxes, K,m	1124	1208	1526	1680	1598	1921	2315
log duty as % of total taxes	12	11	10	9	3	5	6
Solomon Islands							
log export value, SI\$m	277	301	367	309	196	251	224
total merchandise exports, SI\$m	468	573	577	582	683	725	353
log exports as % of total merchandise exports	59	52	64	53	29	35	64
duty or export tax, SI\$m	67	63	69	51	31	46	38
total taxes, SI\$m	241	271	290	286	316	365	260
log duty as % of total taxes	28	23	24	18	10	12	15

Sources: Bank of Papua New Guinea (various); Central Bank of Solomon Islands (various); SGS (various).

The importance of forest industries to the economy depends not just on the value of exports and taxes but also on the level of domestically-sourced inputs and employment. Logging in PNG and the Solomons is an enclave industry with limited linkages to the rest of the economy. A worthwhile study in the Solomons and PNG would appear to be the investigation of conditions under which value adding to raw logs can thrive and the contributions it could make to economies.

Resource rents and their distribution

Figure 1: Estimated shares of resource rents, PNG



When natural forest resources in Melanesia are logged, and the logs exported, the financial benefits are distributed between the logging company, the forest owners (in the case of Melanesia, the customary owners), and the central government. The central governments control the distribution of the financial benefits by imposing log export taxes and by stipulating

landowner royalties. It can be argued that the logging companies' share of benefits, as determined by the level of taxes plus royalties, should be no more than that will induce the companies to maintain their investment and to log at the level set by government. This is particularly the case if logging companies repatriate their profits rather than retaining them in country. However, logging companies will attempt to maximise their share of rents by reducing their logging costs and will lobby to minimise government taxes and landowner royalties. Figure 1 shows how the distribution of resource rents over time have changed in PNG. (The data in Figure 1 has been derived from Table 2.)

Table 2: PNG: shares of resource rents

	1994	1995	1996	1997	1998	1999	2000	2001
log production, plantations, m3	0	0	0	0	0	0	0	0
log production, natural forests, m3	2.943	2.513	2.607	3.006	1.613	1.984	1.992	1.91
log production total, m3	2.943	2.513	2.607	3.006	1.613	1.984	1.992	1.91
log export value, K,m	483	437	453	496	218	386	384	346
log export price, K/m3	164	174	174	165	135	194	193	181
duty or export tax, K,m	137	133	145	154	47	101	136	118
landowner benefit, K,m	41	35	43	54	24	36	36	34
logging costs, K/m3	50	58	66	74	82	89	97	105
resource rent total, K,m	336	291	281	274	86	208	190	145
government's share of rent, %	41	46	52	56	55	48	72	81
landowners' share of rent, %	12	12	15	20	28	17	19	23
loggers' share of rent, %	47	42	33	24	17	34	9	-5

Note: Premiums in addition to minimum stipulated landowner benefits negotiated between timber companies have not been included.

Since July 1996, in order to regularise the payment of landowner benefits, all new timber permits have stipulated a level of Producer Development Levy, based on log export price, in addition to a fixed royalty. However, landowners may negotiate additional benefits.

In the case of existing permits, in kind and financial benefits have been required to equal the PDL.

Sources: SGS (various); Duncan (1994); Fortech (1997); Hunt (forthcoming).

Table 3: Solomon Islands: shares of resource rent

	1994	1995	1996	1997	1998	1999	2000	2001
log production, plantations, m3	0.079	0.090	0.100	0.083	0.072	0.075	0.064	0.078
log production, natural forests, m3	0.580	0.659	0.733	0.607	0.532	0.547	0.472	0.5
log production total, m3	0.659	0.749	0.833	0.69	0.604	0.622	0.536	0.65
log export value, SI\$m	277	301	367	309	196	251	224	245
log export price, SI\$/m3	420	402	440	448	325	403	419	377
duty or export tax, SI\$m	67	63	69	51	31	46	38	41
high landowner royalty, SI\$m	80	80	80	80	80	80	80	80
low landowner royalty, SI\$m	30	30	30	30	30	30	30	30
high landowner in kind, SI\$	40	40	40	40	40	40	40	40
low landowner in kind, SI\$m	6	6	6	6	6	6	6	6
high landowner benefit total, SI\$m	120	120	120	120	120	120	120	120
low landowner benefit total, SI\$m	36	36	36	36	36	36	36	36
logging costs, SI\$/m3	150	156	162	168	173	179	185	191
resource rent total, SI\$m	178	184	232	194	92	139	125	121
government's share of rent, %	38	34	30	26	34	33	30	34
high landowners' share of rent, %	67	65	52	62	131	86	96	99
low landowners' share of rent, %	20	20	16	19	39	26	29	30
high loggers' share of rent, %	42	46	55	55	27	41	41	36
low loggers' share of rent, %	-5	1	19	12	-65	-19	-26	-34

Sources: Central Bank of Solomon Islands (various);

Solomon Islands Ministry of Forestry, Environment and Conservation

(personal communication with Commissioner of Forests, Gideon Bouro and with Training Adviser, Dan Raymond).

The sharp increase in the PNG government's share of resource rents in year 200 and 2001 has two causes. First, the government's mini budget of August 1999 reintroduced the harsher tax schedule that it had suspended in 1998¹, and second, the average kina price of export logs rose due to depreciation of the kina against the US\$ – given that the export tax is progressive, a greater share of the higher price was captured in tax. It is estimated that, in 2001, 81% of the resource rent available from logging will be captured by the PNG government. The log tax and landowner benefit together amount to K154, however the rent available is only K145 – the difference being accounted for by the loss incurred by loggers. While the landowner share of resource rent is estimated to be 19% in 2000 and 32% in 2001 – almost double that of the mid-1990s – it is nevertheless only about 30% of that of government (See Table 2).

A suggested goal of tax policy is that it should allow sufficient profits to be made to maintain investment. The evidence is that logging companies are on average having difficulty in making profits, suggesting that there will be an accelerating disinvestment in export logging. Given the weighting towards the government the tax could also be criticised for being inequitable.

The government's share of resources rent in the Solomon Islands have remained relatively constant (see Table 3). Landowners receive a very variable share of rents, depending on the royalty and the in-kind benefits negotiated. However, it is likely that the rent share of landowners is at the lower end of the spectrum because loggers are unlikely to agree to level of royalties and benefits that leave them with negative shares; if this is so, the rent is presently distributed fairly evenly among the stakeholders, each receiving about a third.

Transfer pricing is a mean by which traders take a share of resource rents. They do this by paying a price lower than market price to the log exporter, which allows them to make an extra margin of profit when realising the full wholesale price of logs in the Japanese market. In 1999 one million m³ of logs, or half of PNG's production, was exported to Japan. It is estimated that the transfer pricing losses incurred by landowners loggers and government totalled between K26 million and K52 million (see Table 4).

¹The 1995 tax schedule was introduced after Duncan (1994) had pointed to the fact that a large proportion of resource rents was being appropriated by logging companies during the high price periods of in 1992 and 1993.

Table 4: Estimated losses of rents due to transfer pricing in PNG in 1999

	Millions of Kina
Revenue loss to government	18 – 37
Producer benefit loss to landowners	2 – 4
Income loss to loggers	6 – 11
Total loss	26 – 52

Source: (Hunt, forthcoming)

Transfer pricing also seems to affect log prices in the Solomons. Logs destined for Korea and China were estimated by the Ministry of Forests, Environment and Conservation (2001) to average about US\$17.08/m³ or SI\$85/m³ less than market price information suggested. The implication is that about 13% of resource rents in these two markets, which make up about a third of the total market, was being transferred offshore to log buyers.

In Vanuatu's case only processed timber has been exported since 1993; the price of exported processed timber averaging US\$308 in year 2000. It is expected that the value added component of exported processed timber would be captured by the processor, thus lowering the relative shares received by government and landowners. About 88% of the value of the value of processed timber exports in 1999, of Vt537 million was, in fact, captured by the processors – the government and landowners each receiving about 6% of value.

We can attempt to compare the benefits received by the resource owners in the three countries by comparing the prices they received per m³ of log harvested. Table 5 shows that landowner benefits, in terms of US\$ per m³, ranged between 6 for PNG and 24 for the Solomons. As a percentage of log price, landowner benefits were 8% in PNG and up to 12% in the Solomons. If we take the lower estimates for the Solomon Islands then the percentages are very little different from those found to be applying in 1992 and 1993 by Duncan (1994). He advocated a larger share for landowners, commenting that “the prospect of this concerns some, who worry that landowners will be even more keen to log and will indulge in wasteful consumption. But there is little evidence from these or other developing countries that governments will use the revenues more wisely than landowners” (Duncan, 1994:xiii). In Vanuatu value adding has not enhanced the landowner benefit per m³ of log harvested (see Table 5) because the value of logs would have fallen after the export ban.

Table 5: Estimated landowner benefits

	PNG	Solomons	Vanuatu
log volume, m3, m	1.992	0.472	0.035
landowner benefit local currency(lc),m	36	36-120	33
Xchange rate, US%/lc	0.33	0.196	0.007
landowner benefit US\$/m3	6	7-24	6.6
average log export price US\$/m³	72.1	81.78	n.a.
landowner benefit as % of log export price	8	9-29	n.a.

Sources: SGS (various); Solomon Islands Ministry of Forestry, Environment and Conservation (personal communication with Commissioner of Forests, Gideon Bouro and Training Adviser, Dan Raymond); Central Bank of Solomon Islands; Vanuatu Department of Forests (2000).

Value adding

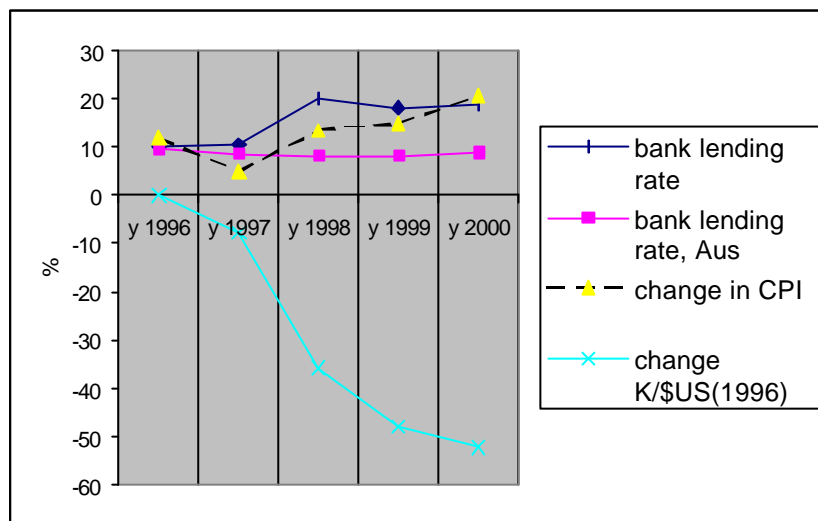
When undertaking a sector analysis, such as this, it is easy to overlook the economic settings that are important to potential investors but are a function of macro-economic management. In all sectors of the Papua New Guinea economy private investment is virtually non-existent (Manning, 1999) and the causes are largely poor macro-economic management and poor governance. The failings in economic management generated unfavourable interest rates and high inflation. These impediments were reinforced by exchange rate and tax uncertainty. Moreover, a high turnover of governments, ministers and heads of departments, means that policy settings are constantly in a state of flux.

The lending rates in Papua New Guinea have been high, in contrast to rates in other countries in the region where investors might do business. Commercial Bank interest rates rose from an average of 10% in 1996 and 1997 to over 20% in 1998, falling back to 18% by June 2000, but still over 17% at the end of the year. This trend is illustrated in Figure 3, which also shows the bank lending rates for business in Australia over the same period.

Inflation is another deterrent to investment, in that it increases the domestic cost of operations and tends to squeeze profit margins or increase losses. Rising import costs resulting from devaluation of the kina relative to the currencies of major trading partners, the introduction of a 10% VAT on July 1, 1999, higher taxes in a

mini-budget of the same year, together with the high interest rates, are the major causes of high inflation. As measured by the consumer price index, annual inflation was running at over 20% in the middle of 2000, having been at a high rate since the last quarter of 1998. Any business that uses machinery and vehicles has not only been affected by the rapid rise in replacement costs and spares parts, which are inevitably imported, but by the year 2000 rise in the price of fuel. Figure 4 shows the trend in the CPI. Due to improved macro-economic management inflation was falling sharply at the end of year 2000.

Figure 2: Lending Rates and CPI and Exchange Rate Changes, Papua New Guinea



Source: Bank Papua New Guinea (various).

While there are downsides associated with the devaluation of the kina, a significant potential benefit is the greater competitiveness of the country's exports. However, AusAID (1999:xviii) warned that, "to maximise the opportunities on offer, policy will need to be more vigilant in maintaining macro-economic stability and in ensuring Papua New Guinea's improved competitive position is not forfeited".

Capital is in short supply for the formation of small business. However, landowners who wish to enter the small-scale processing industry face prohibitive interest rates on start up loans, even if they are fortunate enough to have collateral. In the case of the private harvesters engaged in raw log exports through foreign direct investment, there have been additional factors at work reducing prospects for profitability and investment. As illustrated above, there has been a substantial shift of the resource rent from the private harvesters to the government. This has come about not just by a reversion in late 1999 to a severe tax regime but by the fact that devaluation caused an increase in the kina price of logs and therefore of the average tax rate, even in the face of falling US\$ export prices.

Businesses need tax stability in order to plan their operations. Indeed, tax predictability is probably just as important as the tax rate for business confidence. However, in Papua New Guinea's recent past there have been significant tax shocks to both log exporters and timber processors. The 10% VAT increased costs for log exporters by about 5% at a time when other costs were rising rapidly from mid-1999. Then in August 1999, in the new Morauta government mini-budget, the export log tax system that had been introduced in 1996 – but abandoned in 1998 as too severe – was reintroduced.

Timber processors servicing the domestic market have been operating under considerable protection against imports. Indonesia and Malaysia have in the recent past been able to land timber goods in Port Moresby at a fraction of the domestic cost of production. But the high protective tariffs on timber products increase the input costs for other local businesses. As part of the structural adjustment process, overseen by the IMF and the World Bank, these high tariff rates are being reduced. The tariff cuts are expected to impact processing but it is not clear how the industry will respond given that PNG's competitiveness has been enhanced by the depreciation of the kina *vis a vis* the US\$.

Any business that is financed by foreign direct investment would wish to be able to deploy its profits offshore, or wherever it sees the greatest benefits. Foreign exchange restrictions are bound to deter investors particularly in countries where the economy and the currency are unstable. Nevertheless, such restrictions apply to private log harvesters in Papua New Guinea who are obliged to bring proceeds of log exports onshore.

We now turn briefly to the consideration of governance in relation to investment and doing business. Poor governance has led to the deterioration of education and health services. The productivity of the workforce is low as a consequence. Roads are often in a very poor state due to lack of maintenance, thus the costs of road transport in regional areas may be very high; in fact, a major benefit to landowners as a result of entering into logging agreements is the road infrastructure left behind by the loggers. While these roads may have a limited life, being poorly built and lacking in maintenance, they nevertheless facilitate commerce and the opening up of the area to services.

Violent crime and theft are common enough in PNG to warrant high expenditure by businesses on crime protection. This entails capital costs, as well as operating costs in the employment of security guards at all business premises. Law enforcement is often weak, so that the deterrent affect is absent and redress for loss of assets or income is problematic through the courts.

The Morauta government appears to be turning the economy around, with the assistance of the World Bank, the IMF and the 'friends of PNG' (which include Australia and Japan). Better fiscal management is hopefully bringing government expenditure more in to line with income and the government has already paid off

much high interest debt and increased its foreign exchange reserves, while inflation and interest rates are falling. The government is also attempting to root out deeply embedded corruption by bringing to account the perpetrators of schemes that ripped millions of kina out of government and semi-government institutions. However, the road to recovery will be a long one. The gutting of institutions, particularly by the previous government, not only left large financial holes but depressed public service morale and efficiency. The lack of trained professionals will be a major obstacle to the resuscitation of the economy and the strengthening of governance.

Given the characteristics of PNG's macro-economy and problems of governance it is not surprising that exports of timber, plywood and woodchip exports are minor, relative to log exports, comprising some 5% of total value. The Rimbunan Hijau group opened a processing plant in Western Province in 1998 and announced that it will build more such plants in other provinces and in Port Moresby. The prospects for an increase in processed timber products exports have nevertheless become complex given the recent regional currency realignments and the lifting of the log export ban in Indonesia. The prospects for suppliers of the local market have also become clouded given the phased removal and reduction of import duties on plywood and other wood products.

According to the Bank of Papua New Guinea, the value of forest products other than logs, i.e. processed wood products, has been disappointing in recent years despite the favourable exchange rate (see Table 6). It should be borne in mind, however, that the Bank's statistical base is probably unreliable, omitting many small exporters. The Forest Industries Association of Papua New Guinea (FIA), in contrast, reports the 1999 exports of processed wood exports at about US\$18 million (compared with the estimate of US\$4.0 million for the same year by the Bank of Papua New Guinea (2000:s31)) and about US\$25 million for 2000 (FIA, 2001:10) compared with the estimate of US\$9.1 million for the same year by the Bank of Papua New Guinea (2001:s31)).

Table 6: Exports of processed timber, PNG and Solomons

	1994	1995	1996	1997	1998	1999	2000
PNG							
processed exports, K,m	11.3	13	11.5	24.3	19	10.3	25.3
SI							
processed exports, SI\$,m	12.4	12.4	12	9.5	n.a.	n.a.	n.a.

Note: The FIA reports higher processed exports for PNG (see text).

Sources: Bank of Papua New Guinea (various);

Solomon Islands Ministry of Forests Environment and Conservation
(personal communication with Commissioner of Forests).

The main processed exports by volume and value are woodchip, lumber and veneer. The prices for lumber exports fall mainly in the range US\$200 to US\$400/m³. The main destinations of processed exports, other than woodchips, are Australia, China and Indonesia (FIA, 2001).

The area of plantations has changed little since 1996. There are about 40,000 ha in four main plantations of Eucalyptus and Acacia species for woodchips, out of a total of 60,000 ha. Smallholder plantations for balsa wood production are unrecorded but estimated at 400 ha (FIA, 2001: 12). While the exchange rate now favours the development of plantations, an inhibiting factor remains the difficulty for investors of securing land.

There are presently about 50 sawmills, 27 furniture factories, a plywood mill, and a woodchip mill in PNG. In addition there are several hundred scattered portable sawmills; these small-scale processors access raw logs relatively cheaply free of tax. It is often suggested that the forestry industry, in PNG and other Melanesian countries, should take more advantage of their forests by switching from the export of raw logs to the export of processed timber and thereby gain the economic benefits of value adding and greater urban and rural employment. However, low technical efficiency reflected in the product and low labour productivity, together with high shipping costs, have in the past made it difficult to compete with South-east Asian exporters. Timber processing is a capital-intensive industry requiring overseas investment. Potential overseas investors may find it hard to consider PNG favourably given its volatile political and economic climate together with law and order problems (Yala and Levantis, 1998). The unstable policy environment faced by foreign direct investors is illustrated by the case of the company D-Scan Ltd, described in Box 2.

Box 1: The Case of D Scan

The company D-Scan is engaged in downstream processing of teak into furniture components and exporting them to Indonesia for assembly. The company employs 15 people, has invested \$US5.7 million, including in a new factory, and uses teak grown locally. It planned to invest a total of \$US8 million and employ up to 500 people. The company was invited to Papua New Guinea by two instrumentalities, the Investment Promotion Authority and the PNGFA.

The levy of royalty on teak used was increased from \$US40 per m³ when the operation began to \$US300 per m³ in 2000. The company claimed that other teak operators were being charged much less royalty (Manning, 2000).

After the company was about to close its doors and pull out of PNG, and after publicly stating its case in the press, the PNGFA relented, and lowered royalty to the same level as for other similar operators.

Source: Hunt (forthcoming).

The establishment of timber plantations that would substitute a much higher yield of more uniform logs for the very variable and lower yielding native trees, thus reducing harvesting and milling costs, is another option often put forward for PNG. The economics of plantations do not look favourable, however. Plantations take years to produce millable timber and high discount rates in the country inflate the costs of harvestable plantation logs. Private developers, in assembling large contiguous areas for plantations, may face land ownership disputes and fire risk. Meanwhile, the government has demonstrated its unwillingness to participate in plantation forestry by handing back its plantations to the customary owners. AusAID (1997) suggested that the failure of plantation forestry to develop should be the subject of a major policy review.

In the case of the Solomons, the available data suggest that the processed exports are also at a low level (see Table 6).

The recent political turbulence in the Solomons and the country's subsequent economic collapse make it even less likely than in the past that investors will be attracted to timber processing for export. Moreover, the contraction in the economy has led to an unfavourable short and medium term outlook for timber processing in the domestic market.

Vanuatu's case contrasts with the other two island nations because its ban on the export of raw logs, effective since 1993, means that all timber exports are in processed form. Table 7 shows that volume and value of exports has increased substantially since the mid-1990s.

Table 7: Processed timber exports, Vanuatu

	1994	1995	1996	1997	1998	1999	2000
log production, plantations, m3	0	0	0	0	0	0	0
log production, natural forests, m3	n.a.	n.a.	n.a.	n.a.	n.a.	35143	39860
processed timber exports, m3	5,107	4,160	7,940	14,938	12,917	12,219	8,599
processed exports value, Vt, m	255	234	362	515	524	537	434
<u>processed exports price, Vt/m3</u>	<u>50016</u>	<u>56233</u>	<u>45592</u>	<u>34468</u>	<u>40579</u>	<u>43940</u>	<u>50497</u>

Note: Year 2000 exports are under-reported.

Source: Vanuatu Department of Forests (2000).

The economics of processing

The attraction of domestic processing over the export of the raw product is the increased economic activity associated with adding value to the product. In the case of timber processing the economic activity involves investment in land, buildings, machinery and vehicles, the purchase of local goods and services and fuel and, importantly, the employment of local labour.

The comparison involves the estimation of benefits through the calculation of 'domestic value added' or DVA. For example, it is likely that there will be a greater number of local employees, and therefore a greater wage bill, associated with timber processing than with logging for export, and wages are almost all spent in the local economy. Likewise processing is likely to involve the purchase of more local services, such as transport, than export logging. Logging is likely to use more fuel but diesel is imported, so that only the small value associated with its local supply can be classed as DVA. The studies of DVA in timber processing in Melanesia that would make this section on value adding much more complete seem to be lacking, however.

Policy

The paper focuses on two policy issues in the three countries. The first, affecting the level and distribution of benefits to be derived from forestry, is the issue of tax, i.e. its method of application, its incidence and its level. The second, which affects the sustainability of the economic benefits to be derived, is the rate and manner of the allocation of natural forests for exploitation.

The Papua New Guinea and Solomon Islands governments have one thing in common: that is their desperate need for revenue. While the PNG government has been trying to reduce its expenditure to balance its budget, it still runs short of money to invest in, and meet operating costs of, essential services such as health, education and infrastructure. A common outcome of this shortage is the cancellation of development projects by donors in these high priority areas because of a shortfall of government counterpart funding (Hunt et al, 2000).

To increase revenue the Morauta government reintroduced a progressive log export schedule after it came to government in 1999. This move coincided with a rise in the kina value of logs, caused by the depreciation of the kina relative to the US\$. Table 2 shows that the average log price in 1999 was K194/m³, in 1999, compared with the previous year's average of K135. The tax schedule is constructed so that the average rate of tax/m³ on export logs increases with log price. At the kina export prices that have since prevailed, the tax takes about two thirds of the price of logs. Thus was delivered a tax windfall to the government so that, even with declining production, the log tax has generated over K100 million for consolidated revenue in the last three years (see Table 1). The fact that log production has held up despite the high tax rate has encouraged the government to turn a deaf ear to the protestations of the logging industry. The logging companies are obviously cutting cost to the bone in order to keep producing. However, given the inability of the industry to cover its full costs of operation, it is inevitable that disinvestment will eventually take place,

Meanwhile, the government may well achieve a higher level of revenue from the industry if it lowers the average tax rate. Lower taxation equates to a higher price, and it is suggested that tax revenue is elastic with respect to price – the reduction in revenue from a reduction in tax rate would be more than compensated for by the increased tax take on a higher volume of production.² To achieve higher production, however, new concessions will need to be opened up to replace those logged out. (The implications for sustainability of allocating the new concessions in PNG are addressed below.)

A forest revenue system for PNG that taxes resource rents and thus overcomes the problem of unbalancing the shares of rents as prices change, that also takes account of the environmental costs of logging, and at the same time generates funds for conservation through an environmental levy, is proposed in Hunt (forthcoming).

PNG's economic climate has not looked favourable for investment in timber processing, policy should nevertheless be developed that looks beyond forest exploitation simply as a means of revenue generation for government towards a policy that will maximise domestic value added from the industry. This could well involve the introduction of a suite of incentives for investment that includes a reduction in the rate of log export tax.

In the Solomons the maximisation of revenues from forestry does not rely on raising rates of log export tax but on the maximisation of the volume of log exports. The logging industry is the only major exporter to survive the economic collapse, log exports being only mildly depressed in 2000 because of the reluctance of log ships to call into the Solomons during the hiatus. However, with

² For a detailed exposition of this argument, and a discussion of the importance of the denomination of the tax schedule in forestry, see Hunt (2000).

that restraint removed, and with government encouragement, it is likely that exports in 2001 will grow. The share of the rent captured by the loggers – about 40% (see Table 3) – is sufficient incentive for them to respond to the government's urging. Moreover, the logging companies are able to repatriate capital, a total of SI\$643 million from all sources leaving the country in year 2000. The drawback with this policy of a logging-led recovery is that it renders the industry economically unsustainable, as will be explained below.

Turning to tax policy in Vanuatu, we see applied a complete change in philosophy. The government appears to reap only some 6% of the value of processed timber exports in fees and taxes as a result of its low export duty policy. At the same time, the policy goes so far as to abolish income taxes, corporate taxes, capital gains taxes and withholding taxes. Moreover, projects are exempt from customs duties if they contribute to employment or generate foreign exchange. In concert with these policies to encourage investment is a removal of both foreign exchange controls and limits to foreign ownership of Vanuatu business (Government of Vanuatu, 2001). Forest policy calls for the establishment of 25,000 hectares of plantation forestry over the next 25 years.

We now consider the sustainability issues associated with the rate and manner of allocation of forest resources for exploitation, which are in the purview of Government. In PNG, many of the concessions awarded about a decade or more ago are now nearing the end of their economic life. It is planned to allocate new concessions under Forest Management Agreements (FMAs). These concessions cover some 11m hectares of the estimated available commercial forest of 22 m hectares. Within the FMAs there are supposed to be sufficient timber resources to be able to implement sustained yield management: one thirty fifth of the concessions being logged each year, their recovery allowing a second cut to begin in year thirty six. However, an official review of the FMA process has found that the forest volume inventories, which are the basis on which the FMAs are to be sustainably exploited, are in many cases overestimated (Everts, 2001). The implication is that logging companies will need to operate on a shorter cycle than 35 years (in some case much shorter) to achieve the throughput of logs they need to attain financial viability.

A problem with the long cutting cycle, apart from doubts that the forest will recover in that time or will be available for continuous forestry, is that vast tracts will be locked up for thirty five years waiting to be harvested. This is unjustifiable on economic grounds because the economic value of the forest may have been higher in some other use, such as small-scale forestry or conservation, but these options are never tested by the Forest Authority before it bundles the resource.

In the first place it is questionable whether it is appropriate role for the government to be the agent for the appropriation of customary landowners' forest resources ready for logging, while at the same time determining that landowners

will receive only 12% of the log value. In the second place it has been shown that government is incapable of implementing sustained yield management.

It is therefore proposed that government vacate its pro-active role and allow the forest owners to negotiate with parties who wish to exploit or conserve their forest resources. The role of the forest authority would be a regulatory one in ensuring the implementation of forest management plans and fair dealing by the parties. The benefits of exploiting or leasing their forest would be received directly by the landowners according to the negotiated agreements reached – while taxes would be paid by loggers on export, as they are presently.

It was illustrated that in the Solomon Island's case the emphasis has been on volume of production in the generation of log export tax. The volumes have been in excess of sustainable yield, resulting in a depleted inventory. Moreover, recovery of forests has been uneven. Two estimates of the available commercial forest and sustainable yield were obtained by the author. According to Sheehan (2000;126) the sustainable harvest rate is 250,000 m³ per year. However, an estimate by a senior official in the Ministry of Forest Conservation and Environment, suggested that there was some 3.5 m³ of timber left unharvested. An AusAID forester suggested to the author that there was about 4.0 m³ of timber still available. At present harvest rates of about 500,000 m³ per year the resource will last only seven or eight years on these estimates. However, the government's view is obviously that the financial flows from logging are much more useful now, in its time of crisis, than in the future. It is hoped that plantation forestry will be able to fill the export gap left by exhausted logging. Presently plantations generate 60,00 to 80,000 m³ of logs a year, Kolombangara hosting a successful plantation on alienated land. New plantations of 10,000 ha are planned for New Georgia on customary land.

Small scale or walkabout sawmills are unregulated, as in PNG, and they tend to be unsustainable in their operation. In contrast, the Swift eco-forestry operation is sustainable but it has scaled down its operations since the strife of last year. Eco-forestry groups in PNG, managed by the EU and NGOs, are producing sawn timber for home consumption and export. While the financial sustainability of these groups is under question, given their high subsidy requirements, the environmental and social benefits generated by the groups can be considerable.

The commonly quoted national estimates of sustainable yield from logging, for the three countries under consideration, are dangerously misleading. This is because it is common in the three countries for logging to be concentrated in certain islands or provinces. In the case of Vanuatu, the unevenness of logging is well illustrated. While the total annual log output of around 40,000 m³ of log is well within the national estimated sustainable yield of 68,000 m³, the 2000 harvest on six of the ten islands exceeded sustainable volume. Another sustainability issue highlighted in Vanuatu is selective logging by species. On the island of Santo, the focus of the industry, 97% of the timber harvest in year 2000 came from just two

favoured species. Such selective harvesting is a problem mainly associated with fixed mills producing for export, rather than walkabout mills that tend to cut a range of species for the local market as well as for export (Vanuatu Department of Forests, 2000:5,6). The codes that govern logging companies in PNG and the Solomons specify that all species over a certain diameter must be taken. The issue here thus becomes one of compliance and enforcement.

Conclusions

The purpose of this paper has been to explore the contribution that timber industries can make to sustainable economic development in three Pacific Island countries that possess significant forest resources.

In the case of the PNG and the Solomon Islands it was shown that the government's emphasis has been on maximising log export tax revenues. In PNG, the log export tax schedule ensures that a large proportion of resource rents is channelled to consolidated revenue; the customary resource owners receive only a relatively small proportion of resources rents, while the resources rents of loggers are negative. An adjustment of the shares of rents is called for on both equity and economic grounds.

The new Forest Management Agreements in PNG will not lead to sustainable yield management, nor are they economically sustainable. Alternative strategies are recommended that allow the landowners more power over the use of their resource, and throw more emphasis on strategies to maximise the value (domestic value adding) of forestry to the economy. These new strategies would go hand in hand with the government's emphasis on macroeconomic management and governance that are also aimed at achieving a gradual improvement in the investment climate.

In the Solomons, log exports are presently very important in generating revenue for a government in financial crisis. However, the next few years will see the exhaustion of the commercial forests. Above, it was suggested that macroeconomic management and social and political stability are factors that will affect the development of timber industries. In the Solomons there is a policy emphasis on development of plantation forestry, which already generates 12% of the log volume exported. However, plantation development sufficient to maintain timber exports after the natural forest runs out in a few years time, will require the attraction of private investment – in plantation establishment, management and in timber processing. But a very high hurdle is presented to investors by the disastrous state of the economy and the unstable socio-political situation. Meanwhile, the forest revenue system seems capable of delivering a reasonably equitable share of the rents to landowners as well as giving the opportunity to landowners to negotiate in kind benefits.

The forest policy and fiscal settings in Vanuatu are conducive to investment in processing that adds value to raw logs before export; components of domestic value added are the expenditures on goods and services and wages. A question mark hangs over the sustainability of the industry, however. The fixed mills rely heavily on just two species for export, but the amounts harvested of these does not seem to be under control. At the same time, the islands that generate the largest profits are the ones that are being exploited at rates that are unsustainable. The policy thrust in Vanuatu must be the implementation of sustainable forest management to ensure that the economic benefits being derived from the sector are sustained.

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