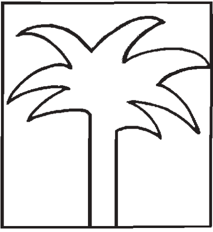

Timber contracting in Melanesia: a system in need of change

Ron Duncan

Many of the problems in the forestry sector reported recently in Papua New Guinea, Solomon Islands and Vanuatu are symptoms of the inefficiency and inequity of the revenue distribution system specified by the logging contract used in these Melanesian countries.

Logging contract systems are in need of change—they are leading to environmentally destructive exploitation and poor returns to landowners. The reaction has been to ban logging, thus giving subsidies to domestic timber processing industries. Export taxes are an inefficient and inequitable means of timber revenue distribution. The logging contract needs to be changed to allow landowners and governments to receive most of any windfalls without putting a wedge between world and domestic prices. A method of allocating logging contracts through auctioning is suggested.

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In Papua New Guinea, Solomon Islands and Vanuatu, reports of logging of the tropical forests in a destructive and non-sustainable manner have been widespread, as have reports of underpayment of royalties and export duties through under-reporting of log prices and log volumes shipped, and corruption of officials. These reports have risen to a high pitch over the past year or so, coinciding with and directly related to the price of tropical timbers rising to unprecedented levels. Many of the problems reported, however, are symptoms of a deeper problem—the inefficiency and inequity of the revenue distribution system defined by the logging contract used in these three Melanesian countries.

Here the deficiencies of the present logging contract lead to suggestions for a new form of contract. A new method of assigning logging rights is under appraisal in Papua New Guinea at present, but the system could be further improved. Suggestions are made for a new system of allocating logging contracts. Returns to landowners and government are maximised while the price risk and the imperative to minimise costs and wastage and maximise prices is placed with the logging contractors who are in the best position to benefit from increases in log prices.

Recent events and background

Estimates of sustainable timber yields for Papua New Guinea, Solomon Islands and Vanuatu highlight the fact that timber licences issued in the three countries are well in excess of annual sustainable yields.

Table 1 **Forest and timber statistics, Papua New Guinea, Solomon Islands and Vanuatu**

	Papua New Guinea	Solomon Islands	Vanuatu
Total forest area (million hectares)	34.0	2.4	0.43
Commercially productive (million hectares)	7.0–7.5	0.48	0.12
Yield allowable under licences currently issued (million cubic metres per annum)	8.0	3.3	0.2
Current harvesting yield (million cubic metres in 1993)	3.5	0.7	0.03
Sustainable yield (million cubic metres per annum)	3.5	0.3	0.038–0.052

Sources: Most recently available estimates—various sources (see Duncan, forthcoming).

Recent harvesting levels, at least in some areas such as West New Britain Province of Papua New Guinea, have also been in excess of sustainable yields. The volume of timber covered by timber licences has increased substantially in the recent past, especially in the period since late 1992 when timber prices began to rise very rapidly.

Rumours of greatly underreported log prices and log volumes declared for shipment have been rife. If this is the case, loggers have been avoiding royalty payments to landowners, as well as payment of export duties and payment of various levies based on the price per cubic metre. There is evidence of considerable price under-reporting in Solomon Islands and some evidence of less extensive price under-reporting in Papua New Guinea (Duncan 1994a). Claims of under-reporting of log volumes shipped could not be supported.

It is reported that logging in Melanesia has been carried out in a destructive and environmentally damaging manner, with little regard to regeneration or to environmental impacts such as siltation of streams. There have also been widespread reports that payments by logging contractors to landowners (that is, the customary owners of the forests) in the form of bridges, roads, schools, churches and so on, have been of poor quality—for example, bridges being only of a temporary nature (logs and filling). It was clear that the forestry departments of the three countries have not been monitoring logging operations effectively, either because of lack of training and/or resources or ineffective use of existing resources.

The ban on the export of logs from Sabah, following earlier bans in Indonesia and Malaysia, together with restrictions on timber harvesting in North America gave rise to timber prices more than doubling in 1993. This price increase, together with the contraction in areas allowing log exports, gave a tremendous incentive to logging contractors with long-term contracts with processing mills in Japan and Korea to expand their activities in these Melanesian countries. The returns from the high prices were huge, so it should not be a surprise if they were prepared to go to great pains to obtain timber licences. Further, because of the log export bans already in place and the clamour for adoption of bans by other countries, it is highly likely that loggers would have expectations of a limited time horizon for log exports. Hence, they would be keen to fell as quickly as possible with little regard for regeneration of future supplies.

For their part, landowners cannot be blamed for wanting to log, or wanting to

log at a faster rate, while prices were high. Moreover, they might also have had expectations of the introduction of log export bans—a policy which reduces the value of their timber. It makes good economic sense to log at a faster rate when timber prices are high, but this should not be done at the cost of damaging the forest's ability to regenerate and generate future revenue. Moreover, it is desirable that such windfall gains be invested, not spent on consumption. Analysis of what happens to windfall gains from commodity booms in developing countries shows that the private sector is much more likely to invest such gains than are governments (Duncan, forthcoming). Governments tend to treat commodity price booms as permanent and to raise domestic consumption expenditure accordingly. The fact that much of the economic surplus from the timber price boom has accrued to loggers is most unfortunate—investment which should have been made has been foregone.

In summary, at least up to early 1994 under the existing logging contract and revenue distribution system there was

- a big incentive for loggers to log as much as possible while prices continue to be high and to have little regard for sustainable logging practices
- little incentive for loggers to construct quality infrastructure as part payment for logs, because of low expectations of a long-term relationship
- limited capacity for forestry department staff to monitor logging and shipping practices, to ensure good forestry management practices, and to eliminate malpractices such as under-reporting of log volumes and prices
- limited capacity of landowners to monitor logging and infrastructure construction
- little incentive for landowners to monitor the shipping of logs and avoid customs duty, as landowners' revenue share was so low.

Landowners and governments bore substantial price and performance risks on their expected revenue share.

Deficiencies of the present logging contract system

Aside from the expectation of the imposition of log export bans, the main underlying cause of these problems is the form of revenue distribution and risk bearing under the present logging contract used in these countries (Tables 2 and 3).

Leaving aside the increases in export duties in 1994 for the moment, comparing 1989 (prior to the recent boom) and 1993 a picture emerges for log revenue distribution in Papua New Guinea (Table 4).

On a log export volume of 2.76 million cubic metres in 1993, loggers gained

Table 2 **Payments to landowners, Papua New Guinea, Solomon Islands and Vanuatu**

Papua New Guinea	
Royalty payments to landowners	1–5 kina per cubic metre
Royalty 'premiums' to landowner groups, where applicable	3–5 kina per cubic metre
Infrastructure payments (roads, bridges, schools, churches, etc.) supplied by contractor	5 kina per cubic metre
Solomon Islands	
Royalty payments to landowners	5–15 per cent of f.o.b. log price
Infrastructure benefits	
Vanuatu	
Royalty payments to landowners (varies by species)	600–1,000 vatu per cubic metre

Table 3 **Government revenues, Papua New Guinea, Solomon Islands and Vanuatu**

Papua New Guinea	
Export taxes on logs	
1979	10 per cent of f.o.b. price
late 1989	17 per cent (average) of f.o.b. price
November 1994	27 per cent (average) of f.o.b. price
March 1994	40 per cent (average) of f.o.b. price
Various levies	1 kina (average) per cubic metre (reafforestation, agricultural, infrastructural)
Solomon Islands	
Export taxes on logs	
prior to 1 January 1994	25 per cent on first SI$75 per cubic metre 30 per cent on part above SI$75 per cubic metre
from 1 January 1994	27 per cent and 32 per cent, respectively
from 4 July 1994	35 per cent on first SI$250 per cubic metre 65 per cent on part above SI$250 per cubic metre
Vanuatu	
Export taxes on logs	
prior to 1994	15 per cent of f.o.b. price *ad valorem*
from 1994	an additional 1,300 vatu per cubic metre

approximately an extra 193 million kina above logging costs and normal profit. In 1989, a non-boom year, there was virtually no surplus available.

The three countries reacted belatedly to this by increasing export duties significantly in 1994. While it is appropriate that governments capture most of this surplus, the use of export duties is inefficient as export duties effectively transfer income from log owners to domestic processors.

Table 4 **Log revenue distribution, Papua New Guinea,** kina per cubic metre

	1989	1993
Average log export unit value	66.3	167
less logging costs + profit	46	50
economic surplus	**20.3**	**117**
less royalties	8	8
infrastructure payments	5	6
export duty (10 per cent average)	6.3	33
loggers' extra revenue	**1.0**	**70**

This is so because the export duty drives a wedge between domestic and international prices, reducing the volume sold internationally and increasing domestic sales at the lower price. An export ban is an extreme form of export duty which reduces exports to zero while maximising the wedge between world and domestic prices and maximises the income transfer to local processors.

From a forest conservation viewpoint, this is the wrong approach to take. If forests are to be conserved, then the value of their components should be raised, not lowered. Driving down the price of logs only serves to make the land more valuable for purposes other than growing trees. It can also increase the volume of trees harvested, as in Indonesia, as domestic millers favoured with logs at less than world prices may process even more logs, and less efficiently, than they would if they had to pay world prices.

If domestic processing cannot be profitable while paying world prices for

logs, it should not be supported by driving down the price of logs through export taxes on logs or log export bans.

Besides giving loggers most of the extra economic surplus in 1993, the current logging contract has the following payout characteristics

- a small guaranteed payment (royalty) to landowners in the case of Papua New Guinea and Vanuatu, and in Solomon Islands a higher, but uncertain royalty payment
- a landowner payment in the form of infrastructure of uncertain quality and value
- a government share (export duty) which varies with the f.o.b. price of logs.

Hence, the landowners and governments have a large price and performance risk exposure. Their performance risk, in terms of the logger cutting the correct trees and reporting them, and doing so in a sustainable fashion, has to be minimised through effective monitoring by the forestry departments and education of landowners. But it will also be reduced through the landowners having a larger stake in log revenues.

The log price risk, however, should not, and need not, be borne by the landowners and governments. Landowners are not in a position to hedge such risks and while governments are better able to do so, it is even better that these are borne externally (Duncan 1993). The exposure of developing countries to commodity price volatility is already far too high and measures need to be taken to reduce it. Developing countries are better off with an assured price and/or revenue stream than a highly uncertain one.

For their part, logging contractors should not be in a position to reap such windfall gains from price booms. While there is some performance risk exposure on their part—due to landowners causing disruptions of operations or governments changing policies—the risk premium involved should be much less than the windfall gains received in years of high prices.

Suggested changes to the logging contract system

The National Forest Policy Guidelines developed recently by the Forestry Authority of Papua New Guinea proposes a new form of logging contract which does away with royalties and export duties and utilises a stumpage fee system with the following characteristics.

- a 'base' stumpage fee of 20 kina per cubic metre
- logging costs plus 'normal' profit are to be estimated by the Forestry Authority
- 85–90 per cent of the difference between the log price and the base stumpage fee plus the logging costs is to be appropriated and paid into a development trust for infrastructure projects and investment in other projects of value to the community. This leaves 10–15 per cent of the difference for the loggers as a variable payment dependent on log prices. As it is also proposed to ban log exports, logs will be sold to domestic processors at prices based on appraised world prices.

In many ways this is a good proposal. It tries to appropriate most of the economic surplus to the government and land-owners, while leaving a small share as incentive for loggers to produce more when prices are high. If exports were not to be banned, this variable share would give loggers some incentive to obtain the best prices for logs. Presumably, it would do away with price under-reporting—at least for those logs reported as sold to domestic processors.

The major problem with this proposal is that the government and landowners will still bear the price risk, which is

substantial. Next, if log exports are not banned (as hopefully they will not be) the proposal provides little incentive for loggers to maximise prices, except perhaps in boom years. Third, the use of cost of production estimates in other agricultural pursuits (as in the early post-war years of agricultural policy in Australia and the United States) proved unworkable as it led to firms inflating their costs.

If such a system is put in place it should be accompanied by a price risk management arrangement. This may be able to be done by hedging through futures contracts. Logging contractors are in a better position to hedge as they can enter into long-term contracts with processors.

Because of these problems with the proposed system, it is suggested that logging rights are auctioned on an annual, or less frequent, basis. Logging contractors would be asked to tender for what they would guarantee to pay in the form of the surplus above logging costs. This system would force loggers to compete over their logging costs and to maximise their expectation of log prices received. This would place them in the position of having to hedge the price risk in some way.

A system of this kind would eliminate concern over price under-reporting as prices would not need to be reported, while loggers would try for the highest prices to ensure they could make the guaranteed payment to the landowners/government. Because it would be a guaranteed per cubic metre payment for a given period, the government and landowners would be able to plan accordingly, although there remains the risk of the volume sold being less than planned.

Two criticisms have been raised about such a scheme and both have merit. First, there is concern that because of the already high level of firm concentration in the timber industry, there will be collusion over the tenders. Second, the guaranteed unit payment will be based on expectations about log prices over the contract period. If prices are higher the logger makes a windfall gain and this may generate adverse reactions among landowners.

On the first point, collusion is always of concern in tendering processes. Monitoring of logging costs and expected timber prices by an independent authority can alert authorities to collusive practices and additional firms can be invited to tender.

As for the second criticism, there would need to be education about the benefits of hedging to obtain a known revenue, and on the point that timber prices, like all commodity prices, are basically random variables and the logging contractors are just as likely to overforecast prices as to underforecast them.

An alternative system

Logging contractors in Papua New Guinea, Solomon Islands and Vanuatu were able to appropriate most of the economic surplus from the boom timber prices of 1993. As a result, timber licences have been issued and logging agreements made far in excess of the annual sustainable timber yields in the three countries. This situation has been changed with the sharp increases in export taxes on logs in 1994. However, export taxes are an inefficient and inequitable means of timber revenue distribution. The logging contract used in these Melanesian countries needs to be changed to allow landowners and governments to receive most of any such windfalls without putting a wedge between world and domestic prices. The stumpage fee proposal in Papua New Guinea's National Forest Policy Guidelines would do this but it is open to the criticism that it would still leave the government and landowners bearing the price risk and would not give logging contractors much incentive to maximise log prices.

An alternative method of allocating logging contracts through auctioning is suggested. This system would also appropriate most of the economic surplus to the government and landowners but would place the price risk with the logging contractors who are in a much better position to hedge the risk. Moreover, it would force logging contractors to minimise their logging costs and maximise the prices received from log sales, while eliminating the incentive for under-reporting of log prices by contractors. Improved monitoring of logging and shipping practices will still be required regardless of which new system is introduced.

The proposals and actions being taken in these countries through log export bans and other support for domestic timber processing industries should be reconsidered. The timber processing industry should stand on its own feet, not on the landowners—which would be the case if log exports are banned or even if export duties are charged on log exports. Export taxes and export bans push domestic prices for logs below world prices and force log owners to subsidise log processors. Such policies devalue the forests when forest conservation demands that forests be made more valuable. If timber processing is not profitable while paying world prices for logs, it does not make economic sense to subsidise it in order to create jobs. If landowners receive the timber revenues to which they are entitled, this money will be spent and invested in other ways which will have the effect of creating jobs in other areas without the need for subsidy or other support.

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