

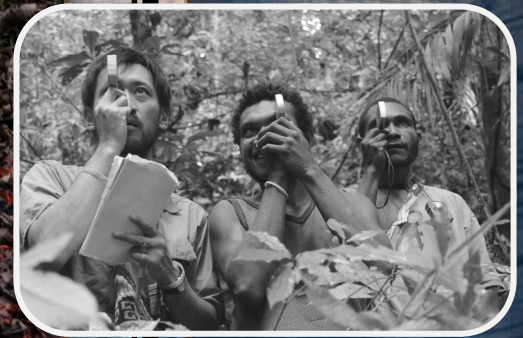
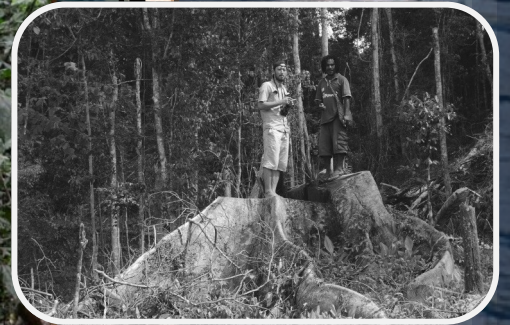
*Papua New Guinea
REDD+ Readiness—
State of Play*

*August
2012*



*IGES Discus-
sion Paper*

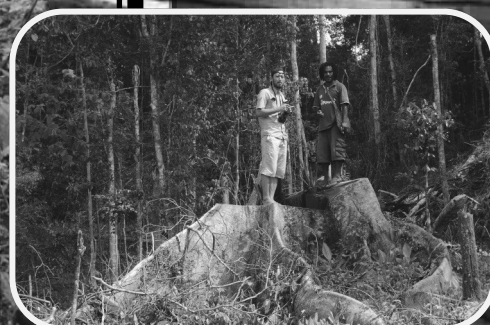
*No. FC-2012-
03*



*Papua New Guinea
REDD+ Readiness—
State of Play*



*August
2012*



Institute for Global Environmental Strategies (IGES)
Forest Conservation Project
2108-11 Kamiyamaguchi, Hayama, Kanagawa 240-0115 Japan
Phone: +81-46-855-3830 • Facsimile: +81-46-855-3809
E-mail: fc-info@iges.or.jp

Copyright © 2012 by Institute for Global Environmental Strategies (IGES), Japan

All rights reserved. Inquiries regarding this publication copyright should be addressed to IGES in writing. No parts of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without the prior permission in writing from IGES.

Although every effort is made to ensure objectivity and balance, the printing of a paper or translation does not imply IGES endorsement or acquiescence with its conclusions or the endorsement of IGES financiers. IGES maintains a position of neutrality at all times on issues concerning public policy. Hence conclusions that are reached in IGES publications should be understood to be those of authors and not attributed to staff-members, officers, directors, trustees, funders, or to IGES itself.

The aim of the IGES Forest Conservation Team is, through strategic research, capacity building and outreach, to contribute to the development of policies and instruments for the sustainable management and use of forest resources. IGES discussion papers are prepared for timely delivery to facilitate substantive discussion among policy makers and research communities.

Author: Henry Scheyvens

Cover photos: Forests in Madang Province, PNG. © Henry Scheyvens



Foreword

With the understanding that deforestation contributes to about 20 per cent of global anthropogenic greenhouse gas emissions, Parties to the United Nations Framework Convention on Climate Change (UNFCCC) have been attempting to reach agreement on how developing countries can be supported and rewarded for protecting and enhancing the carbon stocks in their standing forests — a concept known as REDD+. For international negotiators to reach agreement on a global REDD+ mechanism presents but one challenge; one that is proving a slow and difficult process. Countries preparing to participate in REDD+ are faced with many others. Where deforestation rates have been persistently high over many years and where forest management policies have largely been ineffective at a national scale, reforming governance structures, regulatory controls and incentive systems to protect forest carbon stocks, including in a manner that is socially acceptable (i.e. acceptable to all major forest stakeholders), will not be easy. The global REDD+ mechanism will also require participating countries to project future forest carbon stock changes under a business-as-usual scenario, to monitor and report actual forest carbon stock changes, and to attribute these changes to drivers. As developing countries mostly have incomplete and inconsistent forest datasets, and as some have never conducted a proper forest inventory, this presents another set of difficult challenges.

The Institute for Global Environmental Strategies (IGES) is monitoring the development of national REDD+ systems in selected key REDD+ countries in the Asia-Pacific region. This work is generally based upon outputs produced through a REDD+-related project funded by the Ministry of Environment, Japan.

This report presents the results of a study on REDD+ readiness in Papua New Guinea, a country with forests of immense importance to its people and the globe, and one that has been at the forefront of the international REDD+ movement. I would like to congratulate the author for succeeding in bringing together this report, which I anticipate will be useful to people working on REDD+ issues from local to international levels.

Hideyuki Mori

IGES President

August 2012



Acknowledgements

The author is grateful to a number of people who kindly shared information for this report, including Dr. Ruth Turia and Goodwill Amos (PNG Forestry Authority), Tatsuya Watanabe (Japan International Co-operation Agency), Martin Barl (Office of Climate Change and Development), Gwen Maru (UN-REDD), Paul Barker (Institute of National Affairs), and Thomas Paka (Eco-Forestry Forum). Yati A. Bun (Foundation for People and Community Development), and, at IGES, Dr. Enrique Ibarra Gene and Taiji Fujisaki, kindly provided their thoughts on an early draft of the report. The report also benefited from presentations and discussions at two national INA-IGES workshops on REDD+ and land management issues held at Gaire, NCD, in 2010 and 2011.

Any omissions and errors are entirely the responsibility of the author.



Acronyms and Abbreviations

AR CDM	afforestation / reforestation of the Clean Development Mechanism
AU\$	Australian dollars
AusAID	Australian Government Overseas Aid Program
BSDS	benefit sharing and distribution system
CCBA	Climate, Community and Biodiversity Alliance
CCDS	Climate-Compatible Development Strategy
CO ₂ e	carbon dioxide equivalent
COP	Conference of the Parties
DEC	Department of Environment and Conservation
DOS	development options study
EFF	Eco-Forestry Forum
EU	European Union
GEF	Global Environmental Forum
GHG	greenhouse gas
GIS	geographic information systems
GIZ	<i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i>
FAO	Food and Agriculture Organisation of the United Nations
FCPF	Forest Carbon Partnership Facility
FMA	forest management agreement
FoE-J	Friends of the Earth Japan
FORCERT	Forest Management and Product Certification Service
FPCD	Foundation for People and Community Development
FPIC	free prior informed consent
FRI	PNG Forest Research Institute
ha	hectare/s
IGES	Institute for Global Environmental Strategies
ILG	incorporated land group
INA	PNG Institute of National Affairs
IPCC	Intergovernmental Panel on Climate Change
JICA	Japan International Co-operation Agency
LEAF	Lowering Emissions in Asia's Forests
LULUCF	land use, land-use change and forestry
m	metre/s
MRV	monitoring, reporting and verification

Mt	megatonne
n/a	not applicable
n.d.	not dated
NCCC	National Climate Change Committee
NEC	National Executive Council
NFMS	national forest monitoring system
NGO	non-governmental organisation
NJP	National Joint Programme
NORAD	Norwegian Agency for Development Cooperation
OCCCT	Office of Climate Change and Carbon Trading
OCCD	Office of Climate Change and Development
OCCES	Office of Climate Change and Environmental Sustainability
p.a.	per annum
PDD	project design document
PES	payment for environmental services
PGK	Papua New Guinea Kina
PNG	Papua New Guinea
PNGFA	Papua New Guinea Forestry Authority
PSP	permanent sample plot
RED	reducing emissions from deforestation in developing countries
REDD+	Reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks
REL	reference emissions level
RIL	reduced impact logging
R-PIN	Readiness Plan Idea Note
R-PP	Readiness Plan Proposal
RS	remote sensing
SABL	special purpose agricultural and business lease
SPREP	Secretariat of the Pacific Regional Environment Programme
t	tonne/s
TWG	Technical Working Group
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNITECH	PNG University of Technology

US\$	United States dollars
USAID	United States Agency for International Development
VCS	Verified Carbon Standard
WMA	Wildlife Management Agreement



Executive Summary

- Papua New Guinea (PNG) is one of over 40 countries now preparing their national REDD+ systems with international support. In the international arena, PNG has been a leading proponent of REDD+ and has voluntarily pledged itself to a national emissions reduction target. Back at home, however, PNG's rich forest resource is under serious threat from logging operations, large-scale clearance, ostensibly for commercial agriculture, and shifting cultivation. While there are no recent quantitative assessments of forest cover change to support the contention that forest loss is accelerating, in the past few years there has been a sudden and dramatic increase in the area of land under special purpose agricultural and business leases, which are now posing a serious threat to PNG's forests.
- The main underlying drivers of deforestation and forest degradation can be grouped under the headings of governance, land and resource alienation policies, and development paradigm and resourcing. In PNG, 97% of the land is held under systems of customary tenure, involving clans or other kinship groups. The government has sought to promote development by increasing its control of land and natural resources. The dominant development discourse is one in which development is seen as something brought to rural areas from the outside, rather than something that rural communities, enabled by government, achieve through their own endeavours. Politicians seeking election promise their constituencies development through logging and commercial agriculture, while controls to ensure sustainability of natural resource exploitation and long-term local benefits are lacking. Given that political success in PNG is partly based on bringing "development" back to constituencies, commitment to actual REDD+ policy implementation is only likely if REDD+ brings significant benefits to the customary landowners.
- Strong interest in REDD+ is evident. Government has voluntarily committed PNG to reducing national greenhouse gas emissions by 50% below the business as usual forecast by 2030, and it sees REDD+ as playing a key role in delivering these emissions reductions. It established the National Climate Change Committee (NCCC) and the Office of Climate Change and Development (OCCD) to develop REDD+ strategy and coordinate REDD+ readiness. While some parts of government are clearly interested in REDD+, the actions of other parts suggest little interest, or no capacity to translate interest into any type of action.
- Just as governance issues have troubled the management of forests since independence, they have also troubled the REDD+ readiness process. PNG has been slow to secure international funding for readiness, mostly because of governance concerns and capacity issues, though a number of key documents are now under development, and progress is being made in some areas, particularly on technical issues related to monitoring, reporting and verification (MRV). Technical Working

Groups (TWGs) have been set up under the OCCD and bring together government and other stakeholders to develop policy-related instruments. Complaints have been raised that the TWGs function primarily as consultative groups that receive and provide comments on information from the OCCD. Tensions exist between the key departments involved in REDD+ readiness, though it appears that ways are being found to work around these. Progress on readiness will hopefully accelerate now that the June/July 2012 general elections are over.

- While PNG does not have a national REDD+ strategy, what can be viewed as elements of a strategy are in place. Documents on the public consultations to develop these elements is not readily available, making it difficult to assess the quality of the consultations. A particular concern is the lack of ownership for the Climate-Compatible Development Strategy, which points to the risks of relying heavily on international consultants to develop key elements of the national strategy.
- REDD+ project guidelines have been finalised by the OCCD, documents on free prior informed consent (FPIC) and benefit sharing and distribution system (BSDS) are under development, and studies on deforestation drivers, legal framework for REDD+, etc. are planned. The REDD+ project guidelines are detailed and their feasibility now needs to be assessed through demonstration activities.
- The Japan International Co-operation Agency and UN-REDD are the two largest funders of PNG's REDD+ readiness, and are concentrating their efforts on the Reference Emissions Level (REL) and MRV. In addition to capacity building, investment is being directed at building data sets and techniques to use remote sensing and ground-based monitoring for the REL and MRV. The OCCD optimistically expects that an operable MRV system can be in place within three years.
- A number of demonstration activities are under development, with the Forestry Authority (PNGFA) playing a key role and NGOs undertaking a number of initiatives with customary landowners. The Department of Environment and Conservation (DEC), which could have an important role to play in promoting REDD+ through conservation instruments such as Wildlife Management Agreements, appears to have expressed little interest in being directly involved in piloting.
- REDD+ readiness in any country that must deal with fundamental governance issues in order to manage forest resources sustainably is going to be slow and difficult. REDD+ readiness cannot be rushed. Interagency collaboration, policy coordination, public consultations and stakeholder engagement are all required. Institutional and technical capacity must be built. Transparency and accountability must be part and parcel of all processes. When these elements are lacking, problems invariably arise and remedial actions are required.



Table of Contents

Foreword.....	v
Acknowledgements.....	vi
Acronyms and Abbreviations.....	vii
Executive summary.....	x
Table of Contents.....	xii
Figures and Tables.....	xiii
1. Introduction.....	1
2. Forest Resources and People.....	4
2.1. Forest cover and forest cover change.....	4
2.2. Forest tenure.....	6
2.3. Proximate causes and underlying drivers of deforestation and forest degradation.....	7
2.3.1. Proximate causes.....	7
2.3.2. Underlying drivers.....	11
3. Interest in REDD+.....	17
4. Technical and Financial Assistance.....	18
5. Organisational Framework for REDD+ Readiness and Implementation.....	21
5.1. National Climate Change Committee.....	21
5.2. Office of Climate Change and Development.....	22
5.2.1. Technical Working Groups.....	24
5.3. Forestry Authority.....	25
5.4. Department of Environment and Conservation.....	25
5.5. Sub-national government.....	26
5.6. Non-state actors.....	26
6. National REDD+ Strategy.....	26

6.1. Process of developing strategy.....	26
6.2. Elements of a REDD+ strategy	28
6.2.1. REDD+ activities outlined in the CCDS	29
6.2.2. National REDD+ Project Guidelines.....	29
6.2.3. FPIC, BSDS and REDD+ funding	31
7. REL and MRV.....	32
8. REDD+ Demonstration Activities / Projects.....	34
8.1. PNGFA REDD+ pilots.....	35
8.2. Kamula Doso.....	36
8.3. NGO-led REDD+ pilots	36
8.4. Other possible pilots.....	36
9. Forest Carbon Rights	37
10. Conclusion	38

Figures and Tables



Figure 1: Essential elements of national REDD+ systems	2
Table 1: PNG forest cover, 1975-1996	6
Table 2: PNG annual log exports, 2006-2011.....	11
Table 3: Some of the REDD+ funding in PNG	19
Figure 2: Organisational framework for REDD+ in PNG	22
Figure 3: OCCD organisational structure.....	23
Table 4: REDD+ policies proposed for PNG in the Climate-Compatible Development Strategy..	30
Figure 4: Potential PNG System for MRV under the UNFCCC	33
Table 5: Some of the proposed / on-going demonstration activities in PNG	34



1. Introduction

In 2005, Papua New Guinea and Costa Rica proposed reducing emissions from deforestation in developing countries (RED) to the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) as an item for its agenda. In the following years, the COP broadened the concept to include reducing emissions from forest degradation and the conservation and enhancement of forest carbon stocks (REDD+). At the 17th COP in Durban in December 2011, Parties agreed that REDD+ would be part of the future climate agreement to be implemented from or after 2020.

Negotiators have agreed that ultimately REDD+ must be implemented through national systems. Reflecting on the outcomes of the negotiations, the basic elements of a national REDD+ system can be seen as (i) a strategy or set of REDD+ activities aimed at protecting and/or increasing existing forest carbon stocks, (ii) a reference (emissions) level (REL/RL) against which the impacts of REDD+ activities can be measured, (iii) a national forest monitoring system (NFMS) to monitor changes in forest carbon stocks, as part of a monitoring, reporting and verification (MRV) framework for REDD+, (iv) an organisational framework to implement, monitor and report on the REDD+ activities, (v) a national registry to control claims of REDD+ impacts on carbon stocks, and (vi) a system to monitor and report on the safeguards that Parties have agreed for REDD+ (Fig. 1, overleaf).

To develop these systems will take time.

Combatting the drivers of deforestation will be difficult as some of these are deeply entrenched in economic and political systems, as evidenced by the fact that global rates of deforestation have hardly declined over the past two decades. Preparing a national REDD+ system, or what is commonly referred to as “REDD+ readiness”, requires commitment at the highest political levels to ensure proper assignment of roles, interagency collaboration, proper public consultation and stakeholder engagement, much of which has been missing from natural resource management in developing countries. Technically, REDD+ also poses immense challenges. A proper accounting of forest carbon stock changes is required, yet many countries are still to conduct a proper forest inventory.

PNG is one of over 40 countries now preparing their national REDD+ systems with international support. It has an extensive and rich forest resource that provides an important array of ecosystems services, from local to national levels, and has important global values in terms of biodiversity and climate change mitigation. In the international arena, PNG has been a leading proponent of REDD+ and has voluntarily pledged itself to a national emissions reduction target. Back at home, however, forests are under serious threat from logging operations with poor environmental performance, large-scale clearance, ostensibly for commercial agriculture, and shifting cultivation.

Just as governance issues have troubled the management of forests since inde-

Figure 1: Essential elements of national REDD+ systems



pendence, they have also troubled the REDD+ readiness process. PNG has been slow to secure international funding, mostly because of governance concerns and capacity issues, though a number of key documents are now under development, and progress is being made in some areas, particularly on technical issues related to RELs and MRV.

This report provides an overview of the state of REDD+ readiness in PNG, as of August 2012. It is part of a regional study on national REDD+ readiness conducted by the Institute for Global Environmental Strategies (IGES) that aims to share information and lessons from readiness processes. Information for the report is drawn from the literature and interviews with REDD+ stakeholders in PNG. The report is also informed by discussions at two

national workshops in PNG on REDD+ organised by the PNG Institute of National Affairs and IGES.

Section 2 of the report sets the scene for national REDD+ readiness in PNG by providing a discussion on forest resources and trends, the importance of forests for local people, tenure arrangements, and proximate drivers and underlying causes of deforestation and forest degradation. Unlike in most developing countries where forest land and resources are mostly owned by the state, 97% of the land in PNG is held by local groups or clans under customary tenure systems. In order to bring “development” to rural areas, the state has pursued a policy of alienating these customary rights to organise large-scale forestry and commercial agriculture.

In Section 3, the report points out the need for high level government commitment for REDD+ to succeed. It finds that some parts of government are interested in implementing the concept, while the actions of other parts suggest no interest, or no capacity to translate interest into any type of action.

Section 4 reviews international support for REDD+ readiness in PNG, finding that much of the assistance is directed at the development of the REL and MRV.

Section 5 discusses the organisational framework for REDD+ readiness. Performance problems of the earlier incarnations of the Office of Climate Change and Development caused PNG international embarrassment and there are tensions between key agencies working on REDD+ readiness, though these are being worked through or around. PNG NGOs appear mostly cautiously supportive of REDD+ as a new resource management option for customary owners, and are looking for meaningful ways in which they can contribute to readiness processes.

Section 6 discusses REDD+ strategy. PNG does not have a national REDD+ strategy, but what can be considered elements of a strategy are under development. Progress has been made on a number of key documents, such as the REDD+ project guidelines. The report finds that proper public consultation and stakeholder engagement are particularly critical for the development of the strategy, and must not be sacrificed by government agencies concerned to “show results”. Lack of ownership within PNG of the Climate-Compatible Development Strategy has arisen because of the reliance on an international consultancy to develop the document.

Section 7 is on the development of the REL and the national MRV system. The government is hoping to have an MRV system in place in three years, but given the past pace of readiness, this could well be overly optimistic.

Section 8 provides an overview of REDD+ demonstration activities. For PNG, these will play important roles in generating experiences to inform the development of the national REDD+ policy framework as well as demonstrating whether REDD+ can actually work on the ground, i.e. whether payments can be tied to demonstrated performance in reducing emissions.

Section 9 discusses the issue of carbon rights, focusing on a recent report by O’Brien Lawyers, PNG that argues that various legislative reforms should be considered before the trading of carbon off-sets takes place.



2. Forest Resources and People

Papua New Guinea has a total land area of 46.17 million hectares (ha), 40.53 million ha of which is the eastern part of New Guinea Island, with the remainder divided between the larger islands of New Britain, New Ireland, Bougainville and Manus, and hundreds of small islands (Shearman et al. 2008, 9). Its diverse topography includes a mostly mountainous terrain, coastal lowlands and rolling foothills. Forests cover about 60% of the country and can be found from sea level to elevations above 4,000 metres on landscapes that range from seasonal savannah to continuously wet cloud forest. PNG is well-known for biological endemism and diversification and is thought to hold more than 5% of the world's biodiversity (Takeuchi 1999; Miller et al. 1994), making it one of the world's most floristically rich countries. Its biodiversity includes an estimated 20,000 species of higher plants (about 7.5% of the world's total), over 2,000 species of orchids (more than any other country), a similar number of fern species (Blaser et al. 2011), and over 2,000 timber species in its lowland forests (FAO 2000).

With over 800 indigenous languages, PNG is also one of the world's most culturally diverse countries. Over 80% of PNG's population of about 6.2 million reside in rural areas (OCCD 2012c, 24), mostly in separate communities with only a few hundred people who maintain close relationships with the land and natural resources. 97% of the forests of PNG are owned by the people, not the state, under customary tenure arrangements. PNG's coastal

and upland communities have developed intimate relationships with their forests, which they depend upon for some of their food (especially protein sources) and medicines, soil and watershed protection, and for materials for construction and cultural activities.

Most people live traditional lifestyles based on shifting cultivation, hunting, fishing and gathering, and may earn a small amount of income from the sale of garden produce, food and materials gathered from the wild, and small-scale cash cropping, such as cocoa, coconut, betel nut and coffee. Securing sufficient protein is a concern and an inadequate diet, coupled with a lack of government services and the tough living conditions, are responsible for the low life expectancy reported in some areas. Many communities are remote and difficult to access, resulting in uneven economic development, and maintaining law and order is a problem in some locations. The challenges of distance, isolation, lack of transport and a shortage of skilled birth attendants can make childbirth hazardous (UN n.d. (a)). In these circumstances, communities are interested in deriving an income from their forests and lands.

2.1. Forest cover and forest cover change

Amongst scholars there is a great deal of disagreement over forest cover in PNG, due in part to their different assumptions and methods (see Shearman et al. 2008, Annex 3; Filer et al. 2009; Shearman et

al. 2010). This disagreement extends to how land cover should be classified, how much forest has existed at any one point in time, rates and drivers of deforestation and forest degradation, and the responses of forests to disturbance.

Shearman et al. (2010) describe three distinct phases in the recent mapping of forest vegetation in PNG. These are (i) the use of aerial photography from the early 1970s to generate 40 m spatial resolution topographic and vegetation mapping (Coulthard-Clark 2000), (ii) use of the same aerial photographs and moderate resolution printed satellite images to produce vegetation maps in the early 1990s (Hammermaster and Saunders 1995), and (iii) the digital processing of high resolution satellite data to produce vegetation maps in the early 2000s (Shearman et al. 2008).

In PNG, forests, including mangroves, are officially classified into 15 classes. Table 1 (overleaf) provides the total area of each of these classes for 1975 and 1996, as reported by government to the Food and Agriculture Organisation of the United Nations (FAO). The figures reported are based on work conducted during the first 2 mapping phases described above. The 1975 forest area was based on aerial photographs and the 1996 forest area was generated by visual comparison of unorthorectified hard copy Landsat TM prints (Shearman et al. 2008, 117). Based on these figures, the total forest cover in 1975 was 33.67 million ha, and this declined by 8.8% to 30.70 million ha in 1996, meaning an average annual forest loss of 0.42% over the 21-year period.

In their more recent study, Shearman et al. (2008) developed a forest map for 1972 using the same set of aerial photographs and a forest map for 2002 using

Landsat ETM+ and SPOT4 and SPOT5 imagery. They estimated total forest cover in 1972 at 38 million ha, of which 33.23 million ha were rainforest, 3.4 million ha were swamp forest, 0.6 million ha were mangroves, and 0.75 million ha were evergreen forest. Of the 33.23 million ha of tropical rainforest in 1972, Shearman et al. (2008) estimated that 28.2 million ha remained in 2002, of which 25.3 million ha were intact forest. This equates with an average annual forest loss of 0.51% (or 0.80% for intact forest). Most vulnerable have been the lowland rainforests, of which 30% were cleared or degraded between 1972 and 2002, and especially vulnerable were lowland rainforests in New Ireland (53% cleared or degraded) and New Britain (46% cleared or degraded) (ibid.).

There is disagreement in the literature over whether forest cover change has been accelerating in recent years. The Readiness Plan Proposal (R-PP) submitted in August 2012 to the World Bank's Forest Carbon Partnership Facility reports an increase in forest loss. It calculates an annual deforestation rate of 1.55% from 2005-2010 based on FAO's *Global Forest Resources Assessment 2010* (OCCD 2012c, 22). Shearman et al. (2008), who estimate that in 2002 annual deforestation reached 0.77% and degradation 0.64%, also suggest acceleration in forest loss, though their findings were challenged by Filer et al. (2009). While there are no recent (e.g. since 2010) quantitative assessments of forest cover change to support the contention that forest loss is accelerating, there has been a sudden and dramatic increase in the area of land under special purpose agricultural and business leases in the past few years that is now posing a new and serious threat to PNG's forests (see Section 2.3).

Table 1: PNG forest cover, 1975-1996

National classes		Area (1,000 ha)		
		1975	1996	1996
Low Altitude	Large to medium crowned forest (P1)	3260.8	798.2	2875.1
	Open crowned forest (P0)		1252.1	
	Small crowned forest (Ps)		824.8	
	Terminalia brassii forest (PTb)		0	
Low Altitude	Large crowned forest (Hl)	17946.8	320.7	17171.1
	Medium crowned forest (Hm)		13839.4	
	Small crowned forest (Hs)		3011	
Lower Montane Forest	Small crowned forest (L)	8109.9	7303.6	7745.4
	Small crowned forest with conifers (Lc)		441.8	
Montane Forest (above 3000 m) (Mo)		177.4	177.4	
Dry seasonal Forest (D)		1062.9	778.6	
Littoral Forest (B)		86.5	86.5	
Seral Forest (F)		171	46.1	
Swamp Forest (Fsw)		2250.3	1267.3	
Mangrove (M)		601.6	550	
Woodlands (W)		2693.8	2693.8	
Savannah (Sa)		1190.6	1190.6	
Scrub (Sc)		601.4	601.4	
Grassland encompassed by FIM summary report (G)		3241.1	3241.1	
Other land uses		5015.8	7985.5	
Total area		46409.9	46409.9	

Source: FAO (2005, 10).

2.2 Forest tenure

In PNG, 97% of the land is held under systems of customary tenure, involving clans and other kinship groups. Customary tenure is established by kinship systems that apply to each social and linguistic grouping (Holzknecht 2011). Customary rights recognised by the Constitution include rights to all natural resources, with the exception of minerals, petroleum, water and genetic resources. This means that any “development”, including REDD+, of PNG’s forests and the land on which they stand cannot take place without the consent of the customary landowners.

As of 2010, the government had acquired timber rights from customary landowners for selective harvesting of over about 12 million ha of forest. Of this, 10 million ha were under timber permits (Amos 2010), though Blaser et al. (2011) suggests that only about 4.9 million ha could be considered to be under active timber extraction licences in 2007. Customary landowners have given the rights to developers to another 5 million ha under special purpose agricultural and business leases.

As for protected forests, Blaser et al. (2011) note that PNG has no legal national definition of protected areas, and that the concept is used vaguely, with differ-

ent figures on the total extent of protected areas reported by the PNG Forestry Authority (PNGFA) and the Department of Environment and Conservation (DEC). These figures range from 547,000 - 1.94 million ha (Blaser et al. 2011; Nicholls 2010). About 80% of the protected forests are Wildlife Management Areas established by communities (Nicholls 2010).

2.3 Proximate causes and underlying drivers of deforestation and forest degradation

2.3.1 Proximate causes

As noted above, there is disagreement among scholars over the drivers of deforestation and forest degradation, especially over how forests respond to selective logging, what additional human and natural disturbances may occur after the logging has taken place, and how shifting agriculture is impacting forests (see Shearman et al. 2008; Filer et al. 2009; Shearman et al. 2010).

In *Climate-Compatible Development for Papua New Guinea (2nd draft)* (CCDS), the government sets out what it (and the McKinsey and Co. consultants who provided major inputs to the report) believes to be the major climate change mitigation strategy options for PNG. These basically reflect what the government believes to be the main proximate causes of deforestation. The report anticipates that emissions from forestry will increase from 49-51 Mt CO₂e/year at present to 45-62 Mt CO₂e/year by 2030, on the assumption that 15% of the selectively logged area will be deforested and the remainder will be degraded after logging (GoPNG 2010, 15). The report also foresees a significant increase in emissions from deforestation

and forest degradation in the agriculture sector, from 24-37 Mt CO₂e/year to 29-47 Mt CO₂e/year by 2030, which it ascribes mainly to shifting agriculture, and to a much lesser extent, commercial agriculture. Fire is identified as another source of emissions. In other words, in order of importance, this report sees logging, shifting agriculture, commercial agriculture and fires as the main proximate causes of deforestation and forest degradation.

Based on their forest cover mapping for 1972 and 2002, Shearman et al. (2008) identify the major drivers of forest change - both deforestation and forest degradation - as timber harvesting (48.2%), subsistence agriculture (45.6%), forest and grassland fires (4.4%), commercial agriculture (1.0%), and mining, infrastructure and urban expansion (0.8%). They found subsistence agriculture to be the main proximate cause of deforestation, being responsible for the loss of 3.6 million ha of forests over the study period, though Filer et al. (2009) argue that over the long term shifting agriculture should mostly be viewed as a driver of forest degradation, rather than deforestation, as after 20-30 years of fallow the cleared land will be "secondary forest". Shearman et al. (2008) found logging to be responsible for 0.9 million ha of deforestation and 2.9 million ha of forest degradation. Commercial agriculture was found not to be so significant for the study period, though has become a major threat to forests over the past few years. What appear to now be the three main proximate causes of deforestation and forest degradation in PNG are discussed in more detail below.

Shifting agriculture

Shifting agriculture is key to the subsistence of rural communities. People clear forests to establish gardens for vegetables, fruits, nuts, etc. for household consumption, and some of this produce may be sold at local markets to generate a small amount of income. After several planting cycles, gardens are abandoned and more forest is cleared to establish new ones. This can be either primary forest or secondary forest that grows as the former garden areas recover (Shearman et al. 2008, 40). When population density is low, the gardens are spread out and they revert back to forests. PNG is experiencing high population growth of 2.37% per year for 2005-2010 (United Nations Population Division 2010) and this appears to be increasing the pressure on forests from shifting agriculture. Shearman et al. (2008) suggest that higher population density results in greater deforestation due to a shortening of the swidden cycle.

In the CCDS the government estimates that avoiding deforestation and forest degradation from small-scale agriculture has an abatement potential of 12-20 MtCO₂e/year by 2030 at an opportunity cost of US\$ 1-2/t CO₂e and suggests this can be achieved through agricultural extension services. However, no explanation of how these estimates are derived is provided, and the low opportunity cost is likely to be highly misleading. For REDD+ to provide an alternative to shifting agriculture in isolated areas will be difficult as local people know they can depend upon this form of agriculture to provide most of their food requirements. Also, further analysis is required to better understand what is happening to carbon stocks in garden areas, which is compli-

cated by the fact that both primary and secondary forests are being cleared.

Timber harvesting

Most of the logging that takes place in PNG is selective and is expected to be the foundation for a sustainable national timber industry. The Forestry Act 1991 requires logging to be on a sustainable yield basis, i.e. logs should be harvested at a rate and using practices that allow the forest to sufficiently recover after logging to maintain harvest yields. Supplementary regulations and guidelines, such as the Key Standards for Selective Logging in PNG 1995, Planning Monitoring and Control Procedures, and the Logging Code of Practice 1996, have been developed to achieve sustainable yields. Selective logging on a sustainable yield basis would reduce time-averaged carbon stocks but would maintain these at the reduced level. This conforms to the notion of “sustainable management of forests”, which is one of the five REDD+ activities agreed by international negotiators.

While PNG has the necessary regulatory framework to ensure sustainable yields (2003/2004 Review Team 2004), Blaser et al. (2011) concluded that only about 193,000 ha of forest under logging concessions can be considered to be under sustainable management. A government commissioned review of existing logging projects found that “under the current market conditions, the current levels of log export tax, the current non-compliance with environmental standards, and the inadequate monitoring and control imposed by government regulating agencies, timber production as currently practiced is not sustainable” (2003/2004 Review Team 2004, ix).

The underlying drivers of poor environmental performance of logging operations in PNG are discussed in Section 2.3.2.

For “sustainable management of forests” REDD+ requires quantification of the impacts of logging on forest carbon stocks, in terms of both immediate impacts and the responses of carbon stocks after logging has taken place. Key issues for REDD+ are the amount of biomass removal associated with harvesting (“removal” here refers to not only the extraction of logs but also the residual damage caused by the construction of roads and skidding tracks, etc.) and whether the forest degrades further or recovers after logging, and at what rates.

PNG has a network of 135 1 ha permanent sample plots (PSPs) that are located across the country, mostly in lowland and low montane selectively harvested forests. The plots are maintained by the PNG Forest Research Institute (FRI) and have been remeasured at various intervals, depending on funding and accessibility. A number of studies have used these plots to estimate forest biomass before and after logging.

Alder (1998) suggests that the basal area of an un-logged forest in PNG reaches a dynamic equilibrium of about 32 m²/ha, while Yosi (2004, cited in Yosi 2011) found an average basal area of unlogged forests of 26.9 m². Yosi (2004) concluded that logging reduced the basal area to about 17.8 m²/ha, while Oavika (1992, cited in Yosi 2011) found that logging reduced the initial basal area by about 10 m²/ha. More recently, Yosi (2011) found that the basal area in the 1 ha plots in logged-over forest was about 17

m², representing a 43% decline from pre-logging levels. Residual damage is likely to be very high. Enright (1978, cited in Abe 2007) found that after the removal of 21% of the stems in a logging operation in Bulolo, only 17% of stems remained alive.

In addition to providing data for the quantification of immediate biomass removals/loss from logging, the 1 ha PSPs also provide an indication of how forests respond to logging over time (assuming no further major disturbance). Yosi (2011) analysed data from 84 of the 135 FRI PSPs that were in selectively logged forests and were unaffected by fire. He found that basal area generally increased after harvesting, and associated this with forest recovery, but he also found that considerable variability existed, with 75% of the plots showing an increase in basal area and 25% of the plots showing further decline. Abe (2007) found the forest in a 1 ha plot he established in lowland tropical rainforest in the southeast of the Huon Peninsula to be recovering after logging.

While these studies provide important quantitative data on forest response to logging, they do not investigate further human or natural disturbances that are likely to take place after logging. Likely disturbances are discussed by Shearman et al. (2008) and Filer et al. (2009) and include natural fires, conversion for shifting agriculture, and further logging by new operators and local people with portable sawmills. Over the longer term, whether forests fully recover to their undisturbed biomass levels also depends on the cutting cycle and the volume of timber extracted. Filer et al. (2009) find that the degree to which selective timber harvesting will result in long-term

reduction in forest carbon stocks is highly uncertain, highlighting the need for further analysis to understand the most likely post-logging forest modification scenarios and their implications for forest carbon stocks.

Commercial agriculture

For the period 1972 - 2002, Shearman et al. (2008) did not find commercial agriculture to be a major driver of forest change. However, over the past 10 years the situation has changed dramatically as the “global land grab” (Cotula et al. 2009) appears to have played itself out in PNG. Filer (2011) reports that from July 2003 - January 2011 the development rights to almost 5 million ha, or 11% of PNG’s total land area, were issued to national and international developers under lease lease-back arrangements known as special purpose agricultural and business leases (SABLs). A recent Greenpeace report states that 75% of the leases are held by foreign-owned corporations (Winn 2012, 3).

SABLs were made possible under the Land Act from 1996 (National Research Institute 2011). For a SABL to be issued over customary land, the customary landowners must first lease their land to the state, which then leases the land to a lessee for development purposes. The intention of the system was to enable the customary landowners to access credit for agricultural ventures on their land, but this has provided a loophole for large-scale capture of land rights (Holzknecht 2011, 4).

The leases are granted by the Departments of Lands and Physical Planning, after which approval for the proposed activity is given by the Department of

Agriculture and Livestock. Developers can clear any forest under a lease, after acquiring a Forest Clearance Authority from the Forestry Authority. The PNGFA has attempted to control the process of clearance by making clearance authorities conditional on the progress of planting for agro-forestry (INA-IGES 2010).

Filer (2011) found that it was not easy to determine the extent to which SABLs were being used by developers primarily to gain access to timber without any real intention of investing in agriculture. While it is impossible to develop an overall picture of the intentions of the developers, logging does appear to be one of these. A senior PNGFA official reported that some developers are requesting Forest Clearance Authorities from the PNGFA for agro-forestry projects under SABLs, when clearly their proposals are for logging projects (INA-IGES 2010). Greenpeace reports that foreign-owned logging companies hold SABLs over 190,000 ha, while SABLs for 445,400 ha use the addresses of logging companies as their principle base of business (Winn 2012, 3). While oil palm development is the main justification for SABLs, the Greenpeace study found that only SABLs over 311,000 ha are held by listed oil palm or biofuel companies.

Greenpeace explains that amendments of sections 90a and 90b of the Forestry Act 1991 in 2007 facilitated the entry of logging companies into SABLs (Winn 2012, 4). Developers with a Forest Clearance Authority have the rights to any timber in the lease area without having to go through the difficult and lengthy 34-step process of Forest Management Agreements (FMA) for selective logging, as set out in the Forestry Act 1991. Gaining access to timber through

SABLs is far easier than the FMA process, with the Forest Authority reporting that it took about 11 years for it to develop its last forestry project under the Forestry Act (INA-IGES 2010).

SGS, which is contracted by the government to conduct export log monitoring, reports that in 2011 PNG log exports hit an all-time high of 3.5 million cubic metres, well above the previous record of 3 million cubic metres (Radio Australia 2 February 2012). Logs from SABLs made a significant contribution, being responsible for about 20% of the total (Table 2).

How much deforestation are SABLs responsible for? PNG's R-PP states that about 2.3 million ha of primary and secondary forests are now under SABLs, and that Forest Clearance Authorities and Environmental Permits have been issued over 670,000 ha (OCCD 2012c, 32). SGS estimates that in 2011 log exports from SABLs came from the clearing of about 320,000 ha of forest (Radio Australia 2 February 2012).

A Commission of Inquiry into SABLs was appointed in May 2011 by then acting Prime Minister Sam Abal, who issued an immediate moratorium on the granting

of any new SABLs, Forest Clearance Authorities and Environmental Permits (OCCD 2012c, 32). The Commission finalised its report in May 2012, but as of August 2012 is yet to present the report to the Prime Minister. The report is likely to take some time to be released. Informants familiar with the Commission of Inquiry believe that some politicians have vested interests in some of the SABLs and put pressure on reporters to paint a favourable picture of the leases.

Despite setting up the Commission, the government plans for substantial growth in the production of the country's four major export crops (palm oil, coffee, cocoa and copra) over the next 20 years, with the area under oil palm alone estimated to grow by 5-6% annually (GoPNG 2010), suggesting that clear-felling will remain a serious threat to PNG's forests for some time to come.

2.3.2 Underlying drivers

In PNG, the main underlying drivers of deforestation and forest degradation can be grouped under the headings of governance, land and resource alienation policies, and development paradigm and resourcing.

Table 2: PNG annual log exports, 2006-2011

Year	Total log exports (millions m ³)	Log exports from SABLs (millions m ³)	SABL exports as percentage of total
2006	2.7	nil	nil
2007	2.8	15,000	0.05%
2008	n/a	126,000	5%
2009	2.1	133,000	6%
2010	2.999	504,000	17%
2011	3.5	650,000	19%

Source: (Radio Australia 03 February 2012), figures from SGS PNG

Governance

While PNG has “an impressive record of democratic longevity in the developing world” (Faal 2007, 5), vote rigging, intimidation, violence and other forms of corruption are thought to be common, no government has been able to last its full term, and politics is built around personalities and promises, with politicians prone to engaging in short-term rent seeking activities (ibid.). The government commissioned 2003/2004 Independent Forestry Review Team explained that in PNG there are many hundreds of traditional political communities (tribes, villages or clans) most of whom aspire to place their representative in the national parliament, both for the prestige that this brings and to seek access to “development” (2003/2004 Review Team 2004, 6). A reciprocal relationship develops between voters and their elected representatives through which voters aim to secure tangible benefits such as roads, schools, royalties from development projects, etc., and the members of parliament aim to win re-election (Faal 2007). Consequently, a major concern of members of parliament is to secure portfolios that enable them to bring benefits back to their constituencies (ibid.).

Turning to forestry, Bird et al. (2007) suggests that the enactment of the Forest (Private Dealings) Act 1971, which empowered customary owners to sell their timber directly to outsiders, and, in the early post-independence period, a sudden need to generate revenue from forestry to realise the aspirations of the new national leaders, undermined the previously established national forest control system. The exact nature of this erosion of controls was revealed by a Commission of Inquiry into Aspects of the Timber Indus-

try led by Judge Thomas Barnett. In its report (popularly referred to as the Barnett Report) released in 1989, the Commission describes a high level of corruption amongst parliamentary ministers and, to a lesser degree, amongst the heads of the Department of Forests, the Forest Industries Council and the provincial governments (ibid.). The Commission found that some loggers were able to “bribe or influence customary landowners, provincial premiers, national and provincial ministers, politicians and public servants in order to gain access to the timber resource” due to a lack of planning and pre-determined projects (ibid.)

In response to the Commission’s findings, the government undertook sweeping policy and legislative reforms. A new forest policy was published in 1991, after a consultative process involving national and provincial governments, the forest industry and some civil society representation (ibid.). A new forestry act was introduced in the same year and in 1993 the PNG Forestry Authority was established with the mandate to manage the forest resources of PNG as a renewable resource.

Despite the legislative and organisational reforms, concerns remained that forestry was beset by deeply entrenched problems, leading to government, with World Bank support, commissioning 5 independent reviews between 2000 and 2005. The 2003/2004 Independent Forestry Review Team found that PNG has all the necessary policies, laws, regulations and guidelines to ensure that timber production is sustainable, but that committing to the policy and ensuring the available tools are used effectively are major challenges (2003/2004 Review Team 2004). The 2003/2004 Review Team noted that “the political will and support necessary to

achieve the forestry objectives set out in the Constitution and the National Forest Policy 1991 depend on the personal interest and commitment of the politically powerful of the day. This in turn may well depend on the importance or otherwise, of logging in their electorate” (ibid., 6). This observation is supported by the comments of one PNGFA officer who recalled one year when the PNGFA suspended 33 timber licenses, explaining that in that year forestry had a good Minister and a good Secretary (INA-IGES 2010).

The major governance problems that affect the development of forestry projects also affect SABLs. In a Radio Australia interview, Colin Filer reported that senior public servants fronting up to the Commission of Inquiry into SABLs stated that they were under political pressure from government ministers to sign approvals, suggesting that corruption was at the political rather than the bureaucratic level (Radio Australia 1 March 2011).

Policies and processes to alienate resource rights from the customary owners

Recognition of customary forms of land and resource ownership in PNG is enshrined in the Constitution. 97% of the country and 99% of forest lands are owned by the people of PNG according to their customary institutions (Bird et al. 2007). In effect, this means that boundaries are not surveyed and that title is not registered. Under Section 132 of the Land Act 1996, customary land in PNG is: vested communally in a clan, tribe or extended family; inherited through lineage (either patrilineal or matrilineal); has boundaries which are established by memory, transmitted through oral tradition, and often use natural features in

their establishment; is managed according to customary law; and cannot be sold, leased (except for lease-leaseback) or otherwise disposed of, except to other PNG citizens in accordance with custom (OCCD 2012c, 24). Dealings in land are restricted in order to provide members of a community self-sufficiency and security, unite them as a unit, and protect them from becoming a landless class (ibid.).

The Land Groups Incorporation Act was introduced in 1974 to facilitate and control land and resource development. This Act gives legal recognition of the corporate status of certain customary and similar groups, and confers on them, as corporations, the power to acquire, hold, dispose of and manage land, including the right to enter into agreements over their land. Under the Act, landowners within a group form a single legally constituted body which is called an Incorporated Land Group (ILG) (Bird et al. 2007).

As Tararia and Ogle (2010) point out, although the intention of the Act was to enable the ILGs to manage their own land, ILGs have generally been used to acquire landowner consent for resource exploitation and for distributing benefits.

For both forestry and agricultural development projects under SABLs, proper implementation of the land group incorporation process has proved problematic. A basic problem has been ensuring that all customary owners are members of any ILG claiming rights over their area.

The problem of improper representation and unfair benefit distribution also exists in landowner companies, a concept that was tried under the 1979 Forest Policy. In his study of one landowner company in Pomio, East New Britain, Lattas (2011)

describes a situation in which the landowner company was a privileged group looking after itself while purporting to represent the interests of landowners in the area, and was co-opted through various gifts by an overseas logging company to manage public relations and, through a divide-and-rule strategy, to ensure that local opposition did not interfere with the logging operations.

Another problem is that while the Registrar of Land Groups is responsible for assisting communities through the ILG process, due to its lack of capacity, for forestry projects this responsibility has been taken on by the PNGFA, and in some cases logging companies, posing a potential conflict of interest (*ibid.*). Again due to lack of capacity, many ILGs are not registered by the Registrar of Land Titles in the Department of Lands and Physical Planning (*ibid.*).

The problems with the ILG process have been further highlighted by the recent spate of SABLs issued. Both Holzknicht (2011) and National Research Institute (2011) suggest failure by the responsible government departments to ensure that landowners gave their free prior informed consent (FPIC) before giving away the development rights to their land. Colin Filer describes the lack of FPIC preceding the granting of some SABLs as follows:

... in some cases there have clearly been ground-breaking ceremonies or some kind of ceremonial occasion where speeches are made about some new project that is going to happen on this land, in other cases not. Where there have been public ceremonies politicians and public servants turn up and, presumably, it is hard to tell from the newspaper accounts, a small crowd

of landowners turns up, perhaps even a large crowd, and they all make speeches and they all seem to be happy for a while. In other cases, there is no record of such ceremonies taking place and, to judge by the newspaper accounts of the proceedings of the Commission of Inquiry, there are clearly several cases, probably most cases, where large areas have been converted where most of the landowners simply don't know what is going on (Radio Australia 1 March 2011).

The National Research Institute also found that: preliminary checks on the proposed SABLs were not conducted by government authorities; the procedures for Department of Lands and Physical Planning officers to establish boundaries by walking the perimeter of proposed land development were in many instances not complied with; that the required Land Investigation Reports were not verified by the Provincial Administrations; and that the award of leases was based on impromptu procedures (National Research Institute 2011). These and other failures are further elaborated in the Greenpeace report on SABLs (see Winn 2012).

Some hope that the Land Groups Incorporation (Amendment) Act 2007, which was passed by the National Parliament on 19 March 2009, will strengthen the position of landowners in controlling development of their resources. One major change introduced by the amendments is tightening the requirements for incorporation. An individual can now only be a member of one ILG and ILG applications must contain lists of all proposed members, with original birth certificates, or certified copies, of each member. ILGs must pro-

vide a sketch of their land boundaries, and identify any areas of dispute.

A second major change is the strengthening of ILG management obligations. ILGs are now required to establish management committees with six to ten members (at least two must be women) and hold annual general meetings. The management committees must have bank accounts that are open to inspection at all times. For business to be conducted, at least 60% of members (at least 10% must be the other gender) must be present at meetings.

We are now in a transition period as the Land Groups Incorporation (Amendment) Act 2007 states that all existing ILGs will cease to exist five years after the Act comes into force. During this period, existing ILGs can choose to reapply for incorporation, following the new provisions.

At the same time as it introduced the amendments to the Land Act, the Somare Government introduced the Land Registration (Customary Land) (Amendment) Act 2007 (Customary Land Act), which was passed by the National Parliament on 19 March 2009. Under this Act, ILGs can choose to register their land as “registered clan land”.

Land registration has not been popular. Customary land can be converted to freehold land under the Land (Tenure Conversion) Act 1963 and an amendment to the Act in 1987 enabled customary landowners to register this land, but there has been little registration of land, partly because conversion to freehold removes the statutory protection that exists over customary land (i.e. as freehold land it can be sold, leased, mortgaged or subdivided), and partly because there is little

faith in government to properly implement the registration process (Tararia and Ogle 2010).

The Customary Land Act 2007 seeks to encourage the voluntary registration of customary land in order to free up land for development (ibid.). Improvements brought about by the new registration process include requirements for the Director to verify the membership of the ILG and to check the proposed boundaries to ensure the application is legitimate. Once the application is accepted, the Director cannot issue a Certificate of Title until the registration plan has been placed on public exhibition for 90 days and any objections are resolved (ibid.).

The new laws introduce more stringent provisions, but as Tararia and Ogle (2010) conclude, success will depend on the capacity and willpower of government to enforce the new laws, and, until there is significant strengthening of land administration, customary landowners will remain reluctant to register their land.

Development paradigm and under-resourcing of government authorities

The Constitution declares that “economic development [is] to take place primarily by the use of skills and resources available in the country either from citizens or the State and not in dependence on imported skills and resources”, “primarily through the use of Papua New Guinean forms of social, political and economic organisation”, with “particular emphasis in our economic development to be placed on small-scale artisan, service and business activity” (Sections 3 & 4). However, most logging rights in PNG are held by foreign companies and the logging is organised at a scale that is well beyond

PNG customary forms of economic organisation, and is not at all related to small-scale processing or business activity. The pre-independence belief that logging should be organised on a large-scale with foreign companies providing the necessary capital, management and expertise (Bird et al. 2007) has been carried over into the independence era. As Bird et al. (2007, 14) explain: “In the absence of local government capacity, central government has looked to project operators to provide much rural infrastructure, including health care facilities, schools, roads and other forms of communication. Although such benefits may be transitory, declining as logging operations cease, they are also very tangible when and where they exist.” Under this paradigm, development is something that comes to rural areas from the outside; it is not something that rural communities, enabled by government, achieve through their own endeavours.

From a developmental perspective, this paradigm is problematic as any benefits tend to be short lived, with royalties re-

ceived by the landowners used to purchase foodstuffs, etc., rather than invested in businesses that have some likelihood of being sustainable (2003/2004 Review Team 2004). For forests, this paradigm is problematic as the PNGFA, which is responsible for the sustainable management of PNG’s forest resources, is under-resourced and cannot adequately enforce regulations to minimise logging impacts on the environment. Each PNGFA field inspector is responsible for monitoring on average 87,000 ha of forest, which is far from adequate, and with only about US\$13,000 of budget allocated per inspector, they are without vehicles and basic equipment necessary for fieldwork (Blaser et al. 2011).

The Department of Environment and Conservation (DEC) suffers the same under-resourcing as the PNGFA. DEC has been described as “ineffective in the forestry sector, partly due to a lack of operational funds and a lack of adequate staff numbers” (2003/2004 Review Team 2004).



3. Interest in REDD+

It is clear from the previous discussion that in PNG high level political commitment is necessary for REDD+ to have any chance of protecting and enhancing forest carbon stocks. The challenges are large and many. REDD+ must be able to deliver local developmental benefits at least comparable to that of alternatives; instruments to ensure FPIC in any developments affecting landowners are required; inadequate capacity and accountability in the civil service need to be addressed; and the authorities responsible for land and resource management will have to be freed from the pressures exerted on them by the politicians.

Does this high level political commitment to REDD+ exist in PNG? In short, some parts of government are interested in implementing the concept, while the actions of other parts suggest no interest, or no capacity to translate interest into any type of action. At international and regional levels, PNG's leaders have been drivers of the REDD+ concept, but whether their enthusiasm at these levels will be translated into commitments at home is another matter.

Government concern for climate change issues is evident and while progress has been difficult, there is strong interest in REDD+ readiness. At the global level, Sir Michael Somare, Prime Minister from 2002 - 2011, sought to play a global leadership role on REDD+. In 2005, at the 11th Convention of the Parties (COP) to the UNFCCC, PNG, along with Costa Rica, placed reducing emissions from deforestation (RED) on the UNFCCC agenda. In

the same year, in his speech at Columbia University, Somare called for the formation of the Coalition for Rainforest Nations, in order to “align the interests of rainforested developing nations with industrialised nations - with the latter offering markets for carbon off-sets and forest products” (Statement by Sir Michael T. Somare 2005). PNG also acted as the first co-chair of the REDD+ Partnership, which it helped to establish as an interim platform running parallel to the negotiations to scale up actions and finance for REDD+ initiatives. PNG also supported the Copenhagen Accord, under which it conditionally committed to reducing GHG emissions by 30% from current levels, or about 50% from the business as usual forecast, by 2030 (OCCD 2012c, 39).

Within the region, PNG contributed to the development of the *Pacific Island Regional Policy Framework for REDD+*, which was formally endorsed by the Pacific Island Ministers for Agriculture and Forestry in September 2012. The Regional Framework calls on countries to develop their REDD+ policies, strategies, action plans, guidelines, and legislation.

At home, NEC Decision 55/2010 recognises the need to ensure that all national development policies and plans that impinge upon and are affected by climate change mitigation, adaptation, and low carbon growth, are climate compatible; the National Climate Change Committee (NCCC) and the Office of Climate Change and Development (OCCD) were established; and the government allocated PGK

18.4 million, PGK 12.4 million, and PGK 7.7 million to OCCD for 2011, 2012, and 2013, respectively (NEC Decision 54/2010). Strong interest in REDD+ from the PNGFA and from NGOs is also evident. The PNGFA incorporated REDD+ in existing plans, established branches and units to address climate change issues, is building a comprehensive forest database with the intention that it can be used to monitor forest carbon stocks, and is planning five demonstration activities. PNG's NGOs are active in lobbying and holding government accountable on REDD+, and are involved in OCCD Technical Working Groups, REDD+ workshops and road shows, and demonstration activities.

Interest in REDD+ from developers also exists, but the motivations of some of these are questionable. A SPREP (Secretariat of the Pacific Regional Environment Programme) report neatly summed up the situation back in early 2009: "There is currently something of a gold rush mentality in PNG with carbon project developers and investors, ranging from certain international merchant banks, NGOs and development partners, to shady backstreet operators ("carbon cowboys") rushing to sign agreements with forest owning communities - in the absence of any climate change policy or carbon trading rules" (SPREP March 2009, 2).

4. Technical and Financial Support



The realisation of international support for REDD+ readiness has been slow, mostly because of governance concerns. Table 3 (overleaf) lists some of the REDD+ readiness funding in PNG.

UN-REDD: PNG is one of the nine pilot countries for the UN-REDD Programme's initial phase. The approved budget for the National Joint Programme (NJP) with PNG is close to US\$ 6.4 million and is managed as follows: FAO ~ US\$ 4.5 million, United Nations Development Programme (UNDP) ~ US\$ 1.7 million, United Nations Environment Programme (UNEP) ~ US\$ 160,000. The NJP focuses on MRV. Its intended outcome is "by 2013, PNG has an operational Measurement, Reporting and Verification system that enables the country's participation in international REDD-plus systems to protect its environmental resources and contribute to sustainable livelihood practices of rural

communities" (UN n.d.(b), 1).

The NJP has the following 5 components: 1. National readiness management system development, led by UNDP, 2. MRV, led by FAO, 3. Reference emissions level (REL), led by FAO, 4. Monitoring of abatement concepts, led by FAO, and 5. Stakeholder engagement, led by UNDP. A problem that has affected UN interagency coordination on the UN-REDD Programme is the absence of in-country FAO and UNEP staff, though this situation should improve as in 2011 FAO aimed to recruit and station an MRV expert and an administrative officer in Port Moresby. With the support of FAO, PNG aims to conduct its first multipurpose national forest carbon inventory.

Table 3: Some of the REDD+ funding in PNG

Project Name	Objectives	Provider	Exe. Agency	Period	Total
PNG-UN REDD Programme	<p>Expected outcomes:</p> <ul style="list-style-type: none"> • Readiness Management Arrangements in Place • National Information, Monitoring and MRV System Development • Establishment of REL/ RL supported • Monitoring of abatement concepts in place • Stakeholders engagement in PNG's REDD+ readiness process 	UN-REDD	OCCD	2012 - 2014	US\$6.4 million
Forest Preservation and Monitoring Project	Update the current forest base map, build a competent forest database and create a forest monitoring system	Japan	PNGFA	?	PGK21 million
Papua New Guinea - Australia Forest Carbon Partnership	Reducing greenhouse gas emissions from deforestation and forest degradation, improving livelihoods for forest-dependent communities and promoting biodiversity protection	Australia	?	?	AU\$3 million
Enabling customary landowners to participate in CFM and REDD	Design community-based data collection system to support CFM and REDD schemes	ITTO (Community Forestry Management and Enterprises thematic programme)	PNGFA	2012 (9 months)	US\$150,000

Japan: Japan is supporting PNG's REDD+ readiness through the Forest Preservation and Monitoring Project under JICA's Technical Cooperation Project and the Grant Aid Programme. The approximate value of the Project is US\$ 10 million. Like the NJP, it focuses on technical aspects of REDD+ readiness associated with forest monitoring. Whereas UN-REDD mostly aims to deliver its assistance through the OCCD, JICA is working primarily with the PNGFA. Through grant aid and technical assistance, Japan is providing short and long-term experts and consultants, accepting PNG nationals for training in Japan, and procuring and providing equipment. The assistance focuses on remote sensing, biomass surveys and database development, and aims at providing remote sensing and forest inventory inputs to the National Forest Resource Information Management Database. This comprehensive database is intended to provide information to the National Forest Service and the national greenhouse gas (GHG) inventory. In addition to remote sensing work, JICA is also supporting destructive sampling to estimate below ground tree biomass.

World Bank: PNG is one of the 37 forested developing countries participating in the World Bank's Forest Carbon Partnership Facility (FCPF). The FCPF has a process through which countries develop and begin implementing a comprehensive plan for readiness. PNG has moved very slowly through the FCPF steps. Roughly four years after it submitted its Readiness Plan Idea Note (R-PIN), in August 2012 the government submitted its Readiness Preparation Proposal (R-PP) to the FCPF. PNG is requesting US\$ 9.985 million to implement the R-PP.

Australia: Under the Papua New Guinea-

Australia Forest Carbon Partnership, agreed by the Prime Ministers of both countries on 6 March 2008, Australia committed up to AU\$ 3 million in initial funding including technical, scientific and analytical support for whole-of-government policy development on REDD+. The three initial areas for collaboration are policy dialogue, forest carbon monitoring and measurement, and participation in global carbon markets, including demonstration activities. Under its International Forest Carbon Initiative, Australia also has a funding window for NGOs to test REDD+ concepts. Australia provided grants of up to AU\$ 200,000 to four NGOs to develop REDD+ demonstration activity concepts in five provinces. These are: The Nature Conservancy in the Adelbert Mountains, Madang province; Wildlife Conservation Society in New Ireland and Manus provinces; Conservation International in the Yus area of Morobe province; and Live and Learn in West New Britain province. Overall progress with the Australia funding has been slow due to governance concerns and slow progress on performance measures (Chatterton 2010).

EU: Under EDF10 for the Rural Economic Program for PNG, the EU intends funding activities on inventory and mapping. One EU project also aims to fund remote sensing to monitor forest degradation (OCCD 2012c).

GIZ: GIZ has expressed interest in providing REDD readiness funding directly to PNG. Under the SPC/GIZ supported regional project Climate Protection through Forest Conservation in Pacific Island Countries, a report on forest carbon rights was recently released by O'Brien Lawyers, PNG.

Others:

- NORAD provided support to the Foundation for People and Community Development (FPCD) for REDD+ community-based initiatives.
- The International Tropical Timber Organisation will fund a pre-project to see whether a full project to engage communities in REDD+ is feasible; other projects are in the pipeline.
- LEAF (Lowering Emissions in Asia's Forests), a USAID-funded 5-year programme, has expressed interest in funding REDD+ readiness in PNG and is consulting with government agencies and NGOs.

5. Organisational Framework for REDD+ Readiness and Implementation



In any country, the organisational framework for REDD+ readiness and implementation should take fullest advantage of existing capacities, ensure coordination across the agencies involved in land and natural resource management and with non-government sectors, and ensure all processes are transparent and accountable. In PNG, meeting these challenges has been difficult.

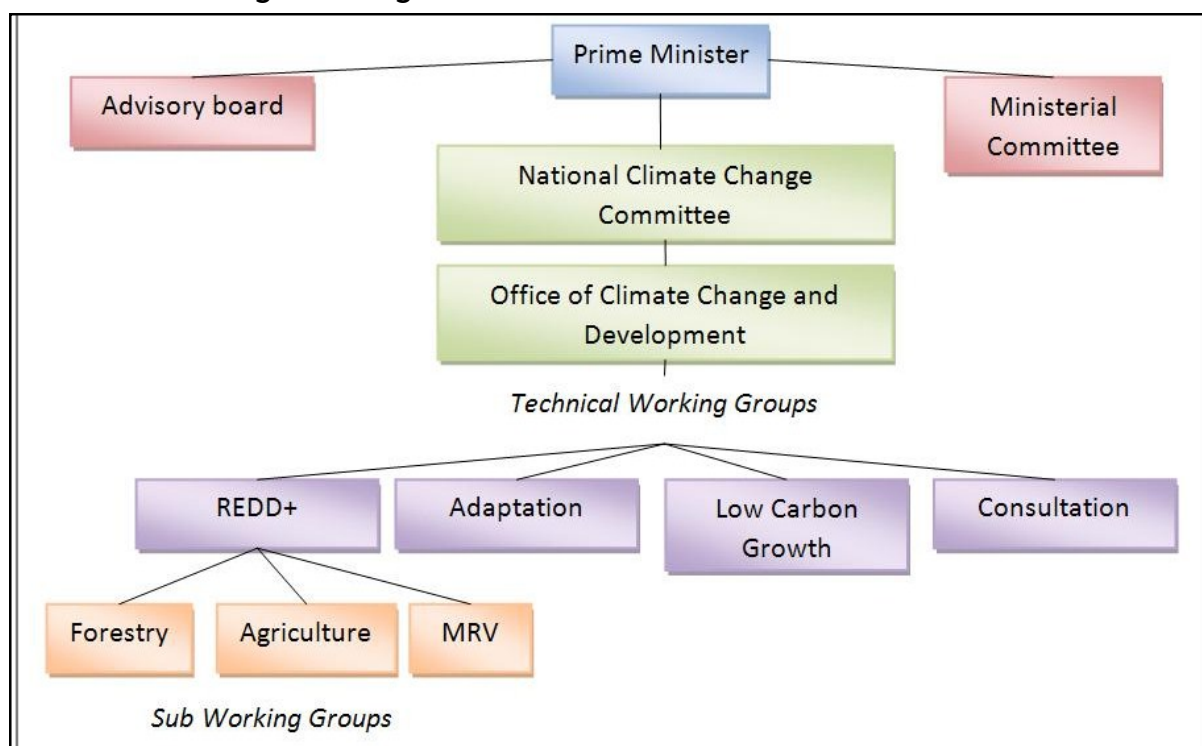
5.1. National Climate Change Committee

The organisational structure through which REDD+ readiness is implemented has at the top the Prime Minister, who also acts as the Minister for Climate Change (NEC Decision 55/2010). Next sits the National Climate Change Committee (NCCC), which is the main decision-making body on climate policy, having full and exclusive responsibility for all policies and actions under Pillar 5 of PNG Vision 2050 concerning climate change and environmental sustainability (NEC

Decision 54/2010). The Advisory Board (with international and national representatives) and the Ministerial Committee (Fig. 2, overleaf) were planned to be set up in 2011 but are still not in existence. PNG's R-PP now states that these two bodies will only be established if necessary (OCCD 2012c, 8).

The NCCC is chaired by the Chief Secretary of Government and the Secretaries from all the main government agencies are represented on its committee. Oversight of climate change policy under the NCCC is now much broader than at first when it was only provided by the Prime Minister's Office (Babon 2011), but at the national level there is still no common vision on REDD+ amongst agencies participating in or relevant to REDD+ readiness (UN-REDD 2011).

Figure 2: Organisational framework for REDD+ in PNG



5.2 Office of Climate Change and Development

In October 2008, the government set up its first office to deal with climate change issues, gave it the title Office of Climate Change and Carbon Trading (OCCCT), and placed it within the Department of the Prime Minister. The name of the office was changed in 2009 to the Office of Climate Change and Environmental Sustainability (OCCES), which may have reflected the new position of the Somare Government that it no longer supported the use of voluntary markets for REDD+ in PNG. The government organised an investigation into the activities of the Executive Director of OCCES after it came to light that the office had printed carbon certificates, and this investigation led to the NEC abolishing the OCCES in 2009.

The Office of Climate Change and Development (OCCD) was established in Sep-

tember 2010 and replaces the OCCES. It sits under the NCCC and is headed by DEC Secretary Dr. Wari Iamo. The role of the OCCD is to coordinate all government policies related to implementing climate compatible development (NEC Decision 54/2010). Its objective is to provide a coordination mechanism at the national level for the research, analysis and development of the policy and legislative framework for the management of climate issues (NEC Decision No 55/2010).

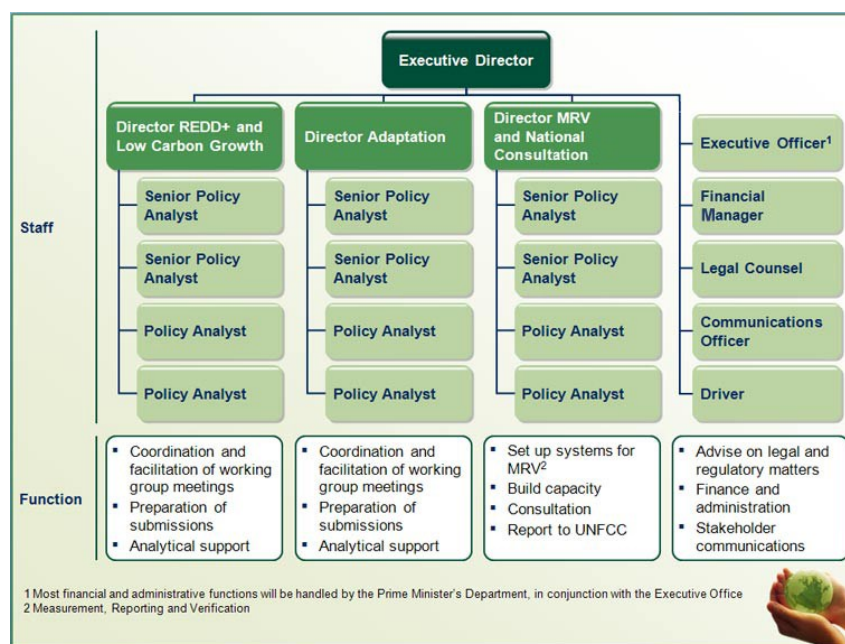
The R-PP reports that the immediate responsibilities of the OCCD include national and provincial consultations on climate-compatible development and REDD+; launching of “fast start actions”, including readiness activities and pilot projects; preparation of the final version of the Climate-Compatible Development Strategy; and establishment of an investment plan for REDD+. Its longer term responsibilities include assistance to government on coor-

dinating and steering climate-compatible development, policy analysis and management of interagency policy development, approval of climate-change related projects (including REDD+ pilot projects), implementation of pilot projects and programmes, and monitoring performance, including responsibility for coordinating a national MRV system for REDD+.

The OCCD has three divisions (REDD+ and Mitigation, Adaptation, MRV and National Communication) that sit beneath its Executive Office and each of these is headed by a director (Fig. 3). The REDD+ and Mitigation Division plays a coordinating role amongst stakeholders on issues in forestry and agriculture, including re-

duced impact logging, secondary forest management, afforestation and reforestation, forest conservation, and community REDD+ schemes to test REDD+ concepts with communities (OCCD 2012b). Its coordination role in agriculture is relevant to REDD+ as it covers issues such as agricultural leases reviews, land use planning, agriculture extension and commercial plantation on non-forest land (ibid.). As of early 2012, the Division had three staff to cover this wide gamut of issues.

Figure 3: OCCD organisational structure



Source: http://www.occd.gov.pg/index.php?option=com_content&view=article&id=64&Itemid=82, accessed 07/08/2012

The OCCD launched a series of provincial consultations on climate change, beginning with Manus in September 2010, followed by Milne Bay, West New Britain, Chimbu, Morobe, Western Highlands, New Ireland, West Sepik, and Bougainville (OCCD 2012b). Workshops on REDD+ that the OCCD has been involved with include a “whole-of-government workshop” in June 2010, an NGO workshop in July 2010, the UN-REDD MRV design workshop in June 2011, the UN-REDD National Programme Document validation workshop in February 2011, and a workshop on Agriculture and Land Use software in August 2012 (OCCD 2012b). The OCCD has also been involved in running a Development Partners Forum and the Technical Working Groups.

A concern that has been raised is the need for greater capacity within the OCCD to outline its priority areas. Without this prioritisation, development partners do not have clarity on where they can most effectively deliver their support (UN-REDD 2011). A priority of the UN-REDD programme in PNG is to establish a programme management office that will help the OCCD set priorities and coordinate donor support.

In the lead up to the 15th Conference of the Parties to the UNFCCC in Copenhagen in December 2009, the government of PNG engaged the consulting firm McKinsey and Co. to draft a national climate change and REDD plan that could be used as part of the negotiations. McKinsey also appear to have been given the responsibility of building the capacity of the OCCD. Within the OCCD there is a feeling that the McKinsey consultants helped the OCCD to be more efficient and develop a results-oriented culture, but this focus on administrative and policy issues was at

the expense of working on particular instruments and areas that the OCCD needed to address, such as the REDD+ guidelines, SABLs, reference levels, what can be learnt from voluntary standards, etc. Concerns raised by those involved with the consultants were that they were not technically qualified to work on REDD+ guidelines, etc., and that they had no one amongst them with PNG experience. The McKinsey consultants departed PNG in October 2011.

Progress on readiness by the OCCD in the latter half of 2011 and early 2012 was slowed by the uncertain political climate. Parliament replaced the former government of Sir Michael Somare with a new Government headed by Peter O’Neil during Somare’s long period of absence due to illness; however, the High Court ruled that Somare should be reinstated as Prime Minister. The instability from this power tussle is reflected in problems arising for the PNG delegation at the 17th COP, and made it difficult for all government agencies to move forward on initiatives with policy implications. Progress on readiness will hopefully accelerate now that the 2012 general elections are over.

5.2.1 Technical Working Groups

The NEC directed the OCCD to establish technical working groups (TWGs) with broad stakeholder engagement. The OCCD set up four TWGs (Fig. 2), including the REDD+ TWG, which is supported by three sub-working groups on agriculture, forestry, and monitoring, reporting and verification (MRV). The R-PP describes the main responsibilities of the REDD+ TWG as providing knowledge and guidance for the implementation of the R-PP; promoting knowledge and information sharing; providing inputs for annual work

plans and budgets; and reviewing FCPF programme documents.

The R-PP lists 21 government agencies and 30 other organisations as comprising the membership of the REDD+ TWG. The OCCD provides no explanation of how these members were chosen.

Despite its broad membership, there appears to be a need to deepen the discussions under the REDD+ TWG (UN-REDD 2011). The TWGs seem to function primarily as consultative groups that receive and provide comments on information from the OCCD. Some of the participating NGOs have argued that their representation in the TWGs should be formalised with terms of reference that clearly state the roles and responsibilities of each stakeholder (UN-REDD 2011).

5.3 Forestry Authority

The PNGFA has not been assigned any specific role on REDD+ readiness. While the PNGFA sees itself as being best equipped amongst government agencies to implement REDD+, the OCCD is responsible for co-ordinating REDD+ readiness, and this dynamic has been a source of tension between the two organisations. The R-PP, apparently drafted primarily by OCCD staff, is careful to explain that “PNGFA is not mandated as a lead agency for activities associated with REDD+” and that “PNGFA has had a limited role in developing the REDD+ policy framework” (OCCD 2012c, 13). Despite their different views and interests, the two organisations are engaged in dialogue and the PNGFA has agreed to the testing of the OCCD REDD+ Project Guidelines at its demonstration sites.

The PNGFA is now developing five REDD+

demonstration activities (see Section 8) and has incorporated REDD+ into forest policy. The PNGFA states that it reviewed the 19 Provincial Forest Plans to include climate change, REDD+ and AR CDM (afforestation / reforestation of the Clean Development Mechanism) initiatives in the Plans. The PNGFA also revised the National Forest Development Guidelines and set out the Forestry and Climate Change Framework for Action 2009 - 2015, incorporating REDD+ into both documents, which were endorsed by the National Executive Council in March 2010. In addition to these policy developments, the PNGFA explains that internal restructuring was undertaken in 2008/2009, including the establishment of the REDD and Climate Change Branch in the Forest Policy and Planning Directorate, as well as the establishment of the Natural Forest Management Programme Technical Unit to conduct Biomass Surveys and a Forest Species Vulnerability and Adaptation Unit at the Forest Research Institute.

5.4 Department of Environment and Conservation

The R-PP states that DEC is responsible for achieving the government’s national target of having 20% of land and coastal waters under some form of conservation management. DEC could thus have an important role in REDD+ implementation, e.g. it could present conservation with REDD+ financing as one possible forest management option to customary landowners. However, there appears to be no efforts made by DEC to consider conducting REDD+ pilots to test this idea. DEC’s involvement in REDD+ readiness appears mostly to have been its support of the OCCD.

5.5 Sub-national government

The R-PP notes that 22 provinces now operate under the auspices of the Organic Law on Provincial and Local Level Government, which delegates budgetary and planning responsibilities to provincial governments, and explains that provincial and district authorities will thus play an important role in the implementation of a national REDD+ mechanism. While the R-PP foresees an important role for provincial forestry offices in implementing REDD+, these offices currently have little capacity to do so.

5.6 Non-state actors

Some space has been created for non-state actors to contribute to REDD+ policy development. Draft documents prepared by the OCCD are made available for pub-

lic comment, though the OCCD website provides no details on consultation processes (apart from a draft set of consultation guidelines) regarding when they took place, and how the public inputs were handled. Amongst the NGOs, the Eco-Forestry Forum (EFF), a national umbrella NGO that works mostly on forest rights issues, illustrates the variety of ways that NGOs can seek to influence REDD+ policy and engage in other aspects of REDD+ readiness. EFF has participated in processes under the UNFCCC since the 13th COP in Bali and is part of the UN-REDD policy board, representing civil society organisations in the Asia Pacific region. EFF also is involved in the TWGs and conducted a Climate Change Road Show consisting of 2-day regional conferences in the Highlands Region, the Momase Region, the Southern Region and the New Guinea Islands Region (Mark n.d.).

6. National REDD+ Strategy



6.1 Process of developing strategy

PNG does not have an official published national REDD+ strategy, though elements of its readiness plans can be found in the R-PP submitted to the World Bank's Forest Carbon Partnership Facility and the UN-REDD PNG National Joint Programme Document. Both of these documents incorporate parts of *Climate Compatible Development for PNG (CCDS)*, released as a second draft for public comment in March 2010.

The R-PP states that "Papua New Guinea currently administers an extensive consultation process under the national govern-

ment through the OCCD" and that the NEC estimates that PGK 2.5 million will be spent on information sharing and early dialogue from 2011-2013 (OCCD 2012c, 15-16). As noted above, while some REDD+ documents have been put out for public consultation, the quality of the consultations is impossible to assess as there is little readily available documentation of the consultations.

PNG's Readiness Plan Idea Note (R-PIN) can be seen as the first attempt by the government to develop a basic REDD+ strategy. R-PINs aim to provide a review of the forest sector and a rough sketch of how the country plans to prepare for REDD+. DEC submitted PNG's R-PIN to the

FCPF in July 2008. The R-PIN had four authors, one each from DEC, PNGFA and the OCCES, and the Ambassador for Environment and Climate Change (GoPNG 2008). There appears to have been a serious lack of consultation in formulating this document, as explained by the FCPF's Consolidated External Technical Advisory Panel (TAP FCPF 2008, 2):

1. There was no consultation process organised in the preparation of the R-PIN, neither forest owners, NGOs nor private sector representatives have been involved in the preparation of the R-PIN.
2. The "donor engagement partnership forum" that has been established to support CC [climate change] activities in PNG is not listed as having been consulted. The authors should consult one or more financing agencies since they can offer advice on appropriate ways to channel REDD funds to key stakeholders.
3. Representatives of rural communities who own local resources, and academic institutions who can help with inventory and monitoring activities are not listed as having been explicitly consulted in the process.
4. To conclude, it is difficult to know to which extent the proposal is owned by a variety of stakeholders.

Despite these concerns, the FCPF approved the R-PIN in May 2008 (Pearse 2012).

Formulation of the UN-REDD National Joint Programme (NJP) in PNG began in 2008 with a joint scoping mission led by the government. OCCES represented the government in the mission team; the other team members were Norway, Australia, the World Bank, UNDP, UNEP, FAO, the Rainforest Foundation and a NORAD

consultant (UN n.d.(b)). The mission produced the PNG REDD Roadmap, which was intended to inform the work programme of the OCCES. An integrated support package for government to initiate the Roadmap was then agreed between the OCCES, UNDP, which had been assigned by government as the international agency for REDD coordination in the country, and AusAID. This support package formed the first draft of the UN-REDD NJP document for PNG, which consisted of a proposal of US\$ 2.585 million for quick start readiness activities to begin in May of the same year (GoPNG 2009). The 2009 draft of the NJP document was approved in principle by the UN-REDD Policy Board (UN n.d.(b)), but it was never implemented. It took until May 2011 for the NJP to be fully approved.

Various problems with the formulation process for the NJP were identified by Chatterton (2010). Chatterton found that to produce the 2009 version of the NJP document, the government had sponsored workshops and discussions that provided multistakeholder and cross-departmental input. However, while by October 2010 the NJP had undergone a complete overhaul, Chatterton found that the revision process lacked the same consultative foundation of the earlier version. Civil society and indigenous peoples were not widely consulted and were only invited at "the eleventh hour" as observers to the TWG meetings on the NJP (Chatterton 2010). It appears that the October 2010 version of the NJP was mostly prepared by external consultants, as the OCCD was only fully staffed from August of the same year (ibid.).

As with the UN-REDD NJP, compared to other countries PNG has been slow to move through the World Bank's FCPF pro-

cess. The amount of public consultation in the formulation in the recently submitted Readiness Preparation Plan is unclear. In the R-PP, the OCCD explains that stakeholders will be engaged to discuss the R-PP through a community REDD+ engagement process, TWG meetings, school visits, radio talk back, and other medium. The R-PP proposes a national consultation and validation process to cover all major REDD+ strategy and implementation issues.

Both the NJP and R-PP incorporate parts of the *Climate Compatible Development Strategy* for PNG. The R-PP explains that the CCDS outlines the overall strategic direction for PNG to achieve the goals of 50% net GHG emission reductions by 2030 and carbon neutrality by 2050, as set out in Vision 2050 (OCCD 2012c, 40). The CCDS relied heavily on inputs from McKinsey and Co. Concerns over inadequate consultations and national ownership of the strategy have been raised (Chatterton 2010; Babon 2011) (the OCCD states that the CCDS is “currently undergoing a consultation process with stakeholders across the country” (OCCD 2012c, 40)). Also, there is doubt over the science associated with McKinsey’s use of cost curves, i.e. by excluding transaction and implementation costs, and the challenges of governance, amongst others, the real costs of REDD+ are not estimated (Dyer and Counsell 2010). Further, while some of the assumptions used to derive the estimates of current and future projected emissions are provided in the document, the figures used (even on the basic issue of the extent of forest cover) are not, making it impossible to judge the credibility of the estimates.

Other documents that present various elements of a national REDD+ strategy are

REDD+ project guidelines and guidelines on free prior informed consent and benefit sharing and distribution. These guidelines were drafted by the OCCD, with input from McKinsey and Co., reviewed by the TWGs, and put out for public consultation. The OCCD states that the REDD+ Project Guidelines was circulated to stakeholders for comments between December 2010 and October 2011, and a provincial consultation was organised in March 2011 in West New Britain (OCCD 2012a).

6.2 Elements of a REDD+ strategy

The government aims to implement REDD+ in phases. Phase 1 (2011-2012) is the readiness phase, phase 2 (2012-2013) is the result-based demonstration activities phase, and phase 3 (2013-2018) is payments for verified performance. Already the timing of these phases needs to be revised. The OCCD is now calling 2013-2015 the readiness phase (OCCD 2012c, 48).

Another element of PNG’s approach concerns the use of voluntary markets. The Somare Government took up a non-negotiable position against the use of voluntary markets, instead aiming for a performance-based compliance market governed by the UNFCCC. NEC Decision 55/2010 directed the Minister for Environment and Conservation and the Minister for Forests to effect the government’s position that the voluntary trading of forest carbon is inadvisable and premature. However, the OCCD hopes to move forward with REDD+ readiness for performance-based payments under the UNFCCC (compliance market) and at the same time make use of the existing voluntary markets for the REDD+ pilots

(interviews, OCCD officers, Jan. 2012). The 2012 OCCD work plan includes a marketing component to facilitate use of voluntary carbon standards and the marketing of carbon credits. Within the PNGFA, some officers also support the use of the voluntary markets. The PNGFA appears interested in generating offsets for voluntary markets through its April Salumei demonstration activity.

6.2.1 REDD+ activities outlined in the CCDS

The CCDS estimates that 95% of PNG's emissions are from land use, land-use change and forestry (LULUCF), with 68-69% from timber harvesting, 28-43% from subsistence and smallholder agriculture, 6% from agriculture leases, and lesser amounts from commercial agriculture, mining, fire and others (GoPNG 2010). It thus sees REDD+ as central to PNG's low carbon future. The REDD+ policies proposed by the CCDS are intended to reduce the impact of logging, improve the management of secondary forests, avoid deforestation for commercial and subsistence agriculture, and improve fire management. Based on past policy performance, lack of capacity and infrastructure, and governance issues, these policies will all be difficult to implement (Table 4, overleaf).

6.2.2 National REDD+ Project Guidelines

The National REDD+ Project Guidelines are intended to be a template for all project proponents who wish to develop a "Government supported REDD+ project". Project proponents include landowners, NGOs, private developers and government.

The Guidelines define a REDD+ project as any activity that specifically aims to develop, test and trial mechanisms that substantially and measurably reduce GHG emissions through REDD+. The Guidelines aim to (i) ensure that Government-supported REDD+ projects produce real net emissions reductions, meet high environment and fiduciary standards, and are assessed in a transparent manner by criteria available to all stakeholders, and (ii) provide safeguard criteria to determine which REDD+ pilot projects and demonstration activities receive Government support. The criteria set out to guide and assess project design documents (PDD) reflect existing carbon standards and UN-FCCC guidance and guidelines (ibid.).

Each PDD is assessed for approval using a set of 37 REDD+ safeguard criteria. These are grouped as follows (OCCD 2012a, 11):

- **General information** consists of a description of the project area and its surrounding project zone, details about the project proponent(s) and community.
- **Climate compatibility** consists of all required climate-related safeguards to ensure additionality and alignment with the national strategy.
- **Environmental safeguards** aim at ensuring that biodiversity and local resources are not negatively affected by the project.
- **Community (or Social) Safeguards** consist of community involvement and community-related impacts of the project.

Table 4: REDD+ policies proposed for PNG in the Climate-Compatible Development Strategy

Policy	Previous policy performance	Potential to contribute to REDD+	Challenges to implementation
Reduced Impact Logging	Only 193,000 ha under sustainable forest management (Blaser et al. 2011)	14-19 Mt CO ₂ e p.a. by 2030; cost, US\$ 4/t CO ₂ e	Additionality: Only forest management practices additional to legal requirements would be credited
Avoided deforestation from land clearances for establishing oil palm plantations	Some well-established companies are members of Roundtable on Sustainable Oil Palm, but newcomers could bring poor practices	5-8 Mt CO ₂ e p.a.; cost, US\$ 35/t CO ₂ e	Availability of grasslands
Avoided deforestation and degradation from smallholder agriculture	No national land-use plan	12-20 Mt CO ₂ e p.a. in 2030; opportunity cost, US\$ 1-2/t CO ₂ e	<ul style="list-style-type: none"> Limited capacity to disseminate knowledge, seeds and inputs Little field experience on controlling shifting agriculture
Fire management	No examples	1 Mt CO ₂ e p.a. of emissions; cost, US\$ 6/t CO ₂ e by 2030	Cultural practices such as the use of fires for hunting and clearing fallow land
Better management of secondary forests	Reforestation levy applied but limited silvicultural activities in logged over forest	17 Mt CO ₂ e in 2030; cost, US\$ 4/t CO ₂ e	<ul style="list-style-type: none"> Additionality Recovery of forest after selective logging still not completely understood
Afforestation and reforestation	Relatively little afforestation / reforestation	10-11 Mt CO ₂ e in 2030; cost, US\$ 7/t CO ₂ e	Technical challenges to establishing forests on Imperata grasslands

Source: Information from GoPNG (2010) and Chatterton (2010).

- **MRV requirements** assure that project monitoring plans are sufficient and continuous monitoring will take place during project implementation.
- **Fiduciary safeguards** are aimed at ensuring that financial flows of the project, such as payments for ecosystem services, REDD+ payments, or any other payments and compensation to landowners, where present, are managed in a transparent and accountable manner.

Criteria are divided into “must have” and “may have”. The former are compulsory while there is some flexibility regarding the latter to avoid imposing too large a burden on small projects. A Technical Review Panel will decide which “may have” criteria apply to each project.

The project approval process set out in the Guidelines starts with the proponent submitting a Project Concept Note, and once this is approved by the Technical Review Panel, a PDD. The Technical Review Panel is chaired by the Director of the OCCD REDD+ and Mitigation division and is made up of ten members who represent “all affected stakeholders”: specifically, four people from government, and two each from NGOs, development partners and the private sector (OCCD 2012a, 21). The Technical Review Panel provides a recommendation, based on majority opinion, to the NCCC, which takes the decision on whether to approve the project. If approved, projects will undergo annual compliance reviews.

Field testing at demonstration sites will now be important to understand the feasibility of the Guidelines.

6.2.3 FPIC, BSDS and REDD+ funding

The OCCD is overseeing the drafting of free prior informed consent (FPIC) guidelines, which it intends to align with the UN-REDD Programme Guidelines on FPIC. The guidelines are now in their second draft, but not all stakeholders are satisfied and further revision is taking place (UN-REDD 2011). Some PNGFA officers are concerned that the FPIC guidelines will be too difficult to implement, but the PNGFA has agreed to field testing the guidelines at its demonstration sites.

The REDD+ TWG has finalised the terms of reference for a review and design study for the development of a benefit sharing and distribution system (BSDS). The study will review existing benefit sharing models in PNG and design the principles and framework for a REDD+ BSDS for PNG. The OCCD approached AusAID for co-funding the study. The R-PP states that a similar study will be required for a “transparent mechanism for GoPNG to receive and manage future REDD+ payments” (OCCD 2012c, 51). Despite the importance of this issue, there is little elaboration in the R-PP of what issues the study would consider and what existing models could provide lessons.

A group of NGO representatives has proposed a payment for environmental services (PES) system for PNG (Trines, Skutsch, and Dam 2008). The proposal aims to provide the outline for a transparent, operational PES framework and ensure maximum benefits reach local communities. The group reports that the initial government response was negative, but is now more positive (INA-IGES 2010), though there is no reference to their proposal in the R-PP. It should be reviewed by the government as part of the pro-

posed review and design study for the BSDS.

7. REL and MRV



NEC Decision 54/2010 directed the OCCD to pursue the development of an MRV system. Several initiatives have been undertaken to build national capacity on RELs and MRV. Through collaboration with the Brazilian Space Agency (INPE), FAO coordinated a 2-week training course in Belem, Brazil, for six PNG remote sensing (RS) and geographic information systems (GIS) experts. In 2011, JICA conducted a basic training on RS and GIS, and has organised customised training on RS/GIS in Japan. JICA plans to fund an internal PNGFA training workshop on the new database and the use of GPS for about 50 PNGFA officers from the regional, provincial and project levels. JICA is hoping that these officers will later be able to collect data for ground-truthing to aid satellite image interpretation.

In 2012, the OCCD began recruiting for PNG Central MRV System Operators. One position for an information technology officer and four positions for GIS and RS experts were advertised. With the support from JICA and UN-REDD, the OCCD has confidence that a “full operational performance-based REDD+ mechanism” can be operational in PNG in a relatively short period of about three years (OCCD 2012c, 71). Given the past pace of REDD+ readiness, this appears overly optimistic. It is not clear how the JICA and UN-REDD support programmes are being coordinated, despite statements in the R-PP that they will be.

Precise details on how the national REL

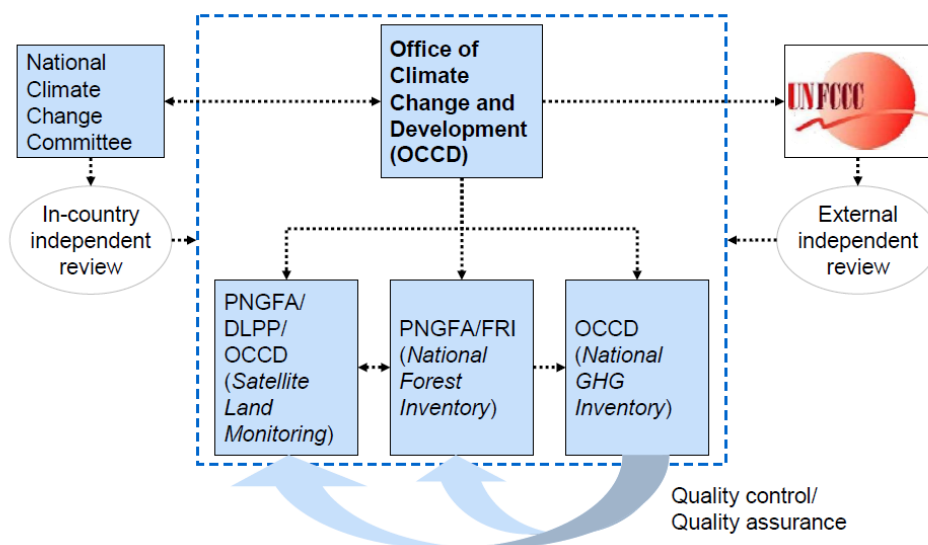
will be developed are not provided in the R-PP, though there is discussion on the basic issues that will need to be considered. The same applies to the envisioned MRV system for PNG. Here, the R-PP has drawn on the document titled *Concept note for a PNG National MRV system* drafted by or for DEC as early as February 2010. The proposed MRV system consists of four pillars: Satellite Land Monitoring System; Multipurpose National Forest Carbon Inventory; National GHG Inventory; and National REDD+ Information System. Although JICA support to the PNGFA and UN-REDD support to the OCCD already favours particular remote sensing data sets, systems and techniques, the R-PP says little about such remote sensing specifics for the MRV system.

The R-PP has more to say about ground-based carbon stock measurement. It states that a total of 1,000 - 2,000 field plots will be required to monitor forest carbon stock changes. It recognises that the existing 135 1 ha PSPs under the FRI provide important data that can be used to provide preliminary estimates of carbon stocks; however, there are limitations regarding the use of these PSPs for carbon monitoring, i.e measurement relevant to carbon pools is limited to living trees > 10 cm DBH; plot locations could be biased towards forest areas with higher biomass; and plots are located next to roads and villages, with implications for disturbance.

A possible initial structure for PNG’s MRV system is presented in the NJP and reproduced in the R-PP (Fig. 4). In this structure, the OCCD is responsible for MRV coordination, hosts the national GHG inventory and reports to external parties; the FRI is responsible for the national forest inventory; management of the satellite land monitoring system is shared by the PNGFA, Department of Lands and Physical

Planning, the OCCD and other relevant departments; and the NCCC acts as auditor and reviewer of the national GHG inventory.

Figure 4: Potential PNG System for MRV under the UNFCCC



Source: UN (n.d.(b)).



8. REDD+ Demonstration Activities and Projects

Some of the major proposed and on-going demonstration activities are presented in Table 5. The major initiatives for which there is some documentation

on are the demonstration activities under the PNGFA, a private initiative in the Western Province, and several pilots led by NGOs.

Table 5: Some of the proposed / on-going demonstration activities in PNG

Project title	Location	Proponents	Major activities	Validation	Estimated credits
?	Eastern Highlands Province	PNGFA/ FRI	Afforestation of grassland areas - 10,000 - 20,000 ha Forest conservation - 5,000 - 10,000 ha		
?	West New Britain Province	PNGFA	Secondary Forest Management (logged over forest) - 100,000 - 150,000 ha Afforestation Reforestation - 40,000 - 50,000 ha		
Central Suau REDD+ Pilot	Mine Bay Province	PNGFA	Reduced Impact Logging (RIL) - 60,000 ha		
?	Sandaun Province	PNGFA	Afforestation Reforestation - 40,000 - 50,000 ha Forest Conservation - 100,000 - 200,000 ha		
April Salumei FMA REDD+ Pilot	East Sepik Province	PNGFA	Avoid selective logging, 177,200 ha	CCBA; VCS planned	Total: 88,597,230 tCO ₂ e Annual average: 3,543,889 tCO ₂ e
Kamula Doso Improved Forest Management Carbon Project	Western Province	Nupan (PNG)	Avoid selective logging, 791,200 ha	Submitted to CCBA	Total: 134,940,667 tCO ₂ e (40 years) Annual average: 3,373,516.7 tCO ₂ e

Sources: <http://redd-database.iges.or.jp/redd/>; Amos (2010).

Note: VCS - Verified Carbon Standard; CCBA - Climate, Community and Biodiversity Alliance

8.1 PNGFA REDD+ pilots

In 2008, after the call by the 13th COP for REDD+ demonstration activities, the PNGFA initiated a small working group, including staff from the University of PNG, PNG University of Technology (UNITECH) and the FRI, to select pilot provinces and possible pilot sites. The provinces selected were West New Britain, Sandaun, Milne Bay and Eastern Highlands, providing a broad geographical spread across the four regions of the country. The criteria for province selection included: Provincial Forest Plans must be approved; Fair distribution of pilots in the four regions; REDD+ pilots to be located in different altitudinal zones and forest types; REDD+ pilots to be located in high risk areas - cyclones, fires, population increase, forest harvesting, oil palm expansions; REDD+ pilots to be located in various resource ownership areas (patrilineal and matrilineal).

In 2010, the NEC approved the four initial provinces, the respective Provincial Forest Management Committees were consulted, and the provinces selected pilot sites and the types of activities to be implemented. East Sepik province was later added to the four original provinces after Rainforest Management Alliance approached the PNGFA Managing Director to have April Salumei included as a PNGFA demonstration activity (the Rainforest Management Alliance wrote the original project design document).

Of its five planned demonstration activities, at the end of 2011 the PNGFA was only focusing on two - April Salumei and Milne Bay (Central Suau) - because of resource constraints. The PNGFA intends managing these two demonstration activi-

ties under the FMA processes, as set out under the Forestry Act.

April Salumei

The April Salumei project REDD+ boundary is defined by the original April Salumei FMA, which was revoked by the High Court after DEC raised concerns that logging was planned in an environmentally sensitive area. Of the 521,000 ha under the FMA, 177,200 ha will be targeted for REDD+ activities. The remainder is now registered as a Wildlife Management Area and is thus under the jurisdiction of DEC, not the PNGFA. As a demonstration activity, April Salumei will test the 34 FMA acquisition and allocation processes, MRV methodologies, FPIC and BSDS, measurement of carbon pools, and the REDD+ Project Guidelines.

In 2011, April Salumei was validated by Scientific Certification Systems against the requirements of the Climate Community and Biodiversity Project Design Standards. It was recognised as a “Gold Standard” project. The National Forest Board has directed the PNGFA Managing Director to form a joint Working Group - PNGFA, OCCD and others - to conduct an awareness and development options study (DOS). The PNGFA reports that awareness/verification of 130 incorporated land groups was completed in August 2011 (interviews, PNGFA officers, 2011, 2012).

Central Suau

Some stakeholder awareness has been conducted and next steps include engagement with local governments and forest owners. This demonstration activity will test the enforcement of reduced impact logging (RIL) and silviculture/environment practices, in addition to BSDS, FPIC, measurement of carbon pools, and the REDD+ Project Guidelines (interviews,

PNGFA officers, 2011, 2012).

8.2 Kamula Doso

The proposed *Kamula Doso Improved Forest Management Carbon Project* is located in the Middle Fly District of Western Province. It covers a total area of 791,200 ha and its boundaries are the Kamula Doso FMA. The FMA was revoked by the High Court after the Ombudsman concluded that the decision of the National Forest Board to grant the extension of an existing FMA to cover Kamula Doso was based on improper considerations. The project developer is Nupan (PNG) Trading Corporation Ltd., headed by an Australian.

This project has faced a lot of controversy and the government has attempted to distance itself from it. The project developer continues to promote its proposed project through a website (<http://www.carbonwontok.org/tag/kamula-doso/>).

8.3 NGO-led REDD+ pilots

The Nature Conservancy is undertaking a REDD+ pilot in the Adelbert Mountains to develop tools and processes for local communities to draft land use management plans and sign conservation agreements with local government. One aim is for three provincial governments to incorporate these tools in their 5-year development plans.

The Wildlife Conservation Society is implementing a project called Village REDD in Manus (INA-IGES 2010). Development of the village REDD concept involved interviews with over 600 individuals. Under village REDD, a village or local level plan is developed by interested villages using their preferred institutions, after they

have participated in a process to decide their development goals. The village then engages with the organisation interested in developing a village REDD activity, which could involve the formation of incorporated land groups, land registration and agreement on property boundaries. Dispute resolution mechanisms and benefit sharing arrangements are also part of the concept.

The Forest Management and Product Certification Service (FORCERT), which supports the production and marketing of certified timber by local communities, is developing a community-based forest carbon inventory methodology and pilot project. Working with the community groups under the certification programme, FORCERT conducted awareness and discussion on climate change and payments for environmental services, provided training on carbon forestry inventory and developed a field protocol for measuring forest carbon stocks with communities (INA-IGES 2010).

Conservation International and Live and Learn are also involved in REDD+ pilots, and the Foundation for People and Community Development is working with IGES on a community-based forest monitoring project in Madang province.

8.4 Other possible pilots

The R-PP suggests pilot projects in Madang, West New Britain, Eastern Highlands and Central provinces to reduce pressure on forests by combining agricultural extension programmes to increase yields with integrated land use planning at the local government level to clarify and rationalise the allocation of land between forestry, commercial agriculture, subsistence agriculture and other uses,

such as hunting (OCCD 2012c, 54). It also suggests pilots to look at the feasibility of establishing oil palm on non-forest lands.

Piloting of REDD+ with communities through community-based Wildlife Management Areas (WMAs) could also be considered.

9. Carbon Rights



In PNG, there is as yet no legislation on payments for environmental services and on carbon rights. A recent report by O'Brien Lawyers, PNG, concludes that under existing law, the owner of the land owns the forest on it (except when rights have been alienated) and can thus commit to protecting or enhancing the carbon pools in it (O'Brien 2012). The commitment (or covenant) is an *obligation* that generates *rights* in the hands of whom the obligation is owed to. Landowners can thus create carbon rights by implementing a REDD+ activity on their land and monetary value can be assigned to these rights. Conversely, the report argues that the State cannot take ownership of carbon forest rights, unless it pays compensation.

In cases when forest rights have been alienated however, O'Brien Lawyers suggest that the right to generate carbon rights has been transferred from the customary owners to the new right holders. In the case of timber permits, the person holding the timber rights could commit to protecting the carbon in the timber they have the rights to harvest. However, this could lead to a breach of the timber permit, which is given for the purpose of generating income from the timber, and paying royalties and taxes to the State (ibid., 57).

In the case of SABLs, O'Brien Lawyers suggest that the ownership of the forest on the land and the right to deal in the carbon passes from the customary owners through the State on to the lessee for the term of the lease (ibid., 57).

O'Brien Lawyers argue against specific legislation seeking to clarify carbon as a class of property and instead propose the following legislative reforms: Amendment to the Land Registration Act to ensure that "land" as defined in the Act includes "forest carbon rights"; Amendment to the Forestry Act to ensure the same common definitions; Amendments to the Forestry Act to record and register customary land that is subject to a Forest Management Agreement; A process to ensure synthesis between registration of Clan Land and Forest Management Agreements; and amending the Forestry Act to ensure PNG-FA powers are expanded to include REDD+ and carbon sequestration activities in the national forest plan.

It is important that further analysis and an open discussion on the existing laws, with respect to their implications for the trading of carbon offsets, now takes place.



10. Conclusion

REDD+ readiness in any country that is struggling to manage its forest resources sustainably because of governance and capacity issues is going to be slow and difficult. REDD+ readiness cannot be rushed. Interagency collaboration, policy coordination, public consultations and stakeholder engagement are all required. Institutional and technical capacity must be built. Transparency and accountability must be part and parcel of all processes. When these elements are lacking, problems invariably arise and remedial actions are required.

Capacity and institution building are central to REDD+ readiness in PNG. Funders and government agencies concerned to show outcomes could place too much of the necessary work in the hands of external consultants, when a better solution would be to use and build on existing capacity for PNG nationals to conduct this work. At one international conference, a PNG national presented on REDD+ readiness activities, but it was an international

consultant to PNG who was requested to respond to difficult questions on technical matters. A focus on outcomes can also be at the expense of ownership. While the OCCD is promoting the McKinsey driven CCDS, there is a lack of ownership of this document in PNG, as well as reason for concern over its abatement prescriptions.

Policy integration is another challenge. While REDD+ readiness is progressing, forests remain under serious threat. The government has shown interest in REDD+ readiness, but real commitment to REDD+ will only be displayed when activities that conserve PNG's forest resource are implemented. Poor performance in forestry operations and forest clearance under SABLs need to be addressed. A proper response to the findings of the Commission of Inquiry on SABLs is a priority.



References

- 2003/2004 Review Team. 2004. *Towards sustainable timber production - A review of existing logging projects*. Final Report (Report prepared for the Inter-Agency Forestry Review Committee, the Government of Papua New Guinea).
- Abe, H. 2007. *Forest management impacts on growth, diversity and nutrient cycling of lowland tropical rainforest and plantations, Papua New Guinea*. (PhD), University of Western Australia.
- Alder, D. 1998. *PINFORM: A growth model for lowland tropical forests in Papua New Guinea*. Lae: Forest Research Institute.
- Amos, G. 2010. *State of PNG's Forests*. Presented at INA-IGES "REDD Capacity Building Workshop and Building Consensus", 1-3 March 2010, March Girls Resort, Gaire Village, Central Province.
- Babon, A. 2011. "Snapshot of REDD+ in Papua New Guinea." *CIFOR Info-brief 40*. <http://www.cifor.org/online-library/browse/view-publication/publication/3443.html>.
- Bird, N., A. Wells, F. van Helden, and R. Turia. 2007. *What can be learnt from the past? A history of the forestry sector in Papua New Guinea*. London: Overseas Development Institute.
- Blaser, J., A. Sarre, D. Poore, and S. Johnson. 2011. *Status of Tropical Forest Management 2011, ITTO Technical Series No 38*. Yokohama: International Tropical Timber Organisation.
- Bun, Y.A., and H. Scheyvens. 2007. *Forest certification in Papua New Guinea: Progress, prospects and challenges*. Forest Conservation, Livelihoods and Rights Project Occasional Paper. Hayama: IGES.
- Chatterton, P. 2010. *Review of the UN-REDD Joint Program in Papua New Guinea*. <http://www.undp.org.pg/docs/publications/UNREDD-JP-Review.pdf>.
- Cotula, L., S. Vermeulen, R. Leonard, and J. Keeley. 2009. *Land grab or development opportunity? Agricultural investment and international land deals in Africa*. London: IIED.
- Coulthard-Clark, C.D. 2000. *Australia's military map-makers: The Royal Australian Survey Corps 1915-1996*. Melbourne: Oxford University Press.
- Dyer, N. and S. Counsell. 2010. *McREDD: How McKinsey 'cost-curves' are distorting REDD*. Briefing. The Rainforest Foundation, UK.
- Enright, N. J. 1978. *The comparative ecology and population dynamics of Araucaria species in Papua New Guinea*. (PhD), Australia National University.
- Faal, E. 2007. *Political budget cycles in Papua New Guinea - IMF Working Paper*. <http://www.imf.org/external/pubs/ft/wp/2007/wp07219.pdf>.
- FAO. 2000. *Asia and Pacific national forestry programmes*. Update 34, RAP Publication 2000/22.
- _____. 2005. *Global Forest Resources Assessment Country Report—Papua New Guinea*. FRA 2005/097, Rome.
- Filer, C. 23 July 2011. "REDD-plus at the

- crossroads in Papua New Guinea." *East Asia Forum*. <http://www.eastasiaforum.org/2011/07/23/redd-plus-at-the-crossroads-in-papua-new-guinea/>.
- Filer, C., R.J. Keenan, B.J. Allen, and J.R. Mcalpine. 2009. "Deforestation and forest degradation in Papua New Guinea." *Ann. For. Sci.* no. 66 (813):1-12.
- FoE-J and GEF. 2011. *Evaluation of social and environmental risks accompanying the procurement of timber from Papua New Guinea*, ITTO project pd391/06 rev.2 (m) "Promoting and creating market demand for certified tropical wood and verified legal tropical wood". http://www.fairwood.jp/eng/res/report/report2011_PNG_FoEGEF.pdf.
- GoPNG. 2008. Papua New Guinea Readiness Plan Idea Note (R-PIN). http://www.forestcarbonpartnership.org/fcp/sites/forestcarbonpartnership.org/files/Documents/PDF/PNG_R-PIN_07-31-08.pdf.
- _____. 2009. Presentation at UN-REDD National Joint Programme Policy Board Meeting, 9-10 March, Panama. <http://www.un-redd.org/UNREDDProgramme/CountryActions/PapuaNewGuinea/tabid/1026/language/en-US/Default.aspx>.
- _____. 2010. *Climate-compatible development for Papua New Guinea*. Port Moresby: Government of Papua New Guinea (Second Draft - For Stakeholder Comment. March 2010).
- _____. n.d. Papua New Guinea Vision 2050. Government of Papua New Guinea. http://www.treasury.gov.pg/html/publications/files/pub_files/2011/2011.png.vision.2050.pdf.
- Hammermaster, E.T., and J.C. Saunders. 1995. *Forest resources and vegetation mapping of Papua New Guinea*. Canberra: CSIRO.
- Holzknrecht, H.A. 2011. *Overview Report to INA regarding the INA/IGES Workshop and issues arising from the Workshop*. March Girls Resort, February 17-18, 2011.
- INA-IGES. 2010. INA/IGES PNG Situation Assessment for REDD, REDD Capacity Building Workshop and Building Consensus, 01-03 March 2010, Gaire, Central Province, PNG: Summary. Hayama: IGES. http://www.iges.or.jp/en/fc/pdf/activity_201003/Summary_Reports/PNG_summary.pdf.
- ITTO. 2007. *Achieving the ITTO objective 2000 and sustainable forest management in Papua New Guinea. Report submitted to the International Tropical Timber Council by the Diagnostic Mission established pursuant to Decision 2(XXIX)*. Yokohama: ITTO.
- Lattas, A. 2011. Logging, violence and pleasure. Neoliberalism, civil society and corporate governance in West New Britain. *Oceania*, 81(1), 88-107.
- Mark, S. n.d. *Climate Change Road show (Conference) Report*. Boroko: The Eco-Forestry Forum. http://www.ecoforestry.org.pg/uploads/loginwindow_sites/ecoforest-ry_loginwindow_com_live/pages/files/Climate%20change%20and%20REDD/CC%20Road%20show%20Report.pdf.
- Miller, S., E. Hyslop, G. Kula, and I. Burrows. 1994. "Status of biodiversity in Papua New Guinea." In *Papua New Guinea Country Study on Biological Diversity*, edited by N. Sekhran and S. Miller, 67-95. Hong Kong: Colorcraft.
- National Research Institute. 2011. *The administration of special purpose*

- agriculture and business leases: Customary land and the lease-lease back system - A preliminary summary of findings. Lae: National Research Institute.
- Nicholls, S. 2010. *Presentation at INA / IGES PNG Situation Assessment for REDD, REDD Capacity Building Workshop and Building Consensus*, 01-03 March 2010, March Girls, Gaire, Central District
- Oavika, F. 1992. *Report on the establishment of PSP/TSI in Turama Forest*. Lae: Forest Research Institute.
- O'Brien, S. 2012. *REDD+ and Forest Carbon Rights in Papua New Guinea: Background Legal Analysis*. SPC/GIZ Regional REDD+ Project: Climate Protection through Forest Conservation in Pacific Island Countries.
- OCCD. 2012a. National REDD+ Project Guidelines. Port Moresby. <http://www.occd.gov.pg/images/stories/documents/png-redd-project-guidelines.pdf>.
- _____. 2012b. OCCD Organisational Structure. http://www.occd.gov.pg/index.php?option=com_content&view=article&id=64&Itemid=82.
- _____. 2012c. Readiness Preparation Proposal (R-PP). Version 6 Working Draft, April 4, 2012. Date of submission: 10th August, 2012.
- Pearse, R. 2012. "Mapping REDD in the Asia-Pacific: Governance, marketisation and contention." *Ephemera* no. 12 (1/2):181-205.
- Radio Australia. 1 March 2011. *PNG landowners get negligible rent for SABL land leases: expert*. <http://www.radioaustralia.net.au/international/radio/onairhighlights/png-landowners-get-negligible-rent-for-sabl-land-leases-expert>.
- _____. 2 February 2012. *Flannery says Australia should be concerned about PNG's record log exports*. <http://www.radioaustralia.net.au/international/radio/onairhighlights/flannery-says-aust-should-be-concerned-about-pngs-record-log-exports>.
- _____. 03 February 2012. *Alarm over record PNG log exports from disputed land*. <http://www.radioaustralia.net.au/international/2012-02-03/alarm-over-record-png-log-exports-from-disputed-land/282596>.
- Shearman, P.L., J. Bryan, J. Ash, P. Hunnam, B. Mackey, and B. Lokes. 2008. *The state of the forests of Papua New Guinea: Mapping the extent and condition of forest cover and measuring the drivers of forest change in the period 1972-2002*. Port Moresby: University of Papua New Guinea.
- Shearman, P.L., J. Bryan, J. Ash, B. Mackey, and B. Lokes. 2010. "Deforestation and degradation in Papua New Guinea: A response to Filer and colleagues, 2009." *Ann. For. Sci.* no. 67 (300):1-4.
- SPREP. March 2009. *A status report of the potential for forest carbon schemes to combat deforestation and forest degradation in Papua New Guinea*. http://www.sprep.org/att/irc/ecopies/countries/papua_new_guinea/95.pdf.
- Statement by Sir Michael T. Somare. 2005. In *Global Roundtable on Climate Change*. Columbia University, New York. <http://www.rainforestcoalition.org/SirMichaelSomareGROCCSpeech-FINAL.pdf>.
- Takeuchi, W. 1999. "Botanical results from the 1995 Bismarc-Ramu expedition in Papua New Guinea." *SIDA* no. 18:751-782.
- TAP FCPF. 2008. Forest Carbon Partner-

- ship Facility (FCPF): Readiness Plan Idea Note (R-PIN) - External Review, <http://www.forestcarbonpartnership.org/fcp/PG>.
- Tararia, A., and L. Ogle. 2010. *Incorporated land groups and the registration of customary land: Recent developments in PNG*. <http://www.aidwatch.org.au/sites/aidwatch.org.au/files/Almah&Lisa.pdf>
- Trines, E., M. Skutsch, and P. (ed) Dam. 2008. "Payment for Environmental Services in Papua New Guinea." *Policy Paper No.3, Kyoto: Think Global, Act Local project*. http://www.silvestrum.com/_userfiles/files/2008%20KTGAL%203%20Policy%20paper%20PNG%20PES.pdf.
- UN n.d.(a). *Papua New Guinea United Nations Development Assistance Framework 2012 -2015. Draft*. UN.
- UN. n.d.(b). *UN Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries Joint Programme Document - PNG*. http://pngexposed.files.wordpress.com/2010/10/unredd_pb5_png-npd1.pdf.
- United Nations Population Division. 2010. *World population prospects: The 2008 revision, (searchable database, http://esa.un.org/unpp/p2k0data.asp)*.
- UN-REDD. 2011. *UN-REDD PNG National REDD+ Programme Annual Report 2011*. UN-REDD.
- Winn, P. 2012. *Up for Grabs: Millions of hectares of customary land in PNG stolen for logging*. Ultimo, NSW: Greenpeace Australia Pacific.
- Yosi, C. K. 2004. *Impact of logging on short-term trends in forest structure, composition and population of lowland tropical forest in Papua New Guinea*. (MSc), University of Wales, Bangor, UK.
- _____. 2011. *Scenarios for community-based management of cutover native forest in Papua New Guinea*. (PhD), University of Melbourne.



IGES OFFICES

HEADQUARTERS

2108-11 Kamiyamaguchi, Hayama
Kanagawa, 240-0115, Japan
Tel +81-46-855-3700 | Fax +81-46-855-3709

TOKYO OFFICE

Nippon Press Center Bldg. 6F, -2-1 Uchisaiwai-cho, Chiyoda-ku
Tokyo, 100-0011, Japan
Tel +81-3-3595-1081 | Fax +81-3-3595-1084

KANSAI RESE ARCH CENTRE

I.H.D. CENTER 3F, 1-5-1 Wakinohamakaigan-Dori, Chuo-ku,
Kobe, Hyogo, 651-0073, Japan
Tel +81-78-262-6634 | Fax +81-78-262-6635

KITAKYUSHU OFFICE

Kitakyushu International, Conference Center 6F, 3-9-30, Asano,
Kokurakita-ku, Kitakyushu, Fukuoka, 802-0001, Japan
Tel +81-93-513-3711 | Fax +81-93-513-3712

Beijing Office

(SINO-JAPAN COOPERATION PROJECT OFFICE)
IGES Sino-Japan Cooperation Project Office
Sino-Japan Friendship Center for
Environmental Protection # 505 Room
Beijing, 100029 China
No.1 Yuhuanlu, Chao Yang District
Tel +86-10-8463-6314 | Fax +86-10-8463-6314

IGES REGIONAL CENTRE

604 SG Tower 6F, 161/1 Soi Mahadlek Luang 3. Rajdamri Road,
Patumwan, Bangkok, 10330, Thailand

