Preserving Paradise

The value of protecting Papua New Guinea's forests for climate

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Executive Summary

The Kiunga Aiambak Road, Western Province, PNG. In 2003 the PNG National Court ruled that the building of the road by logging company Concord Pacific was illegal.
© Greenpeace/Birch

Papua New Guinea (PNG) hosts some of the world's largest and last remaining intact forest landscapes. While these forests have always been a haven for biodiversity and provided a livelihood for the millions of people who live in them, it is only in recent years that their importance for carbon storage has come to be fully appreciated.

PNG's forests are estimated to store around 5 gigatonnes of carbon (GtC), or 18.3 gigatonnes of carbon dioxide ($GtCO_2$), equivalent to almost 1.5 times the greenhouse gas (GHG) emissions from energy production worldwide in 2004.

However, PNG's forests are under threat. Decades of illegal and destructive logging mean that only 55% of the nearly 30 million ha of PNG's remaining forests, are intact forest landscapes. Recently, scientists at the University of PNG estimated that if current levels of selective logging continue, by 2021, 83% of the nation's commercially accessible forests will have been cleared or degraded.[1]

Deforestation is one of the main causes of climate change – accounting for almost a fifth of all greenhouse gas emissions. Selective logging is often thought to have a low impact on carbon storage because, although degraded, the forest still exists. However, this report shows that when forests are selectively logged, vast amounts of carbon are released contributing to climate change. This report examines how much carbon is released by selective logging in PNG and the disastrous economic impacts of continuing to destroy this natural resource.

Approximately 16.3 million ha of primary forests (roughly half of PNG's forests) is currently under threat of being selectively logged. This would result in emissions of up to 3.7 $GtCO_2$, the equivalent of over half of all transport GHG emissions worldwide in 2004.

Analysis of one of the largest logging concessions, Wawoi Guavi, found the carbon liability of emissions to be 127 $MtCO_2$, worth an estimated €1.3 to €3.8 billion. The infrastructure development alone in this one concession created a carbon liability of €108 to €324 million, equating to between €7 million and €22 million per year over the 15 years of operation. For the Wawoi Guavi concession, the loss of carbon – valued at between €87 to €253 million per year of operation – is well above the landowner, government and public benefit that comes from all logging conducted in PNG.

1 Shearman et al. (2008)

With carbon financing mechanisms being established around the world, it is clear that the people of PNG stand to gain dramatically more by keeping their remaining forests intact, compared to the revenues the Government and landowners currently receive from industrial logging. However, these forest carbon financing mechanisms will need to respect customary landholder rights, be linked to the co-benefits of biodiversity protection and local livelihoods, have transparent multi-stakeholder governance that delivers most of the benefits to local communities, and be regulated under a national carbon accounting framework.

PNG has placed itself in a leadership role within the international debate on carbon financing for forests. As co-chair of the Coalition for Rainforest Nations, PNG's Prime Minister, Sir Michael Somare, is calling for international finance to protect PNG's forests.

However, PNG's reputation on forest management is woeful. No logging concession is able to meet the International Tropical Timber Organization's criteria for sustainable logging[2] and none, except for two community eco-forestry group schemes, are certified by the Forest Stewardship Council (FSC).

There continue to be allegations of corruption in PNG – with government ministers and the powerful and wealthy logging industry both heavily implicated. High levels of corruption and poor governance has led to the vast majority of logging being illegal.

The money from decades of forestry in PNG has not filtered back to forest communities and many still have high levels of unemployment, low life expectancy, high infant mortality, poor education rates and low standards of living. They have seen no benefit from logging, just the deterioration and destruction of their forests and waterways, the two things that are key to their very survival.

If PNG fails, it will not only lose hundreds of millions of Euros from carbon funds, no doubt delaying its development, but it will also destroy the incredible wildlife within its forests, destroy the livelihood of millions of its citizens and continue to damage the climate instead of playing a role in fixing it.

2 ITTO (2007)

Background to PNG Forests

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The world's forests are being destroyed at an unprecedented rate. An area of forest the size of a football pitch is cut down every two seconds.[3] Half of the forest lost in the last 10,000 years was destroyed in the last 80 years and most of that destruction took place in the last 30 years.[4]

The world's remaining rainforests play a key role in regulating local and global climates and are a vital frontline defence against climate change. Deforestation is one of the main causes of climate change – accounting for about a fifth of all greenhouse gas emissions. This makes it third after the energy and industry sectors.[5]

Forests are also the most bio-diverse of all land ecosystems and are vital to life on earth. While covering only eight per cent[6] of the planet they are home to over half of all known species of land plants and animals[7] and to millions of people who rely on them for sustenance and cultural identity.

The current extinction rate of plant and animal species is approximately 1,000 times faster than it was in pre-human times.[8] Scientists suggest that the Earth is entering the sixth major extinction event[9] and that extinction rates will further increase ten fold by the year 2050.[10]

Of all the threats to the world's plants and animals, climate change is potentially the biggest. It is projected to exacerbate the loss of biodiversity and increase the risk of extinction for many species, especially those already at risk due to factors such as low population numbers and restricted or fragmented habitats[11].

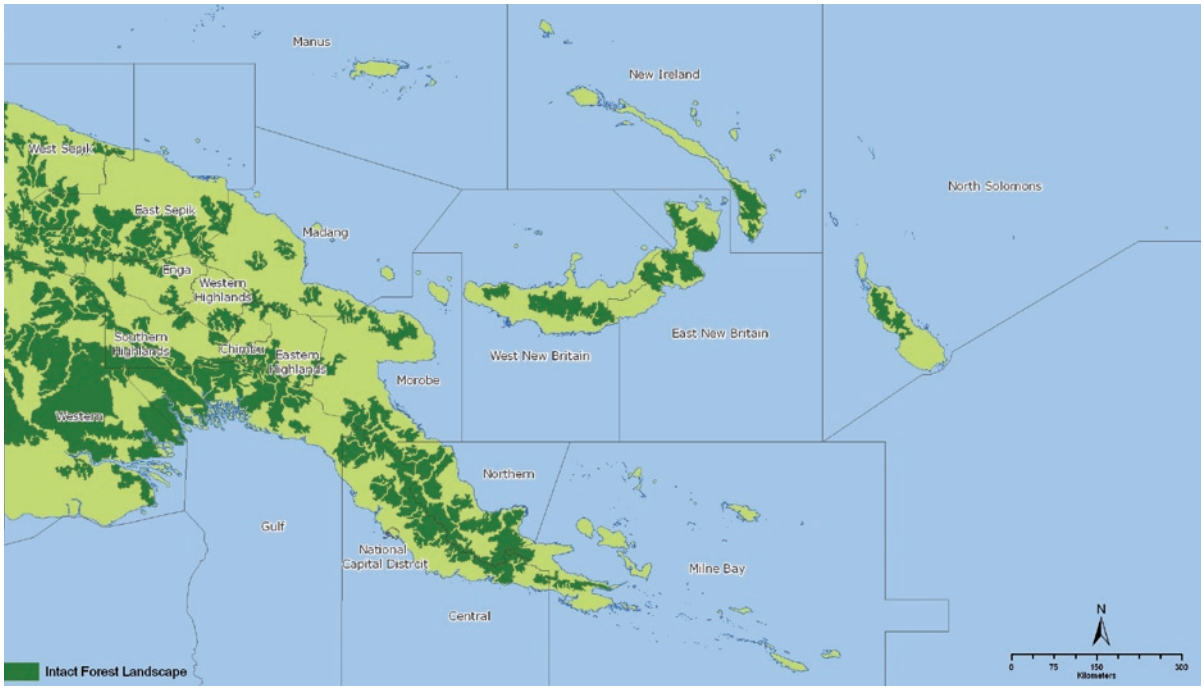
Many native animal species may not adapt quickly enough to climate changes and could come under pressure from invasive species. Land use changes (e.g. conversion of forests to agriculture) will further limit the capability of species to migrate or persist in fragmented habitats.

Protecting natural forests is an urgent and important step that the world can take to reduce GHG emissions and protect global biodiversity.

The protection of the last remaining tropical forests in the Asia Pacific region, the Paradise Forests, which stretch from Southeast Asia, across the islands of Indonesia and on towards PNG and the Solomon Islands in the Pacific, is key in mitigating the threat of global climate change, and adapting to the expected changes.

3 FAO (2005)
4 Adapted from: McNeill, J.R. (2000)
5 IPCC WGIII (2007)
6 Total forest cover 2005: 39.5 million km2 (FAO 2005); Earth surface: 510 million km2
7 MA (2005)
8 MA (2005)
9 Thomas et al. (2004)
10 MA (2005)
11 IPCC WGII (2007)

Papua New Guinea's Intact Forest Landscapes



Papua New Guinea

PNG has some of the largest and most biologically diverse ancient forests left in the world.

Most of PNG's 5.5 million people live a subsistence life, relying on forest resources. It is their home, supermarket, hospital and church. For many, the forest is the inheritance they will pass on to their children. That inheritance includes more than five per cent of the world's species of animals and plants.[12]

In PNG, 58 of the 260 known mammal species and 33 of the 720 known bird species are threatened with extinction.[13]

Of PNG's 29.4 million ha[14] of forests, 57% are made up of tropical lowland rainforest.[15] By 2002, as a consequence of logging activities, 2.9 million hectares (or more than 15%) of these were recently classified as degraded secondary forest and are considered to be at high risk of conversion to non-forest cover.[16] Only 55% of PNG's forests today are in large blocks (>500 km2) of minimally disturbed forest ecosystems known as Intact Forest Landscapes (IFLs).[17]

The protection of these IFLs prevents forest fragmentation and biodiversity loss, and is vital to the long-term health of any forest ecosystem. IFLs are also important from a climate point of view because:

- they facilitate adaptation to climate change, e.g. species migration
- fragmented forest landscapes are more vulnerable to drought and fire (edge effects)
- intact forest landscapes are more resilient to the predicted effects of climate change and hence more likely to retain carbon stocks, preventing further climate change.
- they are less accessible, which protects against industrial logging

However, continued illegal and destructive logging and the conversion of forest areas into plantations could see much of PNG's commercially accessible tropical forests cleared or degraded by 2021.[18]

12 GOPNG (2000)

13 WRI (2005)

14 FAO (2005); see also Shearman et al. (2008)

15 Shearman et al. (2008)

16 Shearman et al. (2008)

17 Intact Forest Landscapes are defined as blocks of mostly forested, but also non-forested (eg swamps) areas larger 500 km2 and a minimal width of 10 km within the forest zone that show no visible sign of significant human impact (eg logging, burning etc). Excluded from these Intact Forest Landscape areas were 1 km buffer zones around human infrastructure (roads, waterways, settlements etc) and fire scars from the vicinity of human infrastructure where most fire regimes have been significantly altered (eg increased fire frequency): Greenpeace (2006)

18 Shearman et al. (2008)

The Carbon Value of Papua New Guinea's forests

Logs ready for export. © Greenpeace/ Orsack

PNG covers a total land area of 46.4 million hectares (ha).[19] In 2005, over half of the country remained covered by forests.[20] Almost two thirds of these forests are lowland rainforests[21] – one of the most carbon rich forest ecosystems in the world – rivalled in its above ground biomass only by temperate rainforests with their giant eucalyptus or redwood trees.[22]

There have been several estimates of the carbon held in PNG's forests. Recent reviews (see table 1) compiling various estimates[23] provide an overview for the estimated carbon stock held by PNG's forests,[24] ranging from 4 to 8 GtC. These estimates do not contain soil carbon and range from low through to high figures for forest carbon per hectare.

Unfortunately, like many other tropical regions, there are few reliable field data for PNG's different forest ecosystem types on which to base forest carbon analysis.

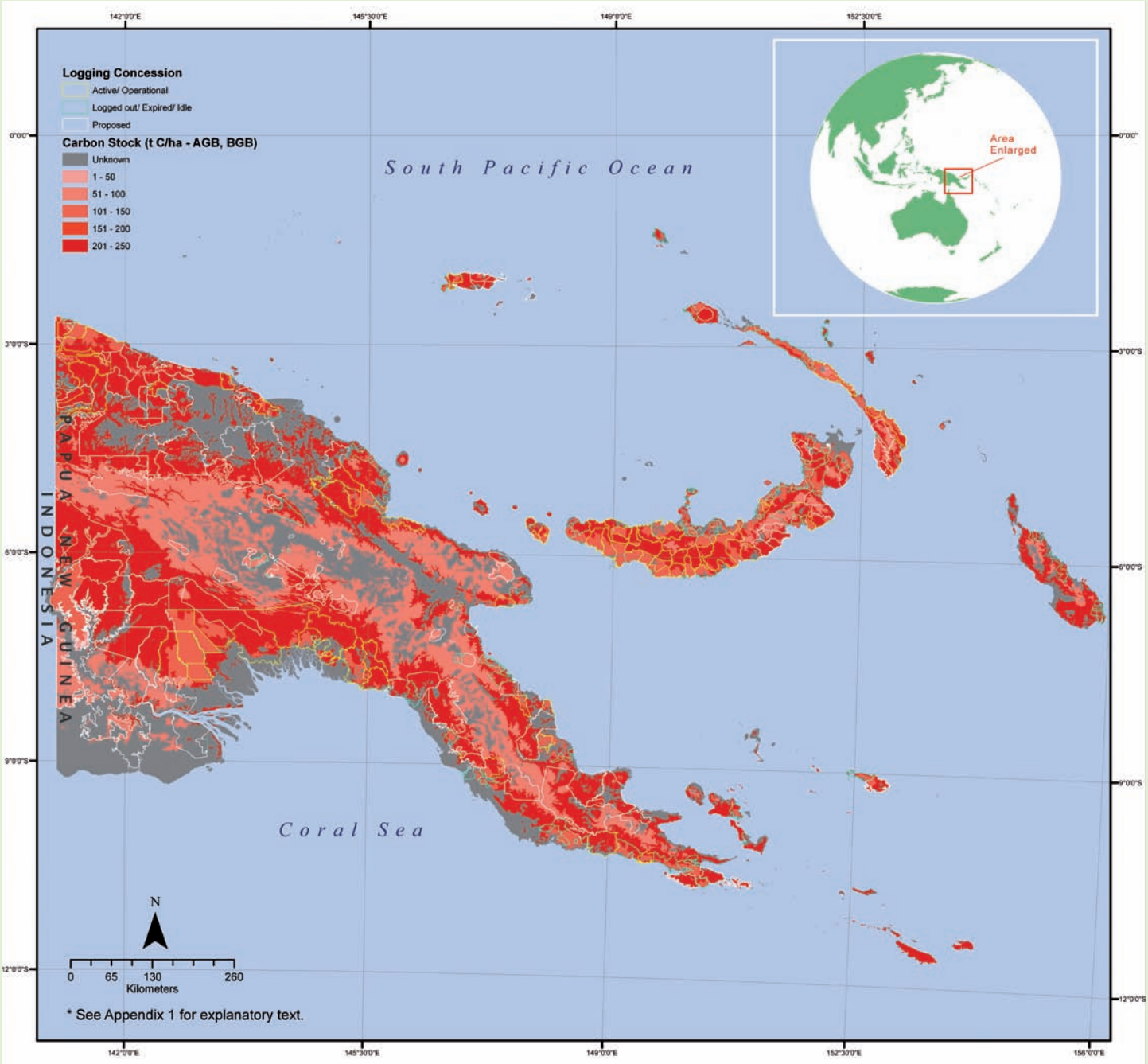
Table 1: Estimated Total Forest Carbon Stocks for Papua New Guinea

Source/Reference	GtC	Notes on Methodology
Gibbs et al. (2007)	*4.2 – 8.0*	*Based on 5 studies applying compilations of biome-average carbon values to the EU JRC Global Land Cover 2000 vegetation map (GLC 2000) and FAO forest ecological zone map (FAO 2001).*
Gibbs et al. (2007)	*7.1*	*Figure based on IPCC (2006) standard values.*
Shearman et al. (2008)	*4.7*	*Integrating field measurements of above and below ground biomass in PNG with high-resolution forest maps and bioclimatic indices.*

It is clear that even when a conservative mid-range estimate of around 5 GtC (or 18.3 $GtCO_2$) is taken from the forest carbon estimates in table 1 that PNG's forests are huge reservoirs of carbon with the capacity to store the equivalent of nearly 1.5 times the entire emissions from fossil-fuel power stations worldwide during 2004.[25]

19 29.4 million ha; FAO (2005)
20 FAO (2005)
21 Shearman et al. (2008)
22 IPPC (2006)
23 Gibbs et al. (2007)
24 above and below ground biomass
25 12.7 $GtCO_2eq$: IPCC WGIII (2007)

Carbon Stock Estimates for Forest Biomass, Papua New Guinea



Appendix 1

Explanation of PNG Carbon Stock Estimates for Forest Biomass Map

Carbon is concentrated in lowland rainforest areas, which are the prime targets of logging companies

This map shows the carbon stocks in above and below ground biomass (AGB&BGB) for the main forest types of Papua New Guinea (low altitude, montane forest and dry seasonal forests) but excludes soil carbon. Different carbon values have been assigned depending on whether forests are unlogged or have been selectively logged (see table 6). Peat carbon has not been included as maps on peat area and depth are not available.[100] Areas marked "no data" are non-forest areas (e.g. non-forest ecosystems, crop land, urban areas etc.) or forest types for which no reliable data on biomass carbon are available (e.g. coastal forests).

The map also shows past,[101] current[102] and proposed logging concessions.[103] Many of the concessions, that are "active", i.e. where selective logging is currently still ongoing, have been largely logged over and are therefore in large parts shown on this map with a lower carbon stock (for values and references used see table 6).

It can be seen very clearly, that logging in PNG targets the dense, carbon rich lowland and lower montane forests. These forest types amounted to about 27.8 million ha in 1996, with only 13.8 million ha having been classified as production or "future production" forests by the Government of PNG.[104] However, a total of around 16.3 million ha have been or are supposed to be allocated to logging in PNG[105] (past, current and proposed concessions combined). Not surprisingly, scientists of the University of Papua New Guinea recently estimated that of the 1972 commercially accessible forest area, by 2021, 83% will have been cleared or degraded if current trends continue.[106]

Table 6: Carbon stock values used for the PNG carbon map

Forest type	Status	AGB (t/ha)	AGB & BGB (t/ha)	AGB & BGB Carbon stock (tC/ha)
Low Altitude Forest	unlogged	300	411	206
Montane Forest	unlogged	140	178	89
Dry Seasonal Forest	unlogged	130	166	83
Low Altitude Forest	selectively logged	150	261	131
Montane Forest	selectively logged	70	108	54
Dry Seasonal Forest	selectively logged	65	101	51

Notes: Coverage of each forest type is based on PNG's Forestry Inventory Mapping (FIM) System.[107] The status (unlogged / selectively logged) has been taken from PNG FA 2002. Above-ground biomass values have been taken from the 2006 IPCC guidelines for National Greenhouse Gas Inventories (IPCC, 2006). Below ground biomass was added by multiplying by the relevant factor from IPCC (2006; Table 4.4). Biomass was converted into carbon using a conversion ratio of 0.5. For selectively logged areas, a 50% reduction of above ground biomass (AGB) has been assumed.[108]

100 According to Hooijer et al. (2006), however, peatlands cover an area of 2.6 million ha in Papua New Guinea, with an estimated average depth of 1.5 m

101 logged out/expired/idle

102 active/operational

103 Greenpeace, based on various sources, the most recent being PNG FA (2007)

104 FAO (2005) Global Forest Resource Assessment, Country Report Papua New Guinea. Both figures un-calibrated

105 Greenpeace research based on PNG Forest Authority maps

106 Shearman et al (2008)

107 for details on the FIM see e.g.: Michalak et al. (2002)

108 Several studies in Southeast Asia (e.g. Pinard & Putz 1996; Lasco 2006) have demonstrated that selective logging results in an approximate 50% reduction in biomass. Logging intensity in PNG is of similar impact as in Southeast Asia, hence it is assumed here that selective logging reduces above ground biomass (and hence carbon) by 50%.

PNG Annual Emissions of Carbon from Forests

Mapping forest degradation, deforestation and the subsequent loss of carbon, and analysing the causes, is of critical importance in any attempt to reduce climate threatening greenhouse gas (GHG) emissions from forests.

This is a crucial knowledge gap that urgently needs to be addressed by the PNG government and donor nations if PNG intends to pursue new revenue streams from the second phase of the UN Kyoto (post-2012) agreement on climate change to protect tropical forests termed "Reducing Emissions from Deforestation and Degradation" (REDD) (e.g. Greenpeace's proposed Forest for Climate mechanism[26]).

In PNG, 94% of total annual GHG emissions (from all sources) originate as CO_2 from land use change and forestry (LUCF), the highest proportion of any country in the world.[27] PNG is in the top ten in the world for LUCF GHG emissions.[28]

By 2002, 2.9[29] to 4.1[30] million ha of PNG's forests had already been selectively logged, with another 3.8 million ha earmarked as concession areas already allocated to logging companies for selective logging.[31] A further 12.5 million ha are covered by proposed concessions in various stages of allocation. Therefore, up to 16.3 million hectares of forest in PNG are currently under threat of becoming degraded as a result of logging. This is roughly half of PNG's total forest area.

Turama Extension logging concession, Gulf Province.
© Greenpeace/ Jeremy Sutton-Hibbert 2008

26 Hare & Macey (2007)

27 146 $MtCO_2$ eq in 2000, WRI (2008)

28 WRI (2008)

29 Shearman et al. (2008)

30 calculated by Greenpeace from: PNG Forest Authority (online), PNG Map Showing Logged Over Areas, As of Year 2002 http://www.forestry.gov.pg/site/files/png%20forest%20cover%202002.pdf; see also Hunt (2006)

31 The total area of currently active (as of 2007) logging concessions in PNG is estimated to be 5.7 million ha, with 1.9 million ha of these already selectively logged.

Table 2: Counting the Carbon Cost of Selective Logging

Source of carbon loss or emissions from selective logging and resulting degradation	***Examples of studies that have considered this source***
1. Logging infrastructure including roads, skid tracks and log ponds	*UPNG (2008), Greenpeace (2007), this paper – Wawoi Guavi case study (see text box).*
2. Forest fragmentation impacts, including forest edge impacts from logging roads and biomass loss from forest fragmentation.	*Laurance et al. (1997), Gaston et al. (1998), Greenpeace (2007)*
3. Timber extraction impact on carbon stock, including volume of timber extracted and carbon from damaged and killed decomposing vegetation.	*Abe et al. (1999), PNGFA (2007), Brown et al. (2005), Lasco et al. (2006), Pinard and Putz (1996).*

Table 2 shows the many ways carbon can be lost as a result of logging along with studies that have considered them. Several studies in Southeast Asia demonstrate that selective logging results in an approximate 50% reduction in biomass carbon.[32] There have been no studies in PNG to determine the impact of logging operations on biomass carbon. Abe et al. (1999), however, estimated that in a logging concession in Finschhafen (PNG), selective logging had removed 27% of stem volume, with another 13% being killed and half of the trees with a stem diameter of more than 5 cm destroyed. This suggests that the logging intensity in PNG is of similar impact as in Southeast Asia, as has been shown also by several preliminary field studies, as well as fly-overs conducted by Greenpeace in recent years.[33] Therefore, it is assumed for the purpose of this report, that selective logging reduces above ground biomass (and hence carbon) by 50%.

Abandoned vehicles at RH's Wawoi Guavi logging concession, Kamusi, Western Province. © Greenpeace/ Jeremy Sutton-Hibbert 2008

Rusting equipment at Turama Forest Industries logging camp, Serebi, Gulf Province. © Greenpeace/ Jeremy Sutton-Hibbert 2008

32 A 50% biomass (and hence carbon) has been found in several SE Asian studies on selective logging, e.g. Pinard & Putz (1996) found that, one year after logging, conventional (selective) logging and reduced impact (selective) logging contained biomass equivalent to 44 and 67% of pre logging levels respectively in Sabah. This was for above and below ground biomass. Lasco et al. (2006) found that above ground carbon stocks declined by about 50% after selective logging. No measurements for below ground.

33 Melick (2003)

Forests are the primary source of food for many communities.
© Greenpeace/Natalie Behring

Estimates of the carbon content of tropical forests in Asia vary widely – up to 250 tC/ha[34] – because of the variety of forest types found in tropical Asia. The most recent estimate for an average tropical Asian forest, taking multiple data sources into account, gives a mid-range value of 150 tC/ha of biomass, with 80% or 125 tC/ha of this being above-ground biomass.[35] This value is used here as an average carbon content of the above ground biomass of PNG's forest. If up to 16.3 million ha of primary forests are being logged, losing 50% of its above ground carbon stock of, on average 125 tC/ha, emissions of up to 3.7 $GtCO_2$ would result.This is equivalent to over half of all GHG emissions from the transport sector worldwide in 2004.[36] This is likely to be a conservative estimate since it doesn't include the full carbon emissions from logging infrastructure, such as roads (see the case study box on Wawoi Guavi below for an assessment including this), nor fossil fuel emissions from infrastructure development, timber extraction, processing, or full wood product lifecycle emissions.

34 Gibbs et al. (2007)

35 Gibbs et al. (2007)

36 6.4 $GtCO_2eq$; IPCC WGIII (2007)

Table 3: Estimated PNG Annual Forest Carbon Emissions and their Value

Source/ Reference	***Hectares/ year***	***Emissions Mt CO_2/yr****	***Value (€billions) @ €10/tCO_2 – conservative†***	***Value (€billions) @ €10/tCO_2 – optimistic‡***	***Notes***
FAO (2005) - degradation#	*250,000*	*57*	*0.57*	*1.7*	*Degradation of primary to secondary forest 2000-2005. Area from FAO figures. Other calculations this study.*
FAO (2005) - deforestation	*139,000*	*63*	*0.63*	*1.9*	*Forests completely cleared to a non-forest use 2000-2005. Area from FAO. Other calculations this study.*
Shearman et al. (2008)		*75-85*	*0.75-0.85*	*2.3-2.6*	*From deforestation and selective logging.*

** based on an above ground carbon stock of 125 MtC/ha (Gibbs et al. (2007). Below ground biomass for the purpose of this calculations is assumed to be recycled within the system. # assuming 50% biomass reduction by selective logging. † This is a conservative estimate considering market volatility, methodological uncertainties and risks associated with forest carbon as a long-term store. ‡ Milner (2008)[37]*

Much of PNG's actual forest clearance cannot be attributed directly to logging activities, but is rather a result of shifting and industrial agriculture. However, as even the industry lobby group, the PNG Forest Industries Association (PNG FIA), points out, industrial agriculture projects can also be a disguise for large scale logging operations.[38] In addition, it is well documented that shifting agriculture is promoted by selective logging operations.[39] As shown in table 3, forest degradation and deforestation are responsible for significant annual CO_2 emissions (57 to 85 $GtCO_2$ per year). These emissions result in a substantial amount of carbon liability and represent a significant loss of value to the landowners and nation.

The value of PNG's forest carbon that could be realised through carbon financing from the market or through REDD mechanisms still needs to be properly assessed. But with the world's attention turning to the fight to prevent catastrophic climate change, PNG's natural carbon storing forests will only become more valuable.

The estimates in table 3 give indicative ranges of the potential revenue that could be generated through carbon financing and protecting PNG's forests. When compared with the current public revenue gained from the logging sector (see table 4), it is clear that PNG is facing massive financial losses if it fails to protect its forests.

In addition to missing out on other benefits of preservation of PNG's forests, most ordinary citizens do not benefit from the comparatively small revenue provided by logging. Most of the revenue from the logging sector comes from the log export tax (collected by the Government), landowner royalties, benefits and staff wages.

Corporate tax or "profit tax" however, is unlikely to contribute much, if anything to PNG's revenue. As the global accounting firm, PricewaterhouseCoopers noted in their assessment of the economics of the PNG logging sector in 2006, "...the industry has been unprofitable for a number of years (2005 losses were estimated at more than K75 million - US$25 million)..."[40]

Government and landowner revenue figures shown in table 4 clearly show that the potential forest carbon financing revenue is at least ten times higher than the logging revenue earned in 2005. Even with prices for CO_2 credits remaining below expectations, the potential gain for PNG from carbon financing mechanisms will always dwarf the current government revenue and landowner benefits from industrial logging.

37 Milner (2008) quoting Henrik Hasselknippe, Point Carbon; and www.pointcarbon.com/article.php?articleID=27161 In the longer term, the price of carbon offsetting will be determined by targets negotiated under post-Kyoto agreements.

38 PNG FIA (undated)

39 Ningal et al. (2008)

40 PricewaterhouseCoopers (2006)

Papua New Guinea Carbon Stock Estimates and Selective Logging

Selective logging has been estimated in scientific reports to reduce above ground biomass by 50% (see text). Logged over areas have been mapped by the PNG Forest Authority for the year 2002 (PNG FA 2002) and are shown here with yellow border lines. Logging in PNG focuses on the carbon rich lowland and lower montane forests, where it has serious negative impacts on carbon storage.

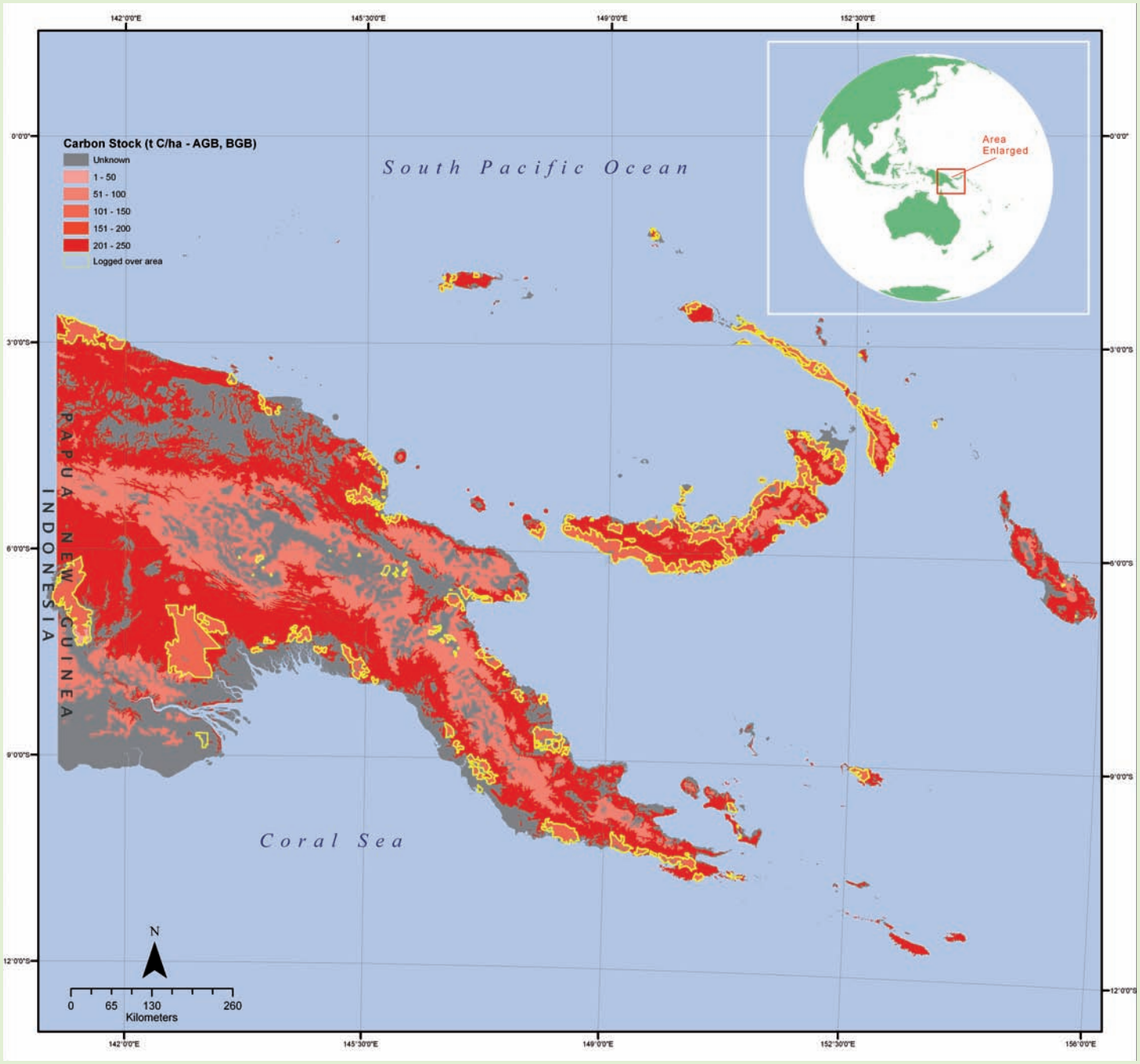


Table 4: Main government and landowner revenue from logging (2005):

Public income	***Total 2005 (€ million)[41]***
Log export tax‡	*30*
Landowner royalties & benefits†	*12*
Staff salaries†	*3*
Total public revenue	***45***

Sources: ‡PricewaterhouseCoopers (2006), †Hunt (2006)

Indirect landowner benefits through infrastructure development

It is generally understood that the key benefit to landowners from logging, that of direct royalty or premium payments, has done little to improve the quality of life for people in rural PNG as the funds are usually wasted or misused.[42] Unfortunately, the more indirect benefits of infrastructure development on rural life have been little studied, especially quantitatively. An evaluation of the Independent Review Team assessments of the large-scale logging industry found that fulfilment of infrastructure obligations was generally poor. There were few exceptions[43] and the logging operations of the dominant operator, Malaysian company Rimbunan Hijau (RH), showed poor compliance.[44] Examples of failures in infrastructure obligations include:

- roads constructed only to a standard to support logging and not the correct standard with permanent bridges or culverts
- substandard construction of buildings, such as health clinics and school class rooms
- water supply not yet provided

It was also concluded that: "Some infrastructure is developed, but it is generally only planned around logging requirements and is not maintained after logging ceases… and lasting infrastructure that does accrue are off-set by the social and environmental cost borne primarily at the local level."[45]

A landowner protesting against Turama Forest Industries, Paia, Gulf Province. © Greenpeace/ Jeremy Sutton-Hibbert 2008

41 Original values in Kina have been converted using the exchange rate as of 1 July 2005, taken from www.oanda.com

42 e.g. Filer & Sekhran (1998); Forest Trends (2006)

43 Open Bay, Makapa, Seraji and Watut logging operations

44 Forest Trends (2006), table 11, p. 49

45 Forest Trends (2006) p. 50, quoting the Independent Review Observations and Recommendations report.

Estimating Forest Carbon losses from Selective Logging of Wawoi Guavi Concession

Most studies on the carbon impact of selective logging have looked at direct emissions resulting from harvested timber, unutilised tree parts (roots, branches, etc) and trees, lianas and other vegetation damaged or destroyed (see table 2).

Not usually taken into account are emissions originating from roads, log ponds and other logging infrastructure development. While these activities lead to large areas being completely cleared of any vegetation, they also fragment previously intact, closed-canopy forest. Although no study on the carbon emissions from forest fragmentation have been performed in PNG, studies have been conducted in the Amazon on similar forest types. These studies indicated that trees on the edges of such fragments are vulnerable to drying out, wind and fire,[46] all of which can result in the death of trees and the subsequent release of stored carbon. It is estimated that on average there is a 10% reduction in forest biomass extending 100 metres from the edges into the forest.[47]

Both total clearance, as well as these edge effects, can add substantially to overall emissions. For RH's "Wawoi Guavi" concession in PNG's Western Province, Greenpeace analysed the extent of infrastructure development including clearance for roads, log ponds and logging camps, using data provided by the University of PNG[48] and high-resolution[49] satellite imagery.

The analysis showed the length of the road network for that concession alone to be 3,922 kilometres. When multiplied by the width of the road – conservatively assumed to be 30 m on average[50] – the total area cleared for roads was 11,766 ha, with an additional 360 ha being cleared for log ponds and logging camps, etc, leading to a total of 12,126 ha of clear cut forest in Wawoi Guavi. The area subject to edge effects was calculated to amount to 77,075 ha.

An above-ground biomass of 300 t/ha[51] is assumed here as the concession area is entirely located within tropical rain forest type. This equates to 150 tC/ha using 50% biomass as C[52]. Based on these figures, Greenpeace estimates the emissions related to infrastructure development in this concession alone to be approximately 11 $MtCO_2$ (see table 5) by the time most of the total concession area had been logged over. This adds another 9% to the emissions of around 116 $MtCO_2$[53] due the logging activity itself[54] giving a total of 127 $MtCO_2$ (see table 5).

46 Laurance (2005)

47 Laurance et al. (1997)

48 UPNG (2008)

49 accurate to 15 metres

50 Road width estimated based on 15 m resolution satellite imagery to range from 30 to 45 m, with 30 m being used for the purpose of this calculation.

51 IPCC (2006)

52 IPCC (2006)

53 based on an above ground biomass of 150 MtC/ha (IPCC, 2006) and a reduction in biomass due to selective logging of 50% (Pinard & Putz, 1996; Lasco, 2006)

54 see main text for methodology

Table 5: Estimated Carbon Emissions from Infrastructure Development and Selective Logging in Rimbunan Hijau's Wawoi Guavi Concession (PNG, Western Province)

Factor	***Area affected (ha)***	***Resulting emissions ($MtCO_2$)***
Clearance for roads and other infrastructure (ha)‡	*12,126*	*6.7*
Edge effect (ha)†	*77,075*	*4.2*
Total CO_2 emissions from infrastructure		***10.8***
*Selective logging**	*422,078*	*116*
Total CO_2 emissions (infrastructure and logging)		***127***

*‡Road network taken from UPNG (2008) and measured to be 3,922 km in length. Road width estimated based on 15 m resolution satellite imagery to range from 30 to 45m, with 30m being used for the purpose of this calculation. Areas cleared for log ponds, logging camps, etc. (360 ha) measured using 15 m resolution satellite imagery. †10% C reduction of above ground biomass on 100 m either side of road; see Laurance et al (1997); *concession area taken from PNG FA (2007); calculation based on an average above ground carbon stock of 150 MtC/ha (IPCC, 2006) and a biomass reduction of 50% through selective logging.*

Once a price is placed on carbon, the costs associated with the destruction of forests become evident. The carbon liability of emissions of 127 $MtCO_2$ is estimated to be between €1.3 and €3.8 billion.[55] The infrastructure development alone in this one concession created a carbon liability of €108 to €324 million, based on a relatively conservative carbon stock figure of 150 tC/ha of above ground biomass. This equates to between €7 million and €22 million per year over the 15 years of operation covered by this calculation (1991-2006). While this is only a preliminary estimate of the carbon emissions resulting from the logging operation, it shows that the total carbon liability of €87 to €253 million per year of operation is well above the landowner, government and public benefit resulting from even all the logging conducted in PNG (see table 4).

55 Using carbon values of €10/t CO_2 (conservative scenario) and €30/t CO_2 (optimistic scenario).

Illegal and destructive logging in PNG:

4

Kiunga Aiambak road © Greenpeace

"We declare our fourth goal to be for Papua New Guinea's natural resources and environment to be conserved and used for the collective benefit of us all, and be replenished for the benefit of future generations. We accordingly call for (1) wise use to be made of our natural resources and the environment in and on the land or seabed, in the sea, under the land, and in the air, in the interests of our development and in trust for future generations."

- PNG Constitution

Despite having some of the best forest laws in the world, PNG's reputation as a forest manager is poor. Reports by numerous international organisations point to serious mismanagement of PNG's forest resources, unsustainable logging practices, illegalities across the board in all large scale logging operations, corruption, poor governance, human rights abuses and a lack of any substantial development or monetary benefits for forest landowners.[56]

It will be difficult for PNG to convince donor countries that it has the capacity to monitor and enforce forest protection unless these issues are addressed adequately.

Sustainability

"A number of reports produced in recent years have established, beyond all reasonable doubt, that the PNG logging industry is more akin to a 'timber mining' operation than a well-managed, ecologically sustainable industry"

University of PNG report: The State of the Forests of PNG

Logging is the key driving force in forest change and degradation in PNG and a leading contributor to the eventual deforestation and conversion for other uses.

The majority of logging operations in PNG can be classified as environmentally, economically and socially unsustainable.[57] According to a diagnostic survey by the International Tropical Timber Organization (ITTO) in 2007:

"The government and industry have not been able to demonstrate integrated, economically viable, ecologically compatible and socially acceptable forest management practices in line with the ITTO Criteria and Indicators. Forest management is reduced to monitoring logging operations at the expense of overall Sustainable Forest Management."[58]

56 See e.g. Forest Trends (2006); ODI (2007a); ITTO (2007) and Roberts (2006b).

57 ITTO (2007), ODI (2007a), Shearman et al. (2008).

58 ITTO (2007)

Harvesting practices in PNG have been characterised as extremely careless. The draft National Reforestation Policy recognises this problem when it states *"the current practice in harvesting natural forest is that of selective logging, cutting stems greater than 50 cm at breast height. In many concession areas it presents an almost clear felling of the scene after the operation."*[59]

It is estimated that to generate the 2007 export volume of 2.8 million m^3, 42-45 million m^3 of wood was felled or extracted.[60]

According to Shearman et al. (2008), at current rates of logging "commercial forestry has a short future". The reasons are that logging operations in PNG are:

"…far beyond being ecologically sustainable. As they are designed to maximise financial return in the shortest time, operations are carried out at a larger scale and much more intensively, with more trees removed per hectare, and with considerably more wastage and collateral damage to the surrounding forest, land and waterways. Highly damaging salvage logging is widespread, there is no little active rehabilitation and repeat logging has been occurring after very short periods".[61]

Shearman predicts: *"Of the 1972 commercially accessible forest area, it is estimated that by 2021, 83% will have been cleared or degraded if current trends continue."*

The environmental policies that are in place to protect PNG's forests are not being policed due to a lack of resources.[62] Logging companies are exploiting this situation and continue to log PNG's forests unsustainably. Despite the millions of dollars that logging supposedly brings to PNG, none of this money is being spent to ensure that logging is done in an environmentally responsible manner that ensures there will be forests for generations to come. No logging concessions have achieved or are anywhere close to achieving Forest Stewardship Council (FSC) certification.[63]

A PNG Government led and World Bank sponsored review of existing logging concessions concluded in its final report 2004: *"…the current non-compliance with environmental standards, and the inadequate monitoring and control imposed by the Government regulating agencies, timber production as currently practiced is not sustainable."*[64]

The ability of PNG's forests to sustain themselves over the long term and in the face of climate change is being eroded by unsustainable logging practices. Fragmented forest areas are more susceptible to drought and fire, fast growing short-lived species take the place of older slower growing trees and forests are not given enough time to regenerate properly.[65]

Social costs of logging

The impacts on the people living in and from the forests are devastating. Over 80% of the nearly 6 million people in PNG still depend on their local environment for their subsistence and livelihoods.[66]

Forests are the wealth, heritage, food, medicine and home for millions of people in PNG. With illegal and destructive logging, food supplies are gone and sacred sites damaged. Rivers and streams become muddied and polluted, killing local reefs and fish stocks. People suffer violence and abuse. New diseases spread and the traditional medicines that once protected people from illness are lost. The traditional ceremonies, skills and way of life are disrupted. Communities' subsistence lifestyle supported by the forest for thousands of years, turns to extreme poverty.

The continued wholesale destruction of PNG's forests has also done little to benefit people who live in and around logging concessions, leading to growing frustration and animosity between forest landowners and logging companies.

Logging destroys the environment that landowner's need for their survival; leaving them will little economic benefit and fewer prospects once logging operations cease in their area.

Landowners quickly find that promised infrastructure development, such as roads and airstrips, are rudimentary at best and for the sole purpose of extracting logs. They quickly fall into disrepair once logging ceases.

Other promised services, like medical stations and schools are also basic and lack the materials needed to make them viable or long lasting.

59 GOPNG (2005)

60 Shearman et al. (2008)

61 Shearman et al. (2008)

62 ITTO (2007)

63 FSC is recognised as the global standard for responsible forest and plantation management with many governments, corporations, banks, institutions and carbon finance schemes preferring it.

64 Review Team (2004a)

65 It is estimated that logged over areas in PNG might need up to 300 years to regenerate to state of maximum diversity. Shearman et al. (2008)

66 Shearman et al. (2008)

The Greenpeace ship MV Esperanza visited several logging concessions in PNG between August and September 2008. At the concession Turama Extension in Gulf Province, Greenpeace found landowners frustrated and calling for a review of the logging agreement.

The original deal allowed Turama Forest Industries (TFI), a RH group company, to cut down 187,000 hectares in the Turama concession area. Locals tell how 13 years ago the decision to extend the logging was rushed through in a few pressure cooker hours during the weeks leading up to an election. This was not just any logging extension though; the Turama Extension expanded the reach of the chainsaws into 1.7 million hectares of rainforest.

"There wasn't enough time for people to consider what would be good and bad for them in the deal," says Kemaru Garry Bissue. "There was no consultation with the wider community. All the clan members here own this land, not just a few people. We don't make these kinds of decisions without input from everybody and we don't make them in a few hours because they are so important. I feel the PNG Government has abused their own forestry laws".

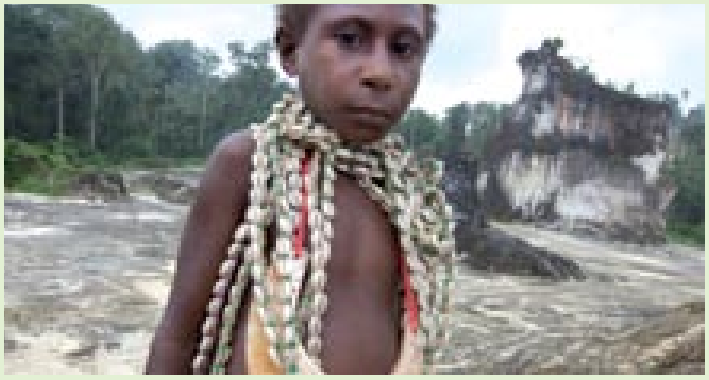
Local people tell of total disrespect from the company towards the resource owners. These include the destruction of sacred sites, lack of promised development, with-holding royalty payments, logging too close to villages and endangering the food supply.

Mr Bissue explains how villagers marked their sacred sites with red ribbons. The sacred area was limestone Karst and was legally outlined as protected in the agreement.[67]

"This was a place our ancestors went to get power and inspiration", says Mr Bissue.

Kemaru Garry Bissue on an abandoned runway built over a sacred site © Greenpeace/ Jeremy Sutton-Hibbert 2008

Not only did workers from TFI log the area, but they also mined the limestone to make logging roads.



A child from Omati village stands in front of a mined limestone Karst hill, an important sacred site © Greenpeace/ Jeremy Sutton-Hibbert 2008

TFI constructed one classroom and one medical clinic in each of the Forestry Management Areas without equipping them with school materials or medical supplies. These buildings are abandoned, as the community does not have the resources to fund either a school or medical centre.

Children from Gibidai village in front of an unused schoolhouse provided by TFI © Greenpeace/ Jeremy Sutton-Hibbert 2008

According to Bissue, on top of the empty promises, *"Turama Forest Industries withheld payments of royalties, premiums and all benefits".*

Logging has been carried out closer to waterways than agreed – sometimes within 20-50 metres of streams and rivers. This has washed huge amounts of silt and debris into waterways. *"The main fish breeding ground is now muddy and the fish populations have dropped," Mr Bissue said. "It's harder to catch fish for food. The diesel leaking from logging operations is also polluting river systems."*

67 The PNG Logging Code of Practice protects areas of limestone Karst from logging.

Conservation areas, which were to be set aside for protection of rare species, have also been logged contrary to the agreement.

The food supply from riverbanks has changed drastically since the logging began. Not only has the company breached the agreement and taken trees too close to villages, but the noise and movement of barges and tugboats up and down the rivers and streams scare away the pigs, cuscus and cassowary that used to be hunted for food.

Accomodation for PNG nationals employed by RH at Ndrahong logging pond, Manus Island. © Greenpeace/ Jeremy Sutton-Hibbert 2008

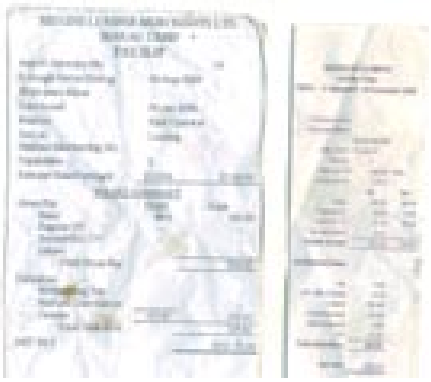
Kila Oumabe is from the Beseremen Clan, and has been asked to represent all the women living in the 1.7 million hectares of the Turama Extension. She is a mother with three daughters and three adopted children. Her experiences are typical of women across the Turama Extension.

"I have to walk six to eight kilometres to find food for my family", she says. "It takes all day. Before it used to take two to three hours or half a day. I used to walk out my back door to find the plants and animals to feed my family. Sometimes a woman can't find anything and comes home at 9 o'clock or midnight and cooks sago only and goes to sleep."

"The children sometimes complain and cry. So we explain to them what has happened."

Logging employs approximately 9,000 people around PNG,[68] however, according to the ITTO most companies are foreign-based and have an extensive foreign employee base, though some have hired domestic logging companies as subcontractors for some aspects of the work.[69]

Payslips obtained by Greenpeace from RH's Vailala and Wawoi Guavi concessions show PNG nationals working long hours for very little pay. What money they do make goes straight back to the company in the form of payment for food and other costs.



Pay-slips obtained by Greenpeace.

Many camp workers are brought in from other areas and have no local fishing or hunting rights so must buy goods at the company canteen, the only store in the area. One fortnightly payslip showed a worker being paid K185.25 (€54) for 114 hours of work. After costs for food were deducted he took home K5 (€1.50). Forestry workers are trapped in a debt cycle with logging companies and have no option but to continue working.

Ken Karere, from RH's Vailala concession, told Greenpeace, "The workload it's very big. You have no food. You have to go back to the store and buy food on credit and their prices are very high. All is recorded. So once I get paid, all that money goes towards the credit and you're only left with maybe K10, K15 (€3-4.50). You have to survive on that for another two weeks but after one day that money's finished."

The money from decades of forestry in PNG has not filtered back to these rural communities and many of them find themselves still with high levels of unemployment, low life expectancy, high infant mortality, poor education rates and low standards of living. They have seen no benefit from logging, just the deterioration and destruction of their forests and waterways, the two things that are key to their very survival.

This has led most recently to the Governor of Gulf province, Havila Kavo, calling on RH, the sole concession operator in this province, to shut down its operations in the province or face a legal battle.[70] The provincial government and the landowners want the company to ship out so they can conserve their forest for future generations and also capitalise on any future carbon financing schemes.

68 PNG FIA (2006)

69 ITTO (2007)

70 Post Courier (September 26, 2008) 'RH face tests',

"I've assessed the logging operations in the last couple of months. My people have been grossly abused and their logs have been grossly removed without maximum benefits," Mr Kavo said. "RH will have to pack up and leave the province immediately."

Illegal logging

> *"I have noticed a lot of corruption going on within the forestry department. Most [forest] officers are not supporting the landowners with their issues and are not promoting Government Laws and Policies that are already in place to penalise the logging companies."*
>
> *Beldan Namah, current PNG Forest Minister*[71]

The vast majority of the logging in PNG is illegal. There exists extensive documentation including official government and independent studies[72] and media reports,[73] which provide clear evidence of this. These have been widely published and distributed in the public domain. No independent assessment of concessions in PNG has recorded a single case of full legal compliance.

The World Bank estimates that up to 70% of all logging in PNG is illegal. Greenpeace estimates that over 90% of logging in PNG is illegal largely due to companies failing to acquire prior and informed consent from the customary landowners consistent with PNG's constitutional and legal requirements.[74]

Most large-scale logging operations in PNG are in fundamental breach of a number of basic legal requirements. Most do not have the informed consent of the local resource owners, as is required by the constitution, have not met the requirements of the Forestry Act, are being operated in defiance of environmental laws and regulations and are not sustainable (a pre-condition identified in both the PNG Constitution and the Forestry Act). There are also extensive documented human rights abuse cases[75] and reports on financial fraud including tax evasion[76] and transfer pricing.[77]

Between 2000 and 2005, the PNG Government and the World Bank gave an Independent Review Team a mandate to audit existing, disputed and proposed operations of the logging industry. The reports were wide-ranging and collated extensive data across many areas. The team's reports showed widespread illegalities in the logging industry, leading Forest Trends to conclude in 2006:

"That although all timber harvesting operations may be officially licensed, there are serious issues of legal non-compliance at almost every stage in the development and management of these projects. For these reasons, the majority of forestry operations cannot credibly be characterised as complying with national laws and regulations and are therefore 'unlawful'."[78]

Forest Trends summarised further, the *"review of 14 active logging projects (including the five largest and eight of the top 12, covering a gross area of 3.16 million hectares with a population of more than 83,000 people) found that none could be defined as legal and only one project managed to meet more than 50% of key criteria for a lawful logging operation".*[79]

The Review of existing concessions documented numerous allegations of abuse of local landowners, including rape and physical violence, by either logging company officials or by police associated with the logging companies. The report on RH's Wawoi Guavi concession concluded, among other things, that:

"The use of physical force by the Police Task Force to intimidate employees and landowners is one of the major issues raised by all members of the community. The people most certainly welcome the presence of police in the area, but not in the manner they were behaving and under total control of the company."[80]

The ITTO notes, while sustainable logging is an issue:

"…the more significant issues are to do with the compliance of the government itself with the laws of PNG when deciding to designate a forested area for logging purposes; negotiating the agreement with landowners; managing, monitoring and enforcing the agreement; and when extending current agreements."[81]

71 PNG Government Hansard (April 8 2008) PNG Parliament House, Waigani, Port Moresby.

72 Review Team (2001)

73 Roberts (2006a, 2006b); McDonald (2006); SBS (2001) & SBS (2004).

74 Review Team (2004a). According to 2004 Review Team Report all of the Forest Management Agreements signed to date are seen by the landowner specialists as deficient with regard to informed consent.

75 ACF & Celcor (2006)

76 Roberts (2006b)

77 ITTO (2007)

78 Forest Trends (2006)

79 Forest Trends (2006)

80 Review Team (2004b)

81 ITTO (2007)

Numerous recent newspaper articles and landowner complaints support these views and provide deep insight into the reality behind the statements above:

In 2005, the integrated local landowner group Baina Agro Forest Limited (BAFL) invited the Malaysian owned logging company, Nasyl No. 98 (a Kerawara Group company), to assist in establishing a 42,100 ha oil palm plantation. The project was based on clearing natural forests to use returns from log sales to finance establishing oil palm plantations. Nasyl No. 98 received four permits to clear blocks of no more than 50 ha. It did not, however, reportedly confine its operations to these small blocks and allegedly cleared a road alignment without authorisation. The company exported 63,000 m^3 of logs between from 2006 to 2007, a volume far beyond the harvesting capacity of four 50 ha blocks. According to the PNG Forest Industry Association the export of logs was also unlawful, as the project site is within 100 km of Port Moresby, a domestic processing zone, where all logs have to be supplied to mills for domestic processing and must not be exported.[82]

In November 2007, a logging operation of Malaysian owned Tzen Niugini (a Cakara Alam Group company) close to Sorawa, Morobe Province[83] was reported to have caused the deaths of four workers due to poor working safety standards, including the use of unregistered, uninsured and unroadworthy vehicles as well as drivers without licences. It was also reported that there was no customs officer present to control log shipments at the loading port.[84]

In February 2007, the Timber Rights Purchase (TRP) agreement for an area called "Block 6" in the Vanimo concession expired.[85] All rights should have automatically been reverted to the local landowners. Instead, the Forest Authority issued a new license to the operator, Vanimo Forest Products (a WTK Group company), without negotiating a new purchase agreement with the customary landowners. The National Court issued a restraining order, but logging continued.[86] A mobile police squad was flown into the area to "resolve" the conflict, but allegedly beat up protesting landowners.[87]

82 PNG FIA (undated)

83 The logging concession in question was not mentioned in the article, but was most likely the concession Yema Gaipa operated by Tzen Niugini in Oro Province, less than 10 km to the south of Sorawa

84 The National (2007)

85 Review Team (2004c)

86 Post Courier (1 June 2007)'Vanimo loggers ordered to stop'

87 Post Courier (13 June 2007) 'Police 'go against' court bid'

What is illegal and destructive logging?

Illegal logging takes place when timber is harvested, processed, transported, bought or sold in violation of national laws including:

- Obtaining concessions illegally (eg via corruption and bribery) or without free and informed consent from landowners
- Cutting protected tree species or extracting trees from a protected area
- Taking out more trees, under sized trees, oversized trees than is permitted, or trees outside an agreed area
- Illegal processing and export of timber
- Fraudulent declaration to customs of the amount of timber being exported
- Non payment or under payment of taxes
- Use of fraudulent documents to smuggle timber internationally

Destructive logging includes:

- Large-scale uncontrolled logging that destroys the structure, function and composition of the forest, and causes major social disruption
- Lack of 'informed consent' and support from traditional landowners
- Serious negative social impacts
- Use of heavy machinery
- No or inappropriate planning
- Over harvesting
- Severe soil disturbance and severe damage to the 'non-target trees, and pollution of waterways.

Corruption in Forest Management

Transparency International lists PNG as one of the 20 most corrupt countries in the world.[88] The history of this corruption is well documented,[89] and has had a significant direct effect on the national government's forest management policies.

In July 2008, PNG's Post Courier newspaper reported it had evidence of a US$40 million private bank account in Singapore, held in the name of an unnamed PNG government minister.[90] The US$40 million were reported to originate from a 2.1% levy on log exports, resulting from a deal struck by the same minister in 2002.

In August 2008, PNG's Sunday Chronicle added more revealing details to the story.[91] According to the weekly newspaper, the total sum transferred to the Singapore bank account amounted to US$67 million, with US$ 27million having been transferred back to a "political syndicate" in PNG around the time of the national elections in 2007. All of the money allegedly originates from log exports of only two logging concessions in Gulf Province, Vailala and Turama Extension - controlled by RH and TFI.[92]

The Post Courier handed over the relevant documents – including the names of the politicians and bank account details – to the Police and Ombudsman for investigation in August 2008.[93]

Despite the complete lack of will or capacity to enforce its own logging code of practice, PNG continues to promote its forests as a future source of carbon credits. It is highly doubtful that it is able or even willing to monitor or protect its forests in any meaningful way in order to participate in the global carbon market.

Greenpeace activists halt the loading of illegally logged trees onto the 'Harbour Gemini', Paia, Gulf Province. © Greenpeace/ Jeremy Sutton-Hibbert 2008

88 Transparency International (2007) (See also Dr Tim Anderson, lecturer in Political Economy of Development at the University of Sydney, cited in: PNG Corruption 'simply not homegrown' Post Courier, (April 29 2003), stating that corruption in PNG is a "logical corollary to the private-profit and privatisation driven development agendas" of the country).

89 See e.g. Barnett (1987), ODI (2007a) and ITTO (2007)

90 Post Courier (2 July 2008) '$US 40 million in MP's account'

91 Sunday Chronicle (August 17 2008) 'Money trail cited'

92 Sunday Chronicle (August 17 2008) also lists the "concessions" Kuri, Victoria Junction and Sirebi. Kuri, however, is part of "Turama Extension", while Victoria Junction and Sirebi are not concessions but logging camps within the concession "Turama Extension".

93 Post Courier (5 August 2008) 'Post-Courier gives $US40m papers to OC and police unit'

CARBON CORRUPTION: Promises and Illegalities in PNG

5

PNG's forests could make a significant contribution to global efforts to combat climate change … However, the current state of forest management and lack of effective governance means that PNG is a long way from being able to meaningfully participate in the carbon economy."

Shearman et al. (2008)

"Leadership" in Forest-Carbon Financing?

Despite the internal corruption and governance issues, PNG has managed to place itself into a leadership role within the international debate on carbon financing for forests.

In 2005, PNG and Costa Rica proposed an initiative to reduce emissions from deforestation at a meeting (COP11/CMP1) of the United Nations Framework Convention on Climate Change (UNFCCC) in Montreal.[94] Prime Minister Mr Somare invited rainforest nations to join with PNG to form a 'Coalition for Rainforest Nations' (CfRN) to address deforestation. The CfRN has since expanded to include numerous countries from several continents.[95]

In a speech at the UNFCCC COP13/CMP3 meeting in Bali in December 2007, Mr Somare called for all industrialised nations to demonstrate leadership by reducing carbon emissions through deep and hard targets. *"The answer is simple," he said. "If we lose the world's forests we lose the fight against climate change. Rainforests are our earth's greatest utility – our planets lungs, thermostat, and air-conditioning system".*[96]

However, the Somare government continues to facilitate the expansion of large-scale industrial and destructive logging and has done nothing to investigate allegations of corruption and illegalities within PNG's forestry sector.

An elder woman near her village of Omati, Gulf Province
© Greenpeace/ Jeremy Sutton-Hibbert 2008

94 see http://unfccc.int/resource/docs/2005/cop11/eng/misc01.pdf

95 see http://www.rainforestcoalition.org

96 see http://www.planetark.com/dailynewsstory.cfm/newsid/45991/newsDate/13-Dec-2007/story.htm

Carbon Financing & Corruption Don't Mix

Greenpeace has serious concerns about recent positions taken by PNG on carbon financing and its impacts on the climate, local livelihoods and biodiversity. The PNG government has recently supported placing forests on the global carbon markets, which would allow rich private companies to offset their emissions by paying PNG to protect its forests. In the worst case, this could eliminate the need for significant reductions in emissions by private companies, and even lead to an increase in global carbon emissions.

Given PNG's history of corruption and its management of forests so far, all carbon financing for PNG's forests should be conditioned upon strict requirements including: good forest governance, a national approach to carbon accounting, baseline setting and independent monitoring, respecting the rights of local communities with customary forest ownership, benefit sharing that ensures the largest portion goes to forest holding communities and ensuring benefits for biodiversity.

A Turama Forest Industries log barge, Paia, Gulf Province.
© Greenpeace/ Jeremy Sutton-Hibbert 2008

A carbon trading system that seeks to deliver forest carbon credits to companies at lowest costs could leave local communities marginalised by lack of information, being left out of the decision making, and sidelined as beneficiaries. Yet it is through addressing local community needs and building on generations of traditional conservation practices that long-term forest conservation and protection is achieved. Carbon trading is also risky and riddled with methodological uncertainties.

Rather than private, market based carbon trading, Greenpeace supports a 'Fund' approach[97] to forest carbon financing in PNG together with biodiversity conservation and support for local community livelihoods. This would be part of a national approach to carbon accounting, involve a multi-stakeholder governance approach, and ensure equitable benefit sharing through the establishment of various 'incentive funds' that include: good forest governance, provision of community services and infrastructure, alternative natural resource 'eco' enterprises and forest conservation.

A key objective of the CfRN however is "utilising selective logging practices" and "harnessing and remunerating the carbon sequestration and absorption capabilities of the rainforest".[98] The government of PNG seemingly wants to allow logging to continue with business-as-usual practices, while collecting funds from carbon trading at the same time.

The analysis in this report shows these objectives to be contradictory. Industrial selective logging of intact tropical rainforests releases huge amounts of GHG – there is nothing climate friendly about it.

97 Hare & Macey (2007)

98 Coalition for Rainforest Nations, Objectives http://www.rainforestcoalition.org/eng/about/mission.php accessed September 15 2008

Conclusion and recommendations

6

© Greenpeace/Natalie Behring

PNG's forests undoubtedly have greatest economic, social and environmental value in their natural and intact state for both PNG and the world. It is imperative that the international community provides financial, regulatory and technical support to PNG to protect what remains of its intact forests. It is also vital that this support directly benefits the traditional landowners of PNG's forested areas in order for long-term protection to be assured.

Unless something is done to protect the carbon stored in PNG's forests, these forests will continue to be a contributor to global climate change instead of being part of the solution.

The PNG Government must match rhetoric with action and show the world that it is ready to participate in any future global carbon financing mechanisms by: demonstrating significant governance reforms to stamp out corruption, reforming the logging industry through stopping all existing logging concessions that are not complying with PNG laws and forestry regulations, scrapping plans for any new logging concessions, committing to halting any deforestation particularly for industrial agriculture such as oil palm plantations, and demonstrating a strong commitment to forest conservation and enhancing local community livelihoods.

Greenpeace calls on the Papua New Guinean Government to:

- Freeze activity in all logging concessions that have been found to be operating illegally and not in accordance with forestry regulations,[99] with a view to cancelling if immediate action is not taken to bring into compliance and compensate past wrong doings.
- Establish a moratorium on issuing any new large-scale logging concessions or extensions to existing concessions until:
  - National and local forestry policies have been reviewed,
  - participatory land use planning with the customary landowners and local communities has been conducted and,
  - in partnership with the customary landowners significant increases in the area of protected forest have been agreed.

  This must be done to improve PNG's reputation as a forest manager and address the key forest carbon issues of 'permanence' and 'additionality' before they can be taken seriously for REDD financial incentives.

99 Such as the PNG Logging Code of Practice

- Must commit and take action to end destructive forest activities by 2015.
- Move to develop a legal and regulatory framework for forest carbon financing and/or Payment of Ecosystem Services that ensures protection of the rights of the customary resource holders as well as requiring multi-stakeholder governance and the development of national forest carbon standards.
- Be able to demonstrate that they have the capacity and willingness to monitor and enforce forest protection, the ability to monitor and independently verify emission reductions, and establish national carbon accounting, before engaging with the international community on carbon financing initiatives.
- Combine anti-corruption measures with measures to improve the management of forest resources; enhance law enforcement and increase the penalties for crimes in forest concessions
- Recognise and support small-scale community eco-forestry as a sector with considerable environmental, social and economic benefits as well as being compatible with maintaining forest carbon stocks.

Greenpeace calls on international governments to:

- Halt deforestation by 2015
- Support the Forest for Climate (TDERM) proposal and 'early action' towards it as the UNFCCC funding mechanism, which will reward developing countries that protect their forests.
- Stop the import of illegal timber and wood products and promote socially and ecologically responsible forest management worldwide
- Establish a comprehensive global network of protected forest areas
- Support measures being taken by timber producing countries to combat corruption and to strengthen law enforcement

Greenpeace calls on logging and timber trade companies to:

- Reject timber and wood products from illegal and destructive sources
- Buy only timber and wood products certified by the Forest Stewardship Council (FSC) or those in transition to FSC.
- Comply with national and international laws and regulations
- End human rights violations throughout the logging industry and timber trade.

Wawoi falls, Western Province. © Greenpeace/Birch

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Acronym list

CfRN	Coalition for Rainforest Nations
FAO	Food and Agriculture Organization
FSC	Forest Stewardship Council
GHG	Greenhouse Gas
GOPNG	Government of Papua New Guinea
GtC	Gigatonnes of Carbon
$GtCO_2$	Gigatonnes of Carbon Dioxide
ha	hectares
IFL	Intact Forest Landscape
IPCC (WG)	Intergovernmental Panel on Climate Change (Working Group)
ITTO	International Tropical Timber Organization
K	Kina
LUCF	Land Use Change and Forestry
$MtCO_2$	Megatonnes Carbon Dioxide
ODI	Overseas Development Institute
PNG	Papua New Guinea
PNG FIA	Papua New Guinea Forest Industries Association
REDD	Reducing Emissions from Deforestation and Degradation
RH	Rimbunan Hijau
tC/ha	tonnes Carbon per hectare
TDERM	Tropical Deforestation Emission Reduction Mechanism, otherwise known as Forests for Climate.
TFI	Turama Forest Industries
UNFCCC	United Nations Framework Convention on Climate Change
WRI	World Resources Institute


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