
Underlying Causes of Deforestation and Forest Degradation

Oceania and Pacific

Forest Loss in Papua New Guinea

"Compendium of Discussion Papers in the Oceania region"
Brian D. Brunton, Forest Campaigner, Greenpeace Pacific
Pacific Bioweb, Nadi, Fiji
28 & 29 September, 1998

Introduction

In Papua New Guinea, we are still in a position where a very large area of the planet's natural forests can be saved. We have about five to ten years to bring forest loss under control. After that time population growth will make forest planning and management very difficult. Current policies and practices point to us losing this struggle. It is likely that during the lives of our children, the accessible production forests will vanish. Our children will be left with forests on mountains, in wet-lands, in parks and in a few other inaccessible places.

Large areas of the country will become degraded secondary-growth, gardens, and agricultural land.

The extent of deforestation in Papua New Guinea is under question, because there is an intense political struggle over the issue of sustainability in mixed species tropical forests, unchallenged statistics are hard to come by, and the public have difficulty accessing the most recent assessments in the Forest Inventory Mapping System (paid for by Australian aid). One view is that Papua New Guinea has a total millable forest area of 70,000 sq.km. Under existing regulations, which may be changed, about 100,000 sq.km of forest is considered unsuitable for industrial logging because of inundation (swamp), or elevation (mountains). Each year, it is claimed, we clear 2 percent of our millable forests. By the end of the century we will have cleared 18 percent of our millable forests. At current rates a total clearance of millable forests will be achieved in the year 2032. (FAO *State of the World's Forests*, Rome, 1997). The Papua New Guinea Forest Authority disputes these figures, says that the FAO statistics are outdated and over-blown, preferring figures of their own that indicate the forests are being logged at a "sustainable rate".

Papua New Guinea exports about 3 million cubic metres of logs a year (Filer 1997). The population of Papua New Guinea now stands at over 4 million people. It grows at the rate of about 2.3% per annum; it doubles every 25 years or so. By 2025 the population of Papua New Guinea will be in the order of 9 million, and by 2050 we will probably have somewhere around 18 million people (see UNDP *Human Development Report 1998*)

At present, Papua New Guinea still has some very large areas of intact tropical forest: one percent of the world's frontier forest. It has 40 percent of its original forests intact, (much secondary growth is the result of traditional clearances and natural disaster). The country probably contains at least 5 percent of the world's species, with less than 1 percent of its land mass. It is a biodiversity hot-spot . About 85 percent of the frontier forests are under moderate or high threat, primarily from logging, agricultural clearing and mining (Bryant, Nielsen, & Tangle WRI 1997).

More recent events

During the course of the Oceania Regional workshop to discuss the Underlying Causes of Deforestation and Forest Degradation, in Nadi, Fiji, 28-29 September 1998, representatives of the United Nations Development Program, the Government of Papua New Guinea and other Pacific Island Governments attempted to suppress this paper.

On the basis that they had not read the paper and had not been given a chance to respond, they took a position that unless the paper was withdrawn, they would not participate in the meeting. They claimed the paper contained inaccuracies.

The Government of Australia took similar steps with the paper presented on forest loss in Australia. The Australian Government demanded the withdrawal of that paper because it disputed the views of the writer. The issue was the detrimental impact of the Government's Regional Forest Area policies, on the pitifully small amount of ancient indigenous forest that still has not been pulped or logged-out in Australia. The organizers of the workshop were in a dilemma. A compromise had to be implemented in which all papers were formally withdrawn. They were then discussed informally after the regular sessions of the workshop.

The nature of these acts indicates the quality of the issues at stake.

Since the paper was first written the logging situation in Papua New Guinea has deteriorated.

The Government of Papua New Guinea gave in to pressures from the logging lobby and decreased the log export tax at the end of November 1998. With current prices at about Kina 135 (US\$63) per cubic metre the export tax is said to be 2.75% of the FOB price (*Post Courier 15 December 1998*) Lavantis and Livernois of the National Center for Development at the Australian National University, in a recent issue of the *Pacific Economic Bulletin*, have concluded that the reductions in the log export tax are far too excessive.

Recent trends directly resulting from the Government's decision to slash the log export taxes show that Papua New Guinea's timber exports in November 1998 rose 250% from the average monthly rate over the past year. On average, at current prices, the companies are saving K25/m³ in taxes. The lowest tax bracket, which most logs fall in under the current system is 0%. So virtually no taxes are being collected. The loggers stock-piled round-logs and waited for the Government to reduce the tax. There now has been a strong supply response to this cut, and companies are gearing up in a major way. If the current rate continues, for a 12 month period our source indicates forest loss would be back to the 3 million cubic metre mark per annum (Anon, December 1998).

In addition, Papua New Guinea's budget includes only 1 million Kina for the SGS export log monitoring contract, when that contract costs 4 million a year. There is a strong chance that SGS will cease monitoring at the end of the year; and that such transgressions as illegal log exports, mis-declaration of volumes, species types, and transfer pricing will return to 1980 levels. Our source indicates that even Papua New Guinea Forest Authority officials are gravely concerned (Anon, December 1998).

Underlying Causes of Forest Loss

Demand side causes

- **Markets**

The demand for unprocessed logs from Asian markets is the greatest cause of forest loss in Papua New Guinea. Papua New Guinea is the world's fifth largest producer of tropical logs (*PNG Resources First Quarter 1997*). Most of the world's tropical logs are processed domestically by the producing countries, not so with Papua New Guinea. Subject to Indonesia's re-entry into the round log market, behind Malaysia, Papua New Guinea has been the world's second largest exporter of tropical raw logs (Light, 1997). Japan has been the largest importer of Papua New Guinea's logs, with South Korea being the

second largest import market (AusAid, 1997). Other significant importers of tropical raw logs from Papua New Guinea have in the past been Malaysia, Philippines, China, Hong Kong and India.

The end of 1997 and the beginning of 1998 saw the effects of the downturn in the Japanese economy and the devaluation of South East Asian currencies on the Papua New Guinean log market. By the end of the first quarter in 1998 the Japanese log market had fallen away. Overall Papua New Guinean log export volumes had fallen by 40%, and prices were down 58% (*The Independent* June 26, 1998). The Government of Papua New Guinea sought to prop-up loggers by reducing the log export tax on logs priced less than K135 per cubic metre (*The National* July 30, 1998)

China may well become the main destination of logs exported from Papua New Guinea. In March 1998 the *China Daily* reported that China would decrease domestic harvesting of its timber stocks, and seek to import about 10 million cubic metres of logs by the year 2002. China was seeking to stimulate its housing sector. A separate *China Daily* report said that Guangdong would expand foreign investment in its timber processing industries. Sixty Guangdong projects in timber processing, pulp, paper-making and fruit orchards had drawn cumulative pledges of \$US850 million (Reuters 22 March 1998).

- **IMF, World Bank and UNDP**

The IMF over the past twenty years in Papua New Guinea has advocated smaller Government. The policy was achieved by no-growth in, and budget cuts to, regulating agencies. Tragically, Structural Adjustment Program policies resulted in the deconstruction of the Department of Environment and Conservation. They impeded the ability of government to directly manage the forests and logging. Both the IMF and the World Bank are supporters of Papua New Guinea's log export trade, and despite the rhetoric to the contrary, by implication, are an underlying cause of forest loss in Papua New Guinea. In November 1998, there was an indication by World Bank officials that the World Bank may be prepared to support a moratorium on new log projects. - there has been no confirmation of this.

The World Bank does not see Papua New Guinea as a producer of manufactured timber products. At best, Papua New Guinea may be able to enter certain specialized niche markets for processed timber products (PNGFA/World Bank, Feb 1998).

One of the most pernicious World Bank and IMF Structural Adjustment Program policies, indirectly linked with forest loss, is the user-pays principle. The user-pays principle forces rainforest people to pay school fees and fees for health services. Anecdotal evidence from rainforest landholders suggests school fees are a prime motivator for people to sell their timber rights. Another driving force behind the export of logs is the State's demand for foreign currency. Recently, the PNG Kina has been in free-fall. This is partly because it is following the market trends for other regional currencies, and partly because of the loss of investor confidence in the current government.

World Bank and IMF policy insists that countries allow their currencies to float on the market. Small countries like Papua New Guinea then lose control of their currency and become desperate to sell their raw materials, regardless of price or wider impact.

- **Free trade**

Free trade is an underlying cause of forest loss.

There are real concerns that processes inspired by WTO, APEC and more pertinently MAI (the Multinational Agreement on Investment) will accelerate exports of cheap logs from Papua New Guinea, with no processing done in Papua New Guinea.

The MAI process is very worrying. Key MAI provisions include requiring countries to treat foreign investors no less favourably than domestic companies (National Treatment). Most Favoured Nation Treatment would prevent regulations on corporate activity (e.g. sanctions that punish a country for

human rights violations). There will be limits on performance requirements, such as requiring a certain level of reinvestment in the local community. There will be bans on uncompensated expropriation, including the re-definition of expropriation to ban actions that are said to be "tantamount to expropriation". Investor-to-state dispute-resolution will take place outside of the domestic court structure. It is feared that MAI will drive a race to the bottom, a downward spiral of economic globalization of forests. This spiral may see the removal of enforceable environmental and forest management obligations. Developing countries may have no recourse to protect their forest ecosystems (Western Ancient Forest Campaign, 4 Feb 1998). The World Bank, IMF, and UNDP are aware of these secret processes, but they do not speak out in protection of the trees.

- **The Papua New Guinea Forest Authority**

The Papua New Guinea Forest Authority is the major facilitator of the export logging trade, and therefore the major facilitator of forest loss in Papua New Guinea. It has an agency and supplicant relationship with the World Bank. The Authority subsidizes the logging industry. It acquires timber rights worth billions of Kina in unfair and inequitable contracts that depend upon landholders being ignorant and kept apart from independent and professional advice. There is no valuation of these assets in its books, and it passes these rights to logging companies for next to nothing, while consuming a taxpayer's subsidy worth about K23 million.

Supply Side Causes

- **Lack of recognition of the role of women in use of forests.**

The failure of either traditional societies or government to genuinely involve women in the decision-making process is a key determinant of forest loss. Half the population want change and improvement in their lives, but are denied any role in the decision-making that leads to industrial logging or agricultural clearances. Generally what emerges from women's meetings and women's groups, is that women show more care and cooperation in their community relationships, and that collectively they hold a conservation view. At all levels of politics in Papua New Guinea, women are marginalized and they are not allowed to express a common view. If women were allowed to express themselves effectively in matters of public interest, on the basis of their numbers, most likely there would be very strong support for protecting forests.

- **Lack of philosophical or religious value of forests**

The philosophical and religious basis of the value of rainforest is understood in many strata and interests groups in Papua New Guinea, but the level of understanding is sporadic, uneven, and incomplete. There has been a recent positive shift in the philosophical views in key policy-making institutions, but this is by no means generalized. There remain key institutions, such as the Papua New Guinea Forest Authority and key cabinet ministers within the National Executive Council that advocate and implement forest destruction.

- **Uncontrolled commercial logging**

Despite government rhetoric to the contrary, the real situation in Papua New Guinea is that industrial logging presents the greatest threat to the ecology of the rainforest in Papua New Guinea (Greenpeace, WWF, Port Moresby, May 1998)

Clear-felling for log extraction is not permitted in Papua New Guinea.

Officially, "selected logging" is used. However, at present, and for the past two decades, forest harvesting has occurred in a destructive and in an ecologically unsustainable fashion. Put simply, Papua New Guinea cannot and does not regulate forest operations. The prerequisites for damage-controlled logging are not being met. The result is that, irrespective of the forest types, the impact

immediately after logging is so great that more than 70 percent of the trees of the original forest are so severely cut or damaged that they do not survive the following ten years (Sekran & Miller, 1996).

In addition there is no effective mechanism for the establishment of areas off-limits to industrial logging. Currently there is no mechanism that is operational and effective for the pursuit of conservation by landholders or by the Government of Papua New Guinea. This means industrial logging is (or will be) occurring over most of the landscape, and to date there has been no provision for conservation or preservation areas (World Bank, 1997). If it were not for the recent down-turn in the log export market, we could say that logging is completely out of control in Papua New Guinea. Fortunately, the collapse of the Asian market has put many logging operations in Papua New Guinea, at least temporarily, out of business. Only 11 out of 70 timber operators who are Forest Industry Association members are operating normally. Most of these are supplying sawmills. 41 operators have stopped production (*Independent*, 28 August 1998).

- **Poverty**

There is a real level of poverty in most rural areas of Papua New Guinea (for general comparative statistics see World Bank, June 1997). This is so particularly in those areas where the ancient rainforests are large and intact. Rainforest people in the Western Province, Sandaun Province, and the Gulf Province (the new logging frontier) have long been neglected by their Governments. They are isolated and many of them live in communities that are intact and largely autonomous. These communities have little ecological impact on the rainforest. They are in desperate need of development and capital.

- **Peasant clearances, rapid population increase**

Papua New Guinea's population doubles every 25 years. It is at present about 4.7 million. By the year 2020 it will reach 7 million (*Independent*, July 24, 1998; UNDP Human Development Report 1998). By 2050 it will be about 17 million. In the next half century there will be massive population pressure on land and on the rainforests as the growing peasant population seeks to feed itself.

- **Conversion to permanent agriculture and long fallow shifting cultivation**

Sakaran and Millar (1996) say "recent estimates suggest that approximately 200,000 ha of forests are disturbed each year through shifting cultivation. A total of approximately four million hectares of mainly secondary forest has been cultivated over the past 20 years". However more recently, Filer (1998) says that a comprehensive survey of current subsistence farming practices indicates that only 3 per cent of the land cleared for agricultural purposes over the last 20 years is land which has not previously been used for agriculture. He argues that subsistence farmers respond to population growth by various forms of agricultural intensification, rather than clearance of primary forest. Two things need to be said to balance these positions.

First, visually, the rolling back of the forest seems to be progressing quite quickly. Much of New Ireland has gone. Very large areas of the New Britain Island have been accessed. Road access is now clear in large areas of the Southern Highlands and Gulf Provinces that have been opened up by oil, gas, and logging activity. Housing and gardens are pushing back the edge of the forest in Oro and Milne Bay provinces. There are rapidly growing areas of settlement and development in the Central Province. These are trends we can see now, by flying over the country.

Second, we need to remember that population growth is exponential. The impact on the forests of population and the need of people to feed themselves, will alter from what it was in the past, with the transformation of a population from 4 million, to 8 million and then 16 million, in 25, and 50 years time or so, respectively. This transformation is not just an exponential quantitative change. The people themselves are changing, with new aspirations and appetites. The quality of social change will have an exponential character too - certainly this was the experience of many Papua New Guineans born fifty

years ago. Predictably the tragedy that has occurred with the rise of population and crime in Papua New Guinea, is an indication of the likely tragedy of population, subsistence, and forests.

- **Agricultural clearances**

The main causes of forest loss in Papua New Guinea from clear-fell operations come from oil palm, rubber, and "coconut-sap" plantations. Until recently the oil palm industry had been under the control of reasonably well capitalized ventures: the Commonwealth Development Corporation (CDC), and Harrissons and Crosfield. Estates were established in New Britain, New Ireland, Oro Province and the Milne Bay Province. Over the past five years we have begun to attract ill-considered proposals from Malaysians, Indonesians, and expatriate Chinese corporations. Papua New Guinea has extensive grasslands - these cleared areas are not attractive to tree-crop investors. Operators prefer to seek out rainforests and the thin layer of humus to establish their ventures using nature's capital.

- **Development policy to promote plantations**

There is considerable scope for tree plantation development in grassland areas, both in the Highlands and on the coast. Overall, whether on the coast or in the Highlands, the scale of tree plantation development has been poor. Due to lack of funds (see comments on IMF) and inertia, little has been done to increase the tree plantation stock since Independence in 1975. In 1996, the PNG Forest Authority, with World Bank advice, secretly abolished the re-forestation levy. The PNG Forest Authority holds in trust re-forestation levies, but has neither the will or the ability to put them to use. The size of Papua New Guinea's plantation stock is now over 60,000 ha (PNGFA Annual Report, 1994). Approximately half of the stock was established by private industry. The effect on maintaining the biodiversity of the existing natural forest has been negligible (Sakarín and Miller, 1995).

- **Domestic processing and local market**

Despite the availability of considerable Government incentives and subsidies for the domestic processing of timber, the sector has actually declined in output over the past decade (PNGFA Annual Report, 1994). In neo-rationalist terms, it has been much more profitable to export raw logs than to process them domestically within Papua New Guinea. Domestic processing was estimated to consume about 400,000 cubic metres a year, some 15% of the current log harvest (Filer, July 1997). With export log prices low, there have been belated attempts by some logging companies to saw, process and sell locally. This has produced a temporary glut of sawn timber, in some areas like Port Moresby.

In the informal sector, there is small-scale sawmill activity in many parts of the country. These portable mills and chainsaws produce rough sawn timber. The potential for small and medium scale sawmilling is large, but it carries with it a risk of forest destruction from operations that are not ecologically sustainable (Martin, 1997).

Other Causes of Forest Loss

- **Natural destruction**

Historically, natural disasters have destroyed the rainforest in Papua New Guinea. The PNG Forest Authority estimated in East Collingwood Bay, in the Oro Province, an area of 650 ha near the coast, was destroyed by Cyclone Justin in 1996. The estimated loss of timber was 405,262 cubic metres. The Authority did not have the capacity to implement a salvage logging operation (see comments on IMF). It let the fallen trees rot. Given a 40% defect rate, the cost of the loss can be calculated as 243,157 cubic metres of logs at say a net of K100 per cubic meter (if milled). An asset of nearly K24 million gross was lost. The East Collingwood Bay people are very poor, and have been recently induced to sign an agreement for export logging. If they had salvaged and milled even part of the fallen logs they could have made money for themselves.

Brunios (1997) has argued in respect of Wawoi Guavi Block 2 (an inland location in the Western Province) that forest density gave protection from cyclones, but once logging opened up the canopy to areas up to 20 metres, the trees were made fragile by their exposure to gusting winds. Anecdotal material from landholders suggest that fires in the Wawoi Guavi concession during the 1997 El Nino event, to the south of Mount Bosavi, were lit by employees of logging contractors. The areas to the north of Mount Bosavi, where there are no logging operations, did not have forest fires during the 1997 dry season. Similarly in Collingwood Bay, Oro Province, where the local community have excluded loggers, fire did not appear to be a major problem. There were large forest fires in the Open Bay concession in East New Britain, an area where there is considerable landholder discontent with the logging operation. Forest fires were uncontrollable in the highly populated Highlands Provinces during 1997. At the end of the 1997 El Nino event, disgruntled landholders at Sagarai, in the Milne Bay Province started large fires. These fires were associated with CDC's clear-felling for oil palm.

- **Industrialisation**

The mining, oil and gas industries open the way for loggers. Road systems in the Gulf and Southern Highlands Provinces facilitate peasant clearances and the expansion of gardening and homesites. Mining oil and gas companies show very little positive commitment to protection of the rainforests (BHP is an exception to this).

Obstacles to Addressing Underlying Causes of Forest Loss

Demand side obstacles

The major obstacles to addressing the underlying causes of forest loss in Papua New Guinea begin on the demand side of export logging. They are to do with the current structure of the markets in Japan; and in the future, in the structure of markets in China; free trade; the key ideological position of the World Bank; the egotism and instinct for institutional survival of the Papua New Guinea Forest Authority.

- **Export demand for Papua New Guineas' logs from Japan**

Japanese buyers are key in the Papua New Guinea Japan log trade. They have long-standing relationships with Malaysian loggers, although the down-turn in the market has had a major impact on that trade. Some Japanese logging companies withdrew from Papua New Guinea after the Barnett Inquiry in the early nineties. Currently, there are three large Japanese companies still operating in East New Britain, West New Britain and Madang Provinces. Japanese NGOs have created awareness in Japan about environmental and cultural destruction in tropical rainforests. They have convinced some local government authorities not to use timber from the tropics. But the Japanese Central Government threatens municipalities who declare bans on tropical log products. The main threat used is that such bans conflict with WTO obligations, and are illegal. There has been some shift by consumers away from tropical hardwoods to temperate softwoods imported largely from Siberia. Japan has large stocks of domestic forest, but round-log imports are cheaper. Japanese *keiretsu* (trading conglomerates) have a strangle-hold on Japanese economics and politics. The *keiretsu* dominate log imports (Light, 1997).

The ideology and practices of the *keiretsu* are a major obstacle to addressing forest loss in Papua New Guinea. It is very difficult, if not impossible, for non-Japanese organizations to affect public opinion in Japan.

- **The Peoples Republic of China**

We can speculate that in the next few decades China will overtake Japan as the major importer of Papua New Guinea's round logs.

China must be counted as a likely major underlying cause of future forest loss in Papua New Guinea.

The Chinese Government, and Provincial Governments within China actively encourage overseas Chinese to return and invest in China. Hiew King Tiong, a member of a Fuzhous family originally from Fujian Province, is the Chairman of the Rimbunan Hijau Group, based in Sarawak. Rimbunan Hijau is a major force in the logging industry of Papua New Guinea. The Group owns timber-processing plants in China. Tijong is head of the Malaysian chapter of the International Society of Fuzhous and a member of the executive committee of the Federation of Hokkien Associations of Malaysia (Hiscock, 1997). Although the People's Republic is not considered a good investment by western timber consultants, it is obvious that that view is not held by Fuzhous citizens of Malaysia, and elsewhere. China's economy is dynamic and exponential. The Chinese economy is simply not understood by most westerners. At best, if China's growth slows, with 1.2 billion people, even low rates of growth will have a major effect on international trade. The decision of the Chinese Government to stop harvesting logs from domestic forest reserves, and to import 10 million cubic metres of logs between 1997 and 2020 is a major event, and indicative of future trends.

- **Free trade**

The international log trade is a major obstacle to addressing the underlying causes of forest loss in Papua New Guinea. In the short to medium term, the import demand for Papua New Guinea's logs from Japan will continue, particularly if Japanese buyers are able to keep prices low. There has been a drop-off in volume this year, but buyers say that it is expected to pick-up after the end of 1999.

A likely scenario is that Papua New Guinea's raw log prices will be kept low by the Indonesia's re-emergence as a log exporter, and the MAI process. The Papua New Guinea Forest Authority plans huge logging concessions in the Western Province of Papua New Guinea. Unofficial reports have it that the National Executive Council (cabinet) has decided to award these concessions, 750,000ha, to Rimbunan Hijau. I believe that these concessions will supply cheap logs into Southern China over the next 20 years. Downstream processing, and value-adding will be reaped by joint ventures made up of local capital and investments by expatriate Chinese companies from Malaysia. Papua New Guinea is fated under this scenario to be a supplier of cheap logs.

In June 1998 a delegation led by Chris Marlow, president of the PNG-China Business Council and General Legal Counsel for the PNG Forest Authority, with Thomas Nen (Nen speaks Mandarin), the Managing Director of the Forest Authority, visited China seeking to sell raw materials (*The National*, 17 June, 1998). A memorandum of understanding was signed. The Chinese log market is clearly under consideration by Forest Authority policy-makers.

At the level of world trade there is a lack of ideological clarity on the economic value of rainforests. World trade acknowledges only market-price. Work done by Cassels in the Solomon Islands shows that export logging on Choiseul Island could have brought the villagers a once only royalty payment of S\$18,000, while the present value of subsistence production lost was S\$176,000 (Cassels, 1992). The draft of a more recent report on development sat Morovo in the Solomon Islands concludes that the present value estimates suggest that the financial value of proposed oil palm and logging operations is equal to about 24% of the value of existing and modestly developed small-scale options likely to be impacted by industrial development—from the perspective of customary owners. This implies that even from a strictly financial view, customary owners are better off foregoing logging or oil palm options if they expect the resulting ecological degradation to reduce the value of small-scale options by 24% or more (Greenpeace, work in progress). So, from a landholders point of view, economists are beginning to say that there is not much in the industrial options for them. When this work is combined with the recent collapse of the revenue system described in the Introduction to this paper, then the irrationality of logging economics is very clear.

WTO/APEC/MAI processes suggest that the basic inequalities in the terms of international trade will be kept in place and reinforced. The forestry melt-down is already in place with 12 mills closed in 1998 in British Columbia and a drop there of \$2 billion in sales (*Globe & Mail*, 11 December, 1998). MAI is likely

to be a major obstacle to addressing the underlying causes of forest loss in Papua New Guinea, driving a race to the bottom, a downward spiral, of the economic globalization of forests. The situation in Papua New Guinea maybe complicated by an argument in the South Pacific Forum over whether Australia and New Zealand should be admitted (PNG Business, August 1998). The move for free trade amongst the Melanesian Spearhead Group last year coincided with a report that Rimbunan Hijau had asked the Government of Papua New Guinea to lift the log export tax completely, because it wanted to process Papua New Guinea logs in Vanuatu.

- **World Bank, IMF, UNDP, AusAid support for export logging**

The World Bank is a major obstacle to addressing the underlying causes of forest loss.

Until November this year, the World Bank refused to recommend any cessation to Papua New Guinea's log export trade (personal communication Peroz Hamidian Raz ,9 August 1997). The proponents within the World Bank for the continuation of export logging from Papua New Guinea are Jim Douglas, who coordinates the World Banks' forest programs, and Klaus Rohlands, the Country Director, Papua New Guinea, East Asia and Pacific Islands. Jim Douglas now appears to be ready to concede a log moratorium, but that may now be too late. Hamidian-Raz, a former Bank employee, now works for the Government of Papua New Guinea. We have no reason to suspect that he has changed his view, which encouraged Papua New Guinea exporting logs. These people are obstacles because they are influential, and the message they give is wrong. It is incorrect to argue, as they do, that forest loss can be prevented by better management, conservation and export logging. This is so because in Papua New Guinea there is no real forest management, no conservation, and we will be left with a log export industry that makes it own rules, and sells our logs for very low prices. That is what happened in the past, and there is little to convince us it will not happen in the future. Indeed the latest intelligence indicates that the Government wants to push ahead with a whole raft of new logging concessions.

World Bank programs for forest management and conservation are built around the continuation of export logging from Papua New Guinea (World Bank, 1997). The World Bank also manages the Global Environment Facility (GEF) in Papua New Guinea.

Although the World Bank and UNDP operate as distinct institutions in Papua New Guinea, UNDP and the associated UNEP has adopted a position that in practice endorses export logging, or conversely has never been heard to speak out to seek the end of export logging from Papua New Guinea.

In Papua New Guinea, the World Bank manages IMF structural adjustment programs. Although World Bank IMF structural adjustment conditionality has insisted upon a number of forest management and environmental reforms, IMF SAP supports the continuation of export logging.

AusAid, a major contributor to World Bank programs in Papua New Guinea, has never been known to contradict the World Bank on forest policy matters.

The World Bank/IMF user-pays policy supports school fees and is one of the major inducements, at grassroots level, for poor peasants to want to exchange their trees for cash. At the policy level, the demand for foreign exchange is a major ideological factor in supporting export logging.

The IMF SAP insists Papua New Guinea allow the market to determine the value of the Kina. But the IMF and the World Bank support regulations that permit oil, gas and mining companies (the biggest earners of foreign currency) to hold their gross receipts in US dollars off-shore, indefinitely. These companies only need bring in sufficient dollars to pay for their Kina expenditures. Other rules allow all overseas investors to hold their gross receipts off shore for 90 days (allowing them to play the currency-markets). The currency is in a downward spiral because of concessions, supported by the World Bank and IMF, to mining, oil and gas multinational corporations. In the meantime the people of Papua New Guinea suffer, and landholders are indirectly pressured to sell their trees.

- **PNGFA a facilitator of export logging**

The Papua New Guinea Forest Authority is an obstacle to addressing the underlying causes of forest loss, because it is the major national proponent of the export log industry. It facilitates the satisfaction of the demand for log exports.

The Authority's institutional survival rests on logging. It has no experience in promoting any other use of the forests. Institutional survival, and egos, within the Forest Authority bind in export logging and forest loss. Even though, with the changes in the log market, the more cerebral elements in the World Bank are beginning to push the Authority on non-logging uses of the forests, the Authority is not responding, and shows active hostility to alternatives. For example, a timber authority issued to a women's group involved in small-scale processing in the Western Province in December 1997, was recently withdrawn because it interfered with the major logging concessions (referred to above) planned for the area.

Supply side obstacles

- **Population growth**

Population growth, which is closely linked with the education of women, poverty, and the drag effect of Catholic Church, are all obstacles to addressing the underlying causes of forest loss.

- **Women's lack of power over the forests**

The lack of recognition of the role of women in the use of forests, and their right to determine how forests are used is another major obstacle.

- **The sporadic level of understanding of the philosophical and religious basis for forest conservation**

The sporadic level of understanding over the philosophical and religious basis for conserving the rainforests is an obstacle to addressing forest loss. More positively, there is also a clear conservation message appearing in the curricula of schools, although it is still in gestation, and has not materialized as well as it has in schools in developed countries. While indications are positive, there is some way to go within the Papua New Guinea education system before mainstreaming and critical-mass in conservation philosophy is achieved. Within the churches there are positive signs that conservation values are being expressed in religious terms. Again, the discourse is by no means generalized. There are unreflecting "cold war" relics within the established churches, and the evangelical movement, that undermine the conservation ethic, and ultimately seek to promote uncritical industrialization. Because of its non-interventionist advocacy of birth- control, the powerful Catholic Church has a negative drag-effect on the implementation of population policy, although there are other factors (both ideological and objective) in Papua New Guinea that hinder the implementation of an effective population policy.

- **Export logging**

Export logging is the biggest threat to the rainforests in Papua New Guinea.

Papua New Guinea cannot and does not regulate its forests. In the past, the Papua New Guinea Forest Authority operated in the context of political manipulation in the granting forest of concessions. Little has changed. The Authority generally, although not always, goes along with political whim, covering-up and hiding deals. There is no transparency. It promotes logging by advocating a "right to develop ethic", and has no regard for environmental or ecological considerations. It is manipulative, paying lip service to the recognition of rights of indigenous peoples. There has been no prosecution of a logging company in recent memory for any regulatory infringement. Indeed, *Forest Regulations* were only recently implemented in June 1998. For the past seven years there were no enforceable regulations to support the *Forestry Act 1991*. The unequal and inequitable standard-form logging concession contracts offered

to customary resources owners on take-it-or-leave-it basis, are an obstacle to addressing the underlying causes of forest loss. These contracts offer little to no protection for the landholders or their lands and forests. There are no modern consumer protection laws in Papua New Guinea, so there is no reliable or tested way of obtaining a judicial review on the terms of a forest contract.

- **No effective conservation**

There are no operational mechanisms for effective conservation in Papua New Guinea and this is an obstacle to addressing the causes of forest loss. The Office of Environment and Conservation has been moribund for over 15 years (see comments on the IMF). It has no capacity to enforce environmental laws, or to implement ecological zonation or conservation. It can boast of no significant gain in forest conservation. It is subject to political direction, and a departmental head or Minister who does not toe the loggers line, is removed from office.

- **Real poverty in rural PNG**

The people in many rural areas of Papua New Guinea are dirt-poor. No money, poorly clothed, few possessions, and powerless in the modern economy. This poverty is a major obstacle to addressing the underlying causes of forest loss in Papua New Guinea. Until recently, the temptations, in terms of "development", cash, and infrastructure, offered by the government and logging companies, have been difficult to resist. Indeed these communities have been lied to, misled by Government and loggers, manipulated by ill-informed, and sometimes dishonest leaders, and induced into signing unfair and inequitable contracts. Those contracts stripped them of their timber rights, in exchange for very little (K10, or US\$4.70 a cubic meter), with a few more Kina in other contractual promises, which may or may not materialize. (In general see Duncan 1994)

Compared with the spin-offs and infrastructure that flow from the oil and mining industries, areas affected by logging show, at best, a mediocre standard of infrastructural improvement. But in many logging concessions development has been poor, and the standard of living has risen only marginally. There are some horror stories of squalid camp conditions and semi-institutionalized prostitution. As there is no such thing as sustainable logging, once the loggers log-out an area, the people are left to fend for themselves, in a de-based form of rural squalor. Little changes for the better.

In an attempt to win the hearts and minds of Papua New Guinean NGOs after the failure of its land mobilization and land registration programs which NGOs successfully opposed, the World Bank implemented, as part of its poverty alleviation program, the Targeted Community Development Fund in 1997.

The fund is a trust administered by Government, Church and NGO representatives. This fund, a condition of the Structural Adjustment Program, was to channel K15 million of taxpayer's money a year to community-based organizations, NGOs and churches. It was specifically aimed at alleviating poverty.

After a long struggle during 1997 and 1998 the Government has finally included the full K15 million in the 1998 budget. Of the promised K30 million over 1997 and 1998, K1.3 million was allocated in 1997, and about K6 million has been allocated at the time of writing for 1998. In 1997 K5 million from the fund was hijacked by the Department of Provincial Affairs and squirreled away in a trust account for drought relief. Provincial Affairs could not spend the money, even though many areas in Papua New Guinea are still suffering from the effects of the 1997 drought. The Government has now announced that it will use the drought money to cushion low-income earners from the effects of a proposed Value Added Tax.

If K15 million was paid out to Community Based Organisations, NGOs and churches every year, we would see a real improvement in the levels of well-being at grass-roots. Many of the TCDP proposals coming from grassroots are timber, forest or wood related: buildings, boats, ecoforestry, eco-tourism etc. AusAid is set to implement another NGO/CBO initiative called the Community Development Scheme. That scheme looks like it is about to be hijacked by officials in the Home Affairs Department.

- **Population pressure on land**

Even if only a fraction of the estimated 200,000ha of peasant clearances actually occur each year, these clearances are an obstacle to addressing the causes of forest loss. The true nature of this obstacle is the lack of land use planning in Papua New Guinea, and the failure of the Forest Authority to integrate its planning into any other wider plans. Planning in Papua New Guinea, such as there is, tends to be top-down. Bottom-up land-use planning is practiced by NGOs, but is foreign to Government, which has no experience in that type of democratic process.

- **Oil palm rubber estates, no effective regulation and management**

Oil palm and rubber estates are clear-fell operations. There has been no development of oil palm and rubber on grass-lands. There have been proposals to log the whole of the Western Province; to plant oil palm; build a railway; currently an oil palm estate is being promoted at East Awin, Western Province. In 1995, an oil palm estate was proposed for Purari in the Gulf Province; there were proposals for oil palm in the Sandaun Province (in addition to Aitape). There was a move by Filipino interests to clear-fell Maisin rainforests in Collingwood Bay, Oro Province, and replace them with a "coconut-sap" industry. Fortunately, the Maisin were in a position to resist this proposal.

The level of development associated with oil palm is somewhat mediocre, although prices are high at present and small-holders doing reasonably well. With their large labour forces, high population growth, and the unskilled nature of much of the work, the nucleus estates are social time-bombs. There is no study on the long-term impact of the run-off of fertilizer, pesticides and herbicides (NPK and Graxozone) used by oil palm estates on marine resources. Pollution from oil palm processing factories is known to have seriously damaged marine resources and fish stocks at Ewasse, Biella, West New Britain. There is anecdotal evidence from affected landholders, that river systems associated with the CDC oil palm project at Guerny have lost their fish stocks. There is general anecdotal material gathered from landholders in other oil palm areas complaining that oil palm diminishes the fish catch from swamps, damages rivers, and brings blue-flies.

The Pai-Damansera operation at Aitape, Sandaun Province, has been less than impressive. Lots of trees have been cut, but no oil palm has been planted, although a nursery was established. The project has been associated with a number of dubious political deals, including one done in 1997 by the Skate Government. That arrangement decreased the company's security bond, allowed impounded logs to be exported, and did away with virtually all forest management.

At Sissano, near Aitape, the recent *tsunami* may well have eased the way of the developers by reducing the population; many died and others are being relocated. The impact of the *tsunami* on the biodiversity of the lagoon at this time is not known. But to the extent that the lagoon is off-limits to fishing because of the large number of dead-bodies, and to the extent that the people are relocated, then the argument for the lagoon's biodiversity maybe reduced.

CDC in Milne Bay began a program of acquiring 20,000 ha of existing coconut plantations and virgin forest in 1997, to ensure sufficient through-put to their mill, as old trees were taken out of production. The first stage of the acquisition of the 20,000 ha was unregulated, done through private deals, and at a time of high fire risk due to El Nino conditions (November-December 1997). Disputes broke out with landholders and large areas were set ablaze.

- **Little investment in tree plantations**

Part of the problem with tree plantations has been the inability of the Forest Authority to develop a legal mechanism that allows landholders to grow trees on their own land. Plantations need large areas of land. Landholders have not been convinced that they should use their land for plantations. Two issues raise obstacles: what would be the form of land title? Or who will own the trees? What is the opportunity cost of plantations? That is, could landholders make more money from other crops, than they would

from plantation trees?

- **No supervision of informal sector**

There is a debate whether small-scale sawmill operations are economically feasible. There are certainly problems with machine maintenance, fuel costs, spare-parts availability, repairs, and labour-skills. Nevertheless, the "wokabout" sawmill industry has established itself. There are many privately-owned operations: between 700 (Henderson), and 2000 (Bun) (see Martin 1997). Other operations are supervised by aid organizations such as the European Union, NGOs such as the Pacific Heritage Foundation, the Village Development Trust, and WWF. Current prices for rough sawn timber per cubic meter gross, around the country are West New Britain: K300-K350, East New Britain: K200-350, Alotau, Milne Bay: K300, Kiunga Western Province: K400 to K600, Gulf Province: K200-K300. Much of this is sold locally, after a buyer has been secured before the trees are cut. There has been an uneven record with small-scale exporting. Initial attempts to export from East New Britain did not have continuity. The European Union has exported to Australia and is seeking Forest Stewardship Council certification. The German GTZ NFCAP projects in Ihu and Manus will likely collapse after GTZ leaves Papua New Guinea in October 1998. Kikori Pacific, a privatized saw-milling effort of WWF, planned to get FSC certification, to export to the United States, seems to have failed. WWF have in the past successfully exported containers of sawn timber to the USA West Coast.

There is little chance of supervising small-scale activities so long as large-scale export logging is permitted. We will only be able to tackle the problems of small and medium scale saw milling, after we have got rid of the loggers. To the extent that the loggers remain in Papua New Guinea, then the biological integrity of the rainforest is threatened from two sources: the loggers, and the juvenile, but growing, domestic processing industry.

- **Failure to promote downstream processing**

If export logging stopped, and downstream processing continued, then the total cut would fall. At present, downstream processing is about 15 percent of total cut. The World Bank, Government and the Forest Authority have not been genuine about downstream processing. The ban on export logging after the Year 2000 introduced in 1993 by Forest Minister Tim Neville, was never to the liking of the World Bank, the Forest Authority and the loggers. It was secretly rolled-back in 1994 by Forest Minister Andrew Posai. I was on the Forest Board at that time, and Board members of the Forest Authority were not told about the revocation of Minister Neville's policy. Posai was sacked by a Leadership Tribunal in 1995 for corruption.

- **Natural disasters.**

The Forest Authority has no ability to respond to cyclonic damage. Trees damaged by storms are left to rot. There is no effective regulation, or management, of forest fires by the Forest Authority. While the failure to respond to cyclone damage is symptomatic only of the lack of capacity in the Forest Authority, the failure to manage for fire damage can be seen as an obstacle to addressing the underlying causes of forest loss.

Solutions to Underlying Causes of Forest Loss

Demand side solutions

- **Export demand for Papua New Guinea logs from Japan**

The solution to the Japanese demand for Papua New Guinea's logs lies in consumer preferences. Japan is a throw-away-society, using very large amounts of paper and plywood in an irresponsible manner. Japanese NGOs have carried the bulk of the burden of educating consumers about the environmental impact of these unsustainable practices. Japanese NGOs work under very difficult

conditions. In some respects they have more difficulty in attracting funds than do NGOs in Papua New Guinea. We should recognize the needs of Japanese NGOs who campaign for forest preservation, and ensure they are adequately resourced. Funds should be made available to Japanese environmental NGOs for their market work with timber. Part of the problem here is an unreasonable prejudice against Japanese NGOs by major western funders. Because they are "Japanese" the NGOs are thought to be "rich". This is generally a misconception, and a matter of ill-informed prejudice. Japanese green NGOs generally are poorly resourced, and do important market-side work for the forests; they should be funded. There are two reasons to support this view. One is that the Japanese market is critical to Papua New Guinea. Secondly, over the next ten years Japan's trade with China will increase dramatically. Japanese NGOs are strategically placed to influence the development of civil society in China, and to begin to campaign on log market issues in China.

- **Export demand from China**

The longer term solution to the market question posed by relations with the Peoples Republic of China is more complex. We need to begin the process of discussing with officials, and those who influence the markets in China, and with progressive components in the emerging civil society, the problems associated with the environmental and cultural impact of logging in tropical countries. This may not be the daunting task that it at first seems.

The Government of China has itself decided to stop the harvesting of its domestic forests. Recent flooding has been linked to deforestation. Both WWF and Greenpeace have positioned themselves to work in China during the next century. Although China has adopted some capitalist practices, it is still a command economy, centrally controlled through a Communist Party. China's trade with Third World Countries has been based upon the ideal of mutual benefit and equality. Green NGOs in Asia and the Pacific are suited to begin the dialogue with China. They will need support in this work. It will require sensitivity, planning and funding.

- **Free trade**

WTO/APEC/MAI/South Pacific Forum processes promote basic inequality of the terms of international trade. MAI is driving a race to the bottom, a downward spiral of economic globalization of forests. NGO, church and religious networks in Asia-Pacific and Europe-America struggle with the process. These networks need to be strengthened and supported financially. This type of work needs to take place at two levels. One; with the peoples of the world, at grassroots, in order to change basic political thinking and to change local and national policies. Two; at the international level, to maintain the pressure and continuity of opposition at international conferences, and meetings, where these issues are decided.

The lack of ideological clarity on the economic value of rainforests needs to be addressed and mainstreamed. Logging for "world market value" is a fraud on the current and future generations. This is a matter that NGOs need to firm-up on, and close ranks. The NGOs need to take the economic argument to the peoples of the world, and undermine the ideological position of the World Bank and other institutions.

- **World Bank, IMF, UNDP support for export logging**

We need to challenge World Bank over its support for export logging in Papua New Guinea. In their recent report, *Sustaining Papua New Guinea's Natural Heritage: an Analysis of the Papua New Guinea National Forest Plan*, Greenpeace and WWF recommend that the Government of Papua New Guinea

"Impose a moratorium on new Forest Management Agreements and extensions of existing agreements, until the capacity to manage PNGs natural resources effectively is developed (as outlined in this report's long-term recommendations)" (Greenpeace/WWF, May 1998)

Almost all green NGOs in Papua New Guinea support this position. These NGOs include the Center for

International Environmental Law, Conservation International, Conservation Melanesia, Greenpeace, the Individual and Community Rights Advocacy Forum (PNG), Melanesian Environment Foundation, the World Rainforest Institute and WWF.

NGOs and church groups need to consolidate their campaigns against the user-pays principle, and policies that insist that currencies be floated. NGOs and churches need to propose how small Pacific Island countries can be linked together in a common monetary union. We cannot allow our countries to be subject to such large currency fluctuations. Currency has to be brought under control. One solution could be for us all to adopt either the Australian or American dollar. The currency privileges given to oil and mining companies in Papua New Guinea should cease.

- **PNG Forest Authority a facilitator of export logging**

The Papua New Guinea Forest Authority in its present form has no future. It is a trader in timber rights, but does not behave like a business. It has a capital stock of billions of Kina's worth of timber rights acquired from landholders. These assets are not valued, and are not recorded as stock in the books of the Authority. The Authority passes its capital stock to logging companies, without proper consideration. It takes from the taxpayer a subsidy of about K23 million a year in operational costs. As a major trading organization, the Authority functions as a subsidy to the logging industry. To say the least, this is no way to run a business. The Authority needs renovation. If the Authority is to continue as an industrial timber body, then it should be drastically down-sized, and be made to charge market-value for its services to the industry. Its taxpayer subsidy should stop. It should trade its stock, by auctioning logs on a coupe by coupe basis. That stock which it cannot sell, it should return to the landholders. Landholders should be paid for trees that are sold to the Authority on the basis of market value, not royalties.

Preferably the Authority should get out of large-scale industrial timber, and concentrate on facilitating small and medium scale processing within Papua New Guinea by Papua New Guineans.

Supply side solutions

- **Population growth, education of women, poverty, drag effect of Catholic Church.**

More effort needs to be concentrated on women's development and their advancement in Papua New Guinea. Government, NGOs and Churches should promote affirmative action programs for the education of girls, including compulsory education to grade 10. Government, NGOs and Churches need to take positive steps to see that mechanisms are developed to allow the full and equal participation of women in all decisions affecting the use of the forests. Donors should target aid for projects that combine forests and women's participation. Population control is key to determining the fate of the forests. The negative role of the Catholic Church in population control and birth control should be confronted.

- **Sporadic level of understanding over the philosophical and religious basis for conserving the rainforests**

NGOs and churches should open a dialogue about the philosophical and religious basis of forest conservation. Work in hand to disseminate and mainstream the conservation ethic through adapting school curricula, should be intensified.

- **Export logging is the biggest threat to the rainforests in PNG**

Bougainville has an effective ban on all logging activities. That ban has been maintained by force of arms, in a 10 year civil war that has cost thousands of lives. There is no legal mechanism to ban export logging in Papua New Guinea, without major claims for compensation. Papua New Guinea has investment guarantee treaties with Malaysia and Japan. The proposed moratorium on new logging concessions by Greenpeace and WWF would be an effective way to slow down the rate of forest loss.

These proposals could be enhanced by vigorously promoting small and medium-scale timber processing amongst Papua New Guinean landholders on their own land. The use of Forest Stewardship Council standards should be encouraged.

- **Papua New Guinea cannot and does not regulate its forests**

Greenpeace and WWF recognized that existing logging contracts can not be arbitrarily broken. They recommended that the Government of Papua New Guinea

"Ensure compliance of existing concessions with the Logging Code of Practice and existing calculations of sustainability. In particular, permitted harvest rates must be reduced in regions, such as the Gulf and Western Provinces, and East and West New Britain, where they exceed what can be sustained even under the existing 35 year cycle."

It was intended that this solution be applied as part of the moratorium process. Without a moratorium, seeking compliance could be meaningless. Forest loss through logging would continue at near current rates. In fact there is no hope of a public body effectively regulating the forests in Papua New Guinea. It has not happened since Independence, and it is not likely to happen before the millable forests are completely decimated in 2032. For any real management and regulation to occur, the Forest Authority must be down-sized, fully commercialized, and its regulatory functions let out to private tender. Currently all log exports are monitored by the Swiss firm SGS.

- **Unequal and inequitable contracts**

As part of the commercialization process, all existing Timber Rights Purchase Agreements, Forest Management Agreements, Project Agreements and Logging and Marketing Agreements should be reviewed. Landholders should be supported in this process with access to independent professional legal and commercial advisers. Papua New Guinea needs to implement existing consumer protection legislation. That would allow judicial review on the terms of timber contracts.

- **No operational mechanisms for effective conservation**

Conservation management needs to be decentralized. Effective power should be given to local communities to plan their land use, and set aside areas for conservation. Current conservation proposals by the World Bank, UNDP and AusAid are worth considering, only in the context of a moratorium on log exports. Otherwise the major obstacle to the underlying causes of forest loss is not addressed, and conservation functions as a band-aid.

- **Real level of poverty in rural PNG**

To begin to address poverty in Papua New Guinea, the Government should continue to pay the full K15 million a year promised into the Targeted Community Development Fund.

The World Bank should ensure that community inputs to its new Conservation and Forest Project should go to the TCDP fund, rather than be left with the Forest Authority. Austaid should pay its Community Development Fund into TCDP to avoid duplication of administration. This would support a number of forest and wood-related local initiatives, strengthen local community initiatives, and go along way to dealing with poverty through community sponsored action.

- **Population pressure on land**

Community education and community-based planning will be needed to cope with the exponential increases in population, and the consequences of uncontrolled land clearances. The structure for local level decision-making is in place through recent local government reforms, but community-based land use planning is not generally used. Funds need to be made available for a system of community

planning workshops and support.

- **Oil palm rubber estates, no effective regulation and management**

The Government must implement an effective system to control the management of agricultural estates. Grassland should be used in preference to the clearance of rainforest. These estates, if they are to be established at all, should only be established with the informed consent of local communities, and as part of the community planning process. Communities should be told about the negative aspects of large agricultural estates on the environment and on culture.

- **Investment in tree plantations**

A special effort should be made to establish tree farms and plantations, using Forest Stewardship Council standards, in grasslands. The Highlands Region, and grasslands along the North Coast of Milne Bay, and in the Morobe Province, should be given priority. The re-afforestation levy should be re-introduced, and a plan quickly developed to spend re-afforestation levies held in trust. Particular attention should be paid to employing women and youths in tree planting. Tree planting on grasslands, and in the Highlands should become a major activity of local level governments. Donors will be needed to support this activity.

- **Domestic processing in decline**

Forest Authority resources should be moved from promoting export logging (which should be phased out) to encourage small and medium scale domestic processing projects, using Forest Stewardship Council standards. This should be a major activity, and should get the full support of donor organizations.

- **No supervision of informal sector**

The Forest Authority should delegate the task of supervising small-scale forest industry to development NGOs. These activities should be run on FSC standards.

- **No ability to respond to cyclone damage**

Where cyclones damage timber resources, the Forest Authority should immediately arrange for local level Governments, community groups and NGOs to participate in salvaging the damaged resource, and replanting the area.

- **No regulation or management of forest fires**

Rapid climate change in Papua New Guinea will bring frequent droughts and increased fire risks. The Forest Authority needs to increase its ability to regulate fire risks and to involve local communities in fire prevention and emergency procedures.

- **Industrialization**

A special effort needs to be made to gain the cooperation of the oil, gas and mining industries to prevent forest loss. The sector should develop appropriate forest and timber related programs as part of its community development and outreach operations.

Bibliography

Anonymous: well placed source in the forest sector who cannot afford to be named, Port Moresby 1998.

AusAID *Economic Survey of Papua New Guinea: sectoral performance* AusAID, Canberra, August 1997

Brunois F, *The Ecological Impact of the Wawoi Guavi Company's Logging Exploitation on the Territory and Society of the Kasua People*, (in French), Avenir des Peuples des Forets Tropicales, Paris, August 1997

Bryant D, Daniel N, Tangle L, *The Last Frontier Forests*, World Resources Institute, Washington DC, 1997

Cassells, RM *Tropical Rainforest Subsistence Values Compared with Logging Royalties*, conference proceedings "Development that Works! Lessons from Asia Pacific, Massey University, NZ, August 1992

Duncan RC, *Melanesian Forestry Sector Study* AIDAB, Canberra, Oct 1994

FAO *State of the World's Forests*, Rome, 1997

Filer C, "A statistical profile of Papua New Guinea's log export industry" in Filer C (ed.) *The Political Economy of Forest Management in Papua New Guinea*, NRI/IIED, PNG, July 1997

Filer C, with Sekhran N, *Loggers, Donors and Resource Owners*, NRI/IIED, PNG, August 1998

Greenpeace Pacific, WWF South Pacific Program, *Sustaining Papua New Guinea's Natural Heritage*, Port Moresby, May 1998

Hiscock, G *Asia's Wealth Club*, Allen Unwin, Sydney, 1997.

The Independent June 26, Port Moresby ,1998

Light A "The politics of large-scale timber consumption in Japan", in Filer C (ed) 1997, *op.cit.*

Martin R, "Small-scale Community-Based Forestry" in Filer (ed) *op.cit.*

The National June 17, Port Moresby, 1998).

The National July 30, Port Moresby, 1998

Pacific and Environmental Resource Center, perc@igc.apc.org

PNG Forest Authority *Annual Report 1994*, Port Moresby 1995

PNG Forest Authority/World Bank Consultants Seminar on Landowner Benefits, Islander Hotel, Port Moresby, 4 Feb 1998

Reuters Beijing, 22 March 1998, internet networked by Ecological Enterprises, grbarry@students.wisc.edu

Sekhran N, Miller S (eds) *Papua New Guinea Country Study on Biological Diversity*, DEC/ACRE/UNDP, PNG, 1996

United Nations Development Program, *Human Development Report 1998*, OUP, NY 1998

Western Ancient Forest Campaign, Washington DC wafcdc@igc.org

World Bank *World Development Report 1997*, OUP, NY June 1997

World Bank, *PNG Forestry and Conservation Project: Project Concept Document*, Washington DC, 10/28/1997

World Bank Peroz Hamidarian-Raz, meeting with select PNG NGOs, Islander Hotel, 9 August 1997 (personal communication)

[back to UC Process](#)



[Go to Home Page](#)
[World Rainforest Movement](#)
Maldonado 1858 - 11200 Montevideo - Uruguay
tel: 598 2 403 2989 / fax: 598 2 408 0762
wrn@wrn.org.uy