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**ACHIEVING THE ITTO OBJECTIVE 2000
AND SUSTAINABLE FOREST MANAGEMENT
IN PAPUA NEW GUINEA**

REPORT OF THE DIAGNOSTIC MISSION

*Report submitted to the International Tropical Timber Council by the Diagnostic Mission
established pursuant to Decision 2(XXIX)*

April 2007

TABLE OF CONTENTS

Executive Summary.....	iii
1. Introduction.....	1
2. Background and overview of the forest sector.....	2
3. Diagnosis.....	3
3.1 Forest Resources of Papua New Guinea.....	3
3.1.1 Forest cover.....	3
3.1.2 Protected areas.....	4
3.1.3 Production forests.....	5
3.1.4 Planted forests.....	5
3.2 Land use and Land use planning.....	6
3.3 Forest policies.....	6
3.3.1 Legislation and Laws governing the forestry sector.....	6
3.3.2 Environmental legislations.....	7
3.3.3 Other relevant legislation.....	8
3.4 Forest Administration.....	8
3.4.1 PNG Forest Authority (PNGFA).....	8
3.4.1.1 National forest Board (NFB).....	9
3.4.1.2 National Forest Service (NFS).....	9
3.4.1.3 Provincial Forest Management Committees (PFMC's).....	9
3.4.1.4 Provincial and Local level Governments.....	10
3.4.1.5 PNG Forest Research Institute (PNGFRI).....	10
3.4.2 Department of Environmental Conservation (DEC).....	11
3.5 Forest concession allocation processes.....	11
3.5.1 The Acquisition Process.....	13
3.6 Land ownership.....	13
3.7 Monitoring.....	14
3.7.1 Third party Log Export Monitoring.....	15
3.7.2 Monitoring by other entities.....	15
3.8 Forest Governance and Law Enforcement.....	15
3.8.1 Compliance with Laws.....	16
3.8.2 Optics, ethics and capacity.....	17
3.9 Industry.....	17
3.9.1 The role of Civil Society.....	19
3.10 The importance of Transparency for Sustainability.....	19
4. Conclusions.....	20
4.1 Forest Management.....	20
4.1.1 Forest Information.....	21
4.1.2 Protected areas.....	21
4.1.3 Planted forests.....	21
4.2 Policies and legislations.....	22
5. Recommendations.....	22
5.1 Forest management.....	22
5.2 Forest policies.....	23
5.3 Forest Governance and Law Enforcement.....	23
6. References.....	25
Appendix 1 - Mission Members.....	27
Appendix 2 - Itinerary.....	28
Appendix 3 - People met, interviewed and consulted.....	31
Appendix 4 - List of Protected Areas.....	35

ACHIEVING THE ITTO OBJECTIVE 2000 AND SUSTAINABLE FOREST MANAGEMENT IN PAPUA NEW GUINEA

EXECUTIVE SUMMARY

Objectives of the mission

In 1999 ITTO member countries adopted the Year 2000 Objective, an objective which committed the members to achieving international trade of tropical timber from sustainably managed forests by the year 2000. The most recent agreement reached in January 2006 reaffirms the commitment, now called Objective 2000, and states that members agree to "...moving as rapidly as possible toward achieving exports of tropical timber and timber products from sustainably managed sources (*ITTO Objective 2000*)"

Within the framework of this objective, the government of Papua New Guinea requested ITTO for an assessment of its forestry sector to determine its potentialities, achievements, and challenges. ITTC authorized a "Diagnostic Mission to PNG with the main objectives of identifying weaknesses of the forestry sector and the constraints contributing to the failure in achieving Objective 2000, hence Sustainable Forest Management and recommending appropriate measures to overcome the constraints."

Development of the mission

ITTO designated a technical team composed of three international and two national consultants. The national consultants prepared a national report which provided background information on the forestry sector and allied fields in PNG. The international consultants reviewed numerous studies and reports pertaining to the forestry sector in PNG and visited PNG between 17 February and 7 March, 2007. They met and interviewed representatives of government agencies, NGOs, landowners and forest industry both in Port Moresby and in the field.

OVERVIEW OF THE CURRENT STATUS

1. Forest resources

PNG is endowed with a very large forest estate. Out of the total land area of 46.3 million hectare, the forest cover is estimated at 30.6 million ha, or nearly two-thirds of the total land area. The forests are classified as 80% rain forests, 4% moist forests, 5% woodland and 11% mountain forests. The coasts host some of the most extensive mangroves in the region. The country has about 10.5 million hectares of forest that might be considered permanent; these include 8.7 million hectares of forest over which timber rights have been acquired (production Permanent Forest Estate), 1.7 million hectares allocated for protection and about 80,000 hectares of planted forests. PNG forests host some of the richest flora and fauna in the world and contain several highly valued commercial timber species. The total area classified as primarily Productive Forests stands at 13.75 million ha.

There are different estimates of the rate of deforestation in PNG, but the loss of forest cover between 1990 and 2000 and between 2000 and 2005 was reported at 0.4%-0.5% annually, (ITTO, 2005; FAO 2005); some NGOs however, report higher rates. Much of the deforestation is due to conversion to other land uses such as agriculture, particularly oil palm.

Protected areas are not well defined in PNG. The Department of Environment and Conservation (DEC) reports 1.6 million ha of protected forests, while the 2006 draft National Forest Plan gives a figure of 0.5 million ha. Furthermore, the delineation of protected areas on the ground is also vague. However, in the absence of accurate information, the figures given above should be taken as indicative of problems with reconciling what forests are protected and what that means in the context of PNG law.

2. Policy, legal and institutional frameworks

The elements of sustainable forest management are enshrined in the PNG Constitution of 1975, but the sector has been plagued with serious problems since then. Most of the legislation and regulations have been enacted as a result of forest degradation and problems associated with logging operations and trade, as well as dissatisfaction of landowners, donors and NGOs. Although the legislation includes substantive social and environmental aspects, the emphasis has always been on logging operations, i. e. economic returns. Sustainable yield has been adopted as the main criterion for sustainable forest management - an invalid assumption since SFM is far more than sustainable yield.

The 1991 Forestry Act introduced new allocation procedures and a new administration system. It established the PNG Forest Authority (PNGFA) and mandated it to manage the nation's forest resources through implementing the overall objectives of the National Forest Policy. It operates through the National Forest Board, the National Forest Service and the Provincial Forest Management Committees among other bodies. The Forestry Act empowers the PNGFA to negotiate Forest Management Agreements (FMAs) with resource owners and select developers (concessionaires) and negotiate conditions under which Timber Permits, Timber Authorities and Licences may be granted. Supported by the National Forestry Development Guidelines (NFDG), the National Forest Policy (NFP) was devised as the operational arm of the Forestry Act, mostly for administration and control of the forest sector.

The National Forest Board (NFB) oversees the activities of the PNGFA. Its composition, as outlined in the Forestry Act, includes representatives of all actors in the forestry sector. Lately however, some stakeholders were dropped from the Board, including the sole NGO representative, while others were added, a focus of much criticism.

The National Forest Service (NFS) is the agency actually responsible for administering the Forestry Act. It is in charge of practically all aspects of forestry at the national level in PNG. Often the responsibilities overlap both within the NFS and with DEC.

The Provincial Forest Management Committees are supposed to ensure effective consultations with customary landowners, among other responsibilities. However, there are indications that PFMCs do not function as anticipated due to shortage of human and financial resources to implement their mandates.

The PNG Forest Research Institute (PNGFRI) located in Lae, is an integral part of the NFS. It has some good physical facilities, but the current research programme is not up to standard as it does not address some of the research topics most urgently needed in PNG such as social aspects; policy, economics and planning; and biodiversity, among others.

The Department of Environmental Conservation (DEC) is mandated to oversee all aspects of forestry operations with impact on the environment, including approval of FMAs during the acquisition process.

The human resources of both PNGFA and DEC, especially the field staff, appeared overworked, under resourced and, therefore, not surprisingly, unmotivated. In some critical areas most pertinent to SFM, their responsibilities are far more than they can perform. Even though their work was reduced to mainly "policing" forestry operations by developers (i.e. logging), they lack facilities to do so. Each field officer must attend to an area of hundreds of thousands of hectares with almost no equipment or infrastructure for support.

Forest concession allocation processes

PNG has in place elaborate systems and procedures for allocating (granting) concessions for forest resource exploitation and development. The country also has numerous types of permits that have evolved over the years, driven mainly by the need to correct the inadequacies of old systems and complaints by interest groups such as donors, forest industry, NGOs and landowners. There are three principle types of licensing for forest development (timber harvest): Timber permit, Timber Authority and Licences. All are subject to an extensive series of processes for approval. The Forestry Management Agreement (FMA) is the ultimate step in allocating forest concessions to developers. It is perhaps the most debated and challenged process in forestry in PNG. It is supposed to be based on consultation with landowners; competitive and transparent; and its implementation is the subject of close and extensive scrutiny.

Land ownership

The system of land tenure plays a critical role in Sustainable Forest Management in PNG by virtue of the fact that 97% of the forests are owned by customary landowners. There is, however, a common reluctance by customary owners to register their title to the land, compounded by vaguely defined boundaries of ownership. While the state has no ownership rights over land or its forest resources, the government, through PNGFA, exercises acquisition of private (customary) property rights in the public interest for forest development. Landowners are supposed to actively participate in the negotiation and granting of FMAs, although the Forest Act of 1991 does appear to pre-empt some of those rights. Effective landowner inclusion in the system of granting forest logging licences is also a matter of dispute. On the other hand, it is rather difficult for any forestry administration to manage privately owned land even when mandated to do so.

Monitoring

Monitoring of developers' compliance with the terms of FMAs is the responsibility of NFS in collaboration with DEC. Furthermore, field officers are supposed to address landowner's disputes and mediate between them and loggers. This is not executed properly due, among other factors, to a shortage of personnel and inadequate logistics.

Monitoring of log exports has been devolved to an independent entity, the SGS (Société Générale de Surveillance) since 1994, after many years of debate and litigation, particularly as related to failures in the declaration of shipments and in significant problems with transfer pricing which have led to major financial losses to PNG government. The process has led to capturing substantial revenues for the PNG government as reported by SGS. However, the monitoring is done at the tail end of the chain of custody and the tracking system does not provide information on the level of sustainable practice of the timber permit holder. Monitoring of compliance with environmental protection and biodiversity conservation entrusted to DEC is even more inadequate.

As in almost all tropical countries, PNG logging operations and log export are under close surveillance by major international NGOs as well as a respectable number of vigilant national NGOs.

Forest governance and law enforcement

The laws governing the PNG forestry sector are regarded as generally excellent, though with far more steps and complexities than necessary. On the other hand, concern is often raised about the capacity of PNG to monitor and enforce its own laws. A striking example of this is the significant extent of forest FMA ha assigned to each officer to monitor compliance with the law, among other major field responsibilities.

There is a major problem in PNG in determining maximum logging levels and the appropriate characteristics of stands to be logged in the context of sustainability of the forests. However, the more significant issues are to do with the compliance of the government itself with the laws of PNG when deciding to designate a forested area for logging purposes; negotiating the agreement with landowners; managing, monitoring and enforcing the agreement; and when extending current agreements.

It is believed that the narrow focus of the PNGFA on exploitation of the forest resource for the primary financial benefit of the national government presents a conflict of interest which colors decisions made by the government at all levels. The National Forest Board has also, on occasion, taken decisions without the due process procedures required in the Forestry Act 1991 (e.g., extension of Timber Authority and Timber Permits without consultation with landowners). This has been the case in at least one significant extension of an FMA which more than doubles the size of the FMA.

Forest Industry

One of the areas where the Mission had relatively few consultations was with industry operating in PNG. Through consultations with the association of industry representatives, some domestic timber operators (but not the FMA owners themselves), the Mission was able to get a sense of the more significant issues facing the industry.

There are very few local companies with the primary authorization to harvest in production forests. Most companies are foreign-based and have an extensive foreign employee base, though some have hired domestic

logging companies as subcontractors for some aspects of the work. There is a significant dependence on the logging industry by PNG for infrastructure in areas being logged. Beyond that, the dependency by government field officers on the companies for housing, transportation, schooling and other public services leads to significant concerns. This is the basis for complaint by the industry, which has to finance and manage these activities in addition to logging. It is, however, also significant concern because of the co-dependency of government officials with the FMA owners.

Concerns were also raised by almost all consulted about timber pricing, issues include the apparent price-setting monopoly of a single foreign company with as much as 70% of the production forest, the unilateral and non-transparent role of the Marketing Division of the NFS in establishing prices, and the paucity of remunerations to the landowners themselves, often functioning under timber prices set at fixed prices under old agreements.

Transfer pricing continues to be a problem as well, although the role of SGS in monitoring log exports has had some positive impact, it is well documented in studies by, among others, the Overseas Development Institute (ODI) published in January 2007.

The Role of Civil Society

Papua New Guinea has all the right ingredients for effectively engaging civil society in the sustainable management of forest resources. An admirable number of local NGOs are very active in PNG, especially as related to monitoring logging operations, close scrutiny of trade in illegally-sourced timber and in working with landowners at the grassroots level. The mission was introduced to two successful activities undertaken by NGOs.

However, there is significant criticism about the Government of PNG's apparently deliberate exclusion of NGOs and Landowners in decision making processes related to the granting and renewal of concessions. This is the subject of a number of legal disputes.

There are significant problems overall with the transparency of the process and information on the forest sector and its management. For example, in the acquisition of forest areas for FMAs the only aspect publicized is the notice of tender. No subsequent steps are available to the public.

Conclusions and Recommendations

The general conclusion of this "Diagnostic Mission" is that PNG has many solid acts, laws and legislation in place, but implementation is problematic due primarily to administrative and governance constraints and intervention. The government and industry have not been able to demonstrate integrated, economically viable, ecologically compatible and socially acceptable forest management practices in line with the ITTO Criteria and Indicators. Forest management is reduced to monitoring logging operations at the expense of overall Sustainable Forest Management.

The environmental impacts of timber harvesting decisions and operations are poorly addressed and the regulatory framework is not being enforced due to inefficient collaborative efforts of PNG Forest Authority and DEC in field monitoring and control. The landowners constantly complain about lack of involvement in all government decision making processes related to forestry.

The following are some specific conclusions and recommendations pertaining to areas identified by the mission as crucial for working towards achieving sustainable forest management. The recommendations are addressed to the government and to ITTO.

Forest management

- The National forest inventory is outdated; hence existing national and provincial level plans are based on “guesstimates” of the area, species and growing volume, which vary tremendously from region to another. It is strongly recommended that PNG undertake and then continue to maintain a forest inventory as soon as possible. A multidisciplinary team of foresters, environmentalists, and sociologists should be involved in a National Forestry Inventory every 5 to 10 years as recommended in the PNG Forest Policy.
- ITTO should provide a technical mission to assess monitoring and build capacity needs for areas of forest being harvested.
- Land use planning (LUP) including definition and delineation of protected areas is lacking. It is recommended that PNG, possibly with the help of ITTO, undertake a LUP with due consideration to stakeholder consultation processes.
- There is a weak institutional working relationship between the two primary agencies (PNG Forest Authority and DEC) responsible for the sustainable management and protection of forests in PNG. This situation must be remedied.
- The design and layout of planted forests are not adequate to demonstrate the protection, restoration and conservation of natural forests and does not seem to minimize pressure on natural forests. It is recommended that PNG finalize the Reforestation Policy and complete the Forest Plantation Development Programme.
- The massive areas under Forest Management Agreements (FMA’s) coupled with inadequate logistics render the working conditions for field officers almost impossible. The government should address the complaints of the field staff.

Forest Policy and administration

The mission concluded that the enacted laws and legislation and the written policies related to forestry in PNG are comprehensive and would help to achieve most aspects of Sustainable Forest Management; therefore conducive to achieving Objective 2000. Nevertheless, it is clear that when it comes to implementation, all activities of the government center around the economic values of the forests and the functions of forest management plans are reduced to mainly “policing” of forest harvesting operations.

There are also serious deficiencies on the ground. Apparently, part of the problems is the multiplicity of the entities (bodies under PNGFA) and the overlap of their mandates and responsibilities. The *modus operandi* of PNGFA is very complex and processes of granting licences to harvest forest are cumbersome. Some specific conclusions and recommendations include:

- The National Forest Plan is based on the outdated information of the current National Forest Inventory. There is an urgent need to update the National Forest Plan with due consideration to the three pillars of SFM; economic, environmental and social aspects. International organizations such as ITTO and FAO could help with these processes especially for national capacity building.
- The government needs to make the processes of negotiating, granting and monitoring of FMA’s more transparent and participatory, including the extension of FMAs, Timber Authorities and other existing agreements which have, or which will shortly expire.
- The diverse interests of landowners augmented by the undue influence of certain interest groups complicate the efforts to achieve SFM. A strong extension programme is overdue in PNG.
- The Mission believes that adopting transparency in the implementation of actions related to the Forest estate is fundamental to achieving Objective 2000.

Forest Governance and Law Enforcement

The Technical Mission endorse the strong view held by many people that the laws of the Papua New Guinea are generally excellent, though with far more steps and complexities than necessary. On the other hand, concern was raised about the capacity of PNG to monitor and enforce its own laws. Project Supervisors assigned to FMAs are responsible for overseeing compliance with the laws and the implementation of all

closes stipulated in the agreement. In addition, they have a politically complex job of distributing the landowner's allocation to the community and mediating in disputes. There are serious concerns about the practicality of such responsibilities given the shortage of personnel and facilities.

- There appears to be a confusion between what constitutes illegal activity, non-compliance and sustainable logging in PNG. The government needs to redefine “sustainable logging” as just one integral component of the economic, social and environment aspects of sustainable forest management. This critical gap is particularly striking in light of the 97% of the forest land and resources belonging to landowners. In this regard, the narrow focus of the PNGFA almost exclusively on exploitation of the forest resource for the primary financial benefit of the national government presents a significant obstacle to achieving Objective 2000. ITTO should build on its previous workshop on illegal logging by offering to work with the Government of PNG to facilitate a process with all stakeholders to address these issues.
- Many questions have been raised regarding the compliance of the government itself with the laws of PNG. The processes for designating a forest area for logging purposes, negotiating the terms of agreement with landowners and monitoring compliance and procedures for extending current agreements could be the focus of an ITTO Mission, workshop or project.
- PNG civil society, particularly NGOs, provide an important contribution in the forest sector, along with international NGOs. The Constitution and the law in PNG provide the basis for transparent engagement in all aspects of sustainable forest management, including decisions made about whether or not a forest area should be considered for an FMA, protected area or other use.
- The PNG government should seek more effective involvement of landowners and NGOs on the National Forest Board, the PFMC and in other forest decision-making processes.
- ITTO should offer to carry out an independent survey of market intelligence needed within PNG, including also the development of the potential role of the PNG Forest Research Institute focused on: timber pricing, the timber market, transfer pricing, the current and future role of planted forests and value-added products in international trade.

This Executive Summary provides only excerpts of the mission diagnosis, conclusions and recommendations. Members are invited to read the full report for a more comprehensive understanding of Papua New Guinea, its challenges and opportunities in moving much closer to achieving Objective 2000, hopefully in the near future.

ACHIEVING THE ITTO OBJECTIVE 2000 AND SUSTAINABLE FOREST MANAGEMENT IN PAPUA NEW GUINEA

REPORT OF THE DIAGNOSTIC MISSION

1. Introduction

The ITTC frequently authorises Technical Missions in order to examine achievement of the ITTO Year 2000 Objective that member countries agreed to in 1990, an objective to achieve international trade of tropical timber from sustainably managed forests by the year 2000. The most recent agreement reached in January 2006 reaffirms the commitment and states that members agree to "...moving as rapidly as possible toward achieving exports of tropical timber and timber products from sustainably managed sources (*ITTO Objective 2000*)".

While PNG has made appreciable strides in addressing the many aspects of forest management to meet Objective 2000, the PNG Government sought the assistance of ITTO for an assessment of the Forestry Sector to determine its potentials, achievements, and challenges. In a letter dated May 9, 2006 from the Acting Director of the PNG National Forest Service to the Executive Director, ITTO, the Government requested ITTO to field a "Diagnostic Mission to assess all issues contributing to its failure, weaknesses, and challenges" in the forestry sector. The intention was to present a report to the 42nd session of ITTC in Port Moresby in May 2007. The specific Terms of Reference of the mission were to:

Identify the factors that are most critical in preventing the attainment of sustainable forest management in that country.

1. Assemble these constraints in order of importance.
2. Recommend a sequence of actions to remove the constraints, providing cost estimates whenever possible.

The general principles underlying the Diagnostic Mission were stated by ITTO as follows: In any situation, there is usually one factor that is most crucial in preventing progress. Until this constraint is removed, no progress is possible on any other front. But, once this first constraint is removed, there may be another that, in its turn, limits progress. The objective of the Diagnostic Mission is to identify these constraints, to arrange them in a sequence and recommend appropriate action.

The exact procedures for the Mission will depend upon the circumstances in the country concerned. It should, however, include:

- Discussion with government ministers and senior members of the department responsible for forests, land use and trade.
- Discussion with forest managers and representatives of the timber trade.
- Discussion with the principal NGOs concerned with forest questions.
- Examination of the National Forestry Action Plan.
- Visits to selected forest areas and forest industries that illustrate particular problems or opportunities.

The important constraints are likely to lie in Criterion 1 of the National Level Criteria and Indicators, and particularly in the subjects dealt with in Indicators 1.1 to 1.5.

The subject areas of potential constraints, as set by ITTO include: Extent of the forest cover; Policy; Allocation; Social and economic conditions; Management; Pre-exploitation survey; Choice of exploiters; Conditions of exploitation; Quality of exploitation; Post-exploitation survey and treatment; Control of operations; Follow up and monitoring and Education, training and research.

ITTO commissioned a mission composed of three international and two national consultants (Appendix 1). The national consultants prepared a "National Report", which served as background information for the mission. The international consultants reviewed numerous reports and studies written about the forestry sector of PNG especially more recent ones as listed in Chapter 6: References.

The international consultants visited PNG between 18 February and 2 March, 2007. The Itinerary of the mission (Appendix 2) included discussions in Port Moresby and field visits and the consultants had dialogues and conducted interviews with representatives of both national and provincial governments, forest industry, NGO's and landowners, as well as few representatives of aid agencies (Appendix 3).

2. Background and overview of the forestry sector

The Independent State of Papua New Guinea (PNG) is located in the south western Pacific Ocean on the eastern half of the island of New Guinea, the second largest island in the world. It also has hundreds of small islands. PNG has 462,860 sq km of land which is home to 5.6 million people, a stunning richness of biological diversity, including more than 21,000 species of higher plants, 200 species of mammals, and 700 species of birds - many species found nowhere else on earth. Papua New Guineans call PNG the "land of the unexpected," a startlingly accurate description of this fascinating country with a diverse geography, a dramatic mountain range running down the spine of the island, dense forests estimated at over 67.6% of the total land area (FAO 2005), including rainforests, moist forest, savannah and woodland and mountain forest. It should be understood from the outset that the forests of PNG hold a wealth of goods and services, including being the source of timber for its citizens and for export.

PNG's indigenous peoples speak over 600 distinct languages and through their clans are the constitutionally recognized owners of approximately 97% of the forests. Customary land covers most of the land in the country; a small percentage is held private under State Lease or is government land. At least 80% of the population still lives in rural areas and is dependent on the land for their livelihoods. Most significantly, the constitution of Papua New Guinea guarantees customary land ownership and the associated rights to all natural resources, with the exception of minerals, petroleum, water and genetic resources. Landowner groups are legally entitled to decide on the management of their forest land and resources.

The Independent State of Papua New Guinea is a relatively young democracy, achieving her independence in 1975. But archaeological evidence of settlement goes back at least 50,000 years, including a period when a land bridge linked PNG with northern Australia. There is even evidence of gardening 9000 years ago, which makes the citizens of PNG among the world's first farmers.

In more recent time the Portuguese were the first Europeans to set foot on the PNG islands, the Netherlands claimed sovereignty in 1600, followed by colonization by Germany and Great Britain. During the First World War Australia was granted the territory by the League of Nations. During the Second World War Japan, Australia and the USA fought on the island. After the war, colonialism continued but, starting in the 1960s at the urging of the United Nations, a House of Assembly with 64 members was formed. Internal self-government came into effect in 1973, followed by full independence in 1975.

ITTO estimates in *Status of Tropical Forest Management 2005* that the country has about 10.5 million hectares of forest that might be considered permanent; these include 8.7 million hectares of forest over which timber rights have been acquired (production PFE), 1.7 million hectares allocated for protection and about 80,000 hectares of timber plantations.

The first law affecting forests in PNG was the 1909 Timber Ordinance of Papua. It was followed by the Timber Ordinance of 1922 for the Territory of New Guinea. Both were focused on controlling the use of forest resources, but particularly targeted at timber resources. The substantive basis for the architecture of forest law in PNG, however, is to be found in the 1936-37 Forestry Ordinance. The Forestry Ordinance enshrined the recognition of timber rights by customary landowners, but also established the concept and process of the "purchase" of those rights and the control and supervision of the permits and licenses for timber. As is true in many countries, the focus of these laws was on the timber resource, with scant attention paid to the forests containing the timber.

Upon independence, the people of PNG adopted the Constitution of Papua New Guinea in 1975 which directly addresses natural resources and effectively targets all aspects of sustainability as objectives for the country (an objective not to be found in several constitutions around the world). In the National Goals and Directive Principles which underlie the Constitution (defining explicitly what is included in the intent of the Constitution), it states unequivocally, "We declare our fourth goal to be for Papua New Guinea's natural resource and environment to be conserved and used for the collective benefit of us all, and be replenished for

the benefit of future generations. We accordingly call for (1) wise use to be made of our natural resources and the environment in and on the land or seabed, in the sea, under the land, and in the air, in the interests of our development and in trust for future generations.”

The first comprehensive law to be passed affecting forests after independence was the 1991 Forestry Act, which came into force in 1992. Associated with this is the National Forest Policy. Described in more detail later in this report, key highlights of the Forest Act which have a bearing on the Technical Missions Assessment include those aspects of the new law which:

- Increased the reach of the national government in the control, planning and management of forestry in PNG;
- Established the sole right to enter into forest management agreements with landowners and subsequently to select the forest industry which implements the agreement;
- Established responsibility to the National Forest Service for providing for their long-term management through the duration of the forest agreements;
- Grandfathered all prior forestry timber rights purchases and related permits; and
- Reinforced the customary landowners rights to the resources

Another set of laws and regulations, however, are as or perhaps more relevant to implementing sustainable forest management in PNG. An excellent summary of these can be found in the ITTO Status of Tropical Forest Management report on PNG (2005). In addition to these there are several laws which provide a particular context for some of the major points in this technical assessment, including the 1998 Organic Law on Provincial and Local-Level Government.

3. Diagnosis

3.1 Forest resources of Papua New Guinea

The following section describes briefly the status of different components of the forestry sector and some observations and comments by the mission.

3.1.1 Forest cover

Papua New Guinea (PNG) has a total land area of 46,410,390 hectares. Of this area, approximately 70% is closed natural forests. Lowland forests, mountain forests, and alpine vegetation are all found in PNG. Its coastal areas host some of the most extensive virgin mangrove forests in the world.

Statistics on forest cover and the various classifications vary according different sources. This vital information is not systematically updated and therefore can be categorized beyond doubt as outdated. Consultations with various stakeholders (government, industry, NGOs and landowners) on the information of the forest resources reveal that forest cover analysis is based on desktop assessment and has not been verified through field surveys and inventories.

The draft National Forest Plan (May 2006) summarizes several functional classification of forests¹: 13.75 million hectares as *Production Forests*, 15.55 million hectares as *Reserve Forests*, 3.91 million hectares as *Salvage Forests*, 546,700 hectares as *Protection Forests*, 3.24 million hectares with *Afforestation potential* and remaining area of 9.41 million hectares classified as *Others*.

Under the present customary ownership of land and forests, it is challenging for PNG to determine the exact area under Permanent Forest Estate. The functional areas given above are based on forest areas identified by the government for timber production or set aside for protection.

¹ In the National Forest Policy (1991), forests are classified according to (i) Production Forests – identified as timber production areas in the long term; (ii) Protection Forests – by virtue of their location, topographic constraints, and ecological, cultural or environmental considerations; (iii) Reserve Forests – not yet otherwise classified, but upon which a decision will be made later; (iv) Salvage Forests – forests to be cleared for other users; (v) land suitable for afforestation.

Recent FAO (2005) statistics on forest cover change show an annual decline of 0.4% between 1980 and 2000.

It is evident that the existing functional classification of the forests described above tends to be skewed towards timber production despite the rich biological diversity of natural resources. The current classification does not adequately capture emerging challenges with regards to ecosystem approaches to sustainable forest management with a strong recognition that management of forests needs to be balanced between economic, social and environmental imperatives.

A National Forest Inventory has not been done as stipulated in the National Forest Policy (1991). At present much of the resource inventory is carried out speculatively to estimate volume, yield, type and characteristics of the forest resource and mostly carried out by the project proponent or permit holder for an FMA.

3.1.2 Protected areas

At present there is no agreed legal national definition of protected areas in PNG. Information on the protected areas of Papua New Guinea is scattered and varied according to the source. Statistics on protected areas and protection forests as identified by PNGFA and DEC are vague and differ tremendously, perhaps as a reflection of the weak institutional communications between the two organizations. Information provided by the Department of Environment and Conservation (DEC) reveals that *protected areas* in PNG amount to 1,643,899 hectares (Appendix 4) represented as National Parks, Memorial Parks, Protected Areas, Provincial Parks, Reserves, Wildlife Management Areas and Sanctuaries. The *protected areas* figure of DEC needs to be harmonized with those publicized by PNGFA as *Protection Forests* (546,700ha) as published in the draft National Forest Plan (2006). The exact delineation of the protected areas on the ground, its management authority, monitoring, enforcement and research on its biological diversity is ambiguous and remains uncertain.

Forests of PNG contain some 11,000 (Check) plant species, of which 90% is reportedly endemic. Other estimates place the number of plant species in PNG to be much higher, with approximately 15,000 to 20,000 species of vascular plants, with a lower endemism rate of close to 60% (PNG Conservation Needs Assessment, 1993). Endemic animal species include 76 species of birds, 56 species of mammals, and some 365 endemic species of freshwater fishes, amphibians and reptiles. Eighty four genera of animals are endemic to PNG.

The Fauna (Protection and Control) Act 1976 is solely confined to protect animals (birds and mammals) and the consolidated list of protected fauna of PNG covers the following species: mammals (12), birds (49), reptiles (1), snakes (1), fish (2) and insects (7). This accounts for a very small proportion of the rich and varied Australasian biological diversity of PNG. The implementation of the Fauna Act depends mainly on the resource owners, viz. the landowners, NGOs, government officials and educational institutions.

Examples of Wildlife Management Areas (WMA) in logging concessions

Pokili WMA (9,840ha) and Garu WMA (8,700ha) in West New Britain Province, currently being looked after by landowners for wild fowl protection.

Information provided by landowners during the ITTO Diagnostic Mission. February 2007

In 1992, a Conservation Needs Assessment (CNA) for Papua New Guinea was requested by the government of PNG for funding by the U.S. Agency for International Development (USAID). The CNA was implemented by the Biodiversity Support Program, a USAID-funded consortium of World Wildlife Fund, World Resources Institute, and The Nature Conservancy in collaboration with local and international NGOs, museums and academic institutions then, determined conservation priorities for the country's rich wildlife and forests.

Analysis show that there are significant overlapping areas identified under CNA with areas given for the extraction of timber under the two arrangements; (1) large scale forest concession areas acquired by the State through PNGFA under Forest Management Agreement (FMA) arrangements; (2) small-scale forest operation covering less than 1000 hectares developed under Timber Authority (TA) arrangements. Both

these arrangements regardless of the scale of forest operations make up the bulk of PNG's annual log harvest and have negative impact on specific high biodiversity priority areas and sustainable forest management, in general.

The complexity of protecting and managing the fragile tropical forests of PNG is further amplified by the fact that forested land is owned by local resource owner groups, “landowners”. Land ownership and resources use pattern pose special challenges as land tenures are complex especially with regards to protected areas. In this context, approximately 97% of the country (99% of forest lands) is held under native customary ownership and engaging landowners in effective protected area management is essential for long term resource management, species conservation and long term ecological viability of the protected area.

The Department of Environment and Conservation (DEC) is mandated to manage protected areas and monitor adherence to environmental regulations. However, the Department’s role has been marginal in administering protected areas, with limited staff based in Port Moresby and limited operational interaction with PNGFA.

3.1.3 Production Forests

The total area of forests classified as *Production Forests* stands at 13.75 million hectares, representing 30% of the total land area of PNG. The merchantable forest area rises to 71% if *Reserve Forests* and *Salvage Forests* are included as potential timber production forests.

Timber extraction in the *Production Forests* is the primary focus of the government authorities responsible for the sustainable management of the forests and its natural resources. With primary forests that are biologically diverse and heterogeneous comprising more than 2,000 tree species, only about 200 tree species currently have economic value. At present, commercial species with high market value are mainly targeted for extraction. Market access/needs determine the choice of specific species to be extracted, though with a standard cutting limit of 50cm DBH for all species.

There is no national standard with minimum thresholds to demonstrate good timber harvesting to benchmark achievement of sustainable forest management in PNG. However, it must be noted that together with DEC, the PNGFA has developed various control measures such as the PNG Logging Code of Practice (1996), which are fraught with difficulties, problems and challenges in its implementation, coordination and monitoring.

It is evident that due to remoteness of many of the timber concessions, implementation of pre-harvest and post-harvest inventories (surveys) is not a standard. This also means that monitoring by the authorities is severely lacking.

Within production forests, the PNG Logging Code of Practice requires that measures for the protection of water and soil resources should be in place. No information is available if this is the case, nor on and the total area of catchments, for example. By default enforcement of these requirements is a drawback.

Timber concessions awarded prior to 1991 has to be in line with new requirements of the 1991 Forestry Act. This would mean a significant drop in the permissible harvest levels and smaller concessions to be consolidated into larger and more economically viable projects.

Observations confirm that at present, PNG is not able to demonstrate sustainable forest management by dividing the total merchantable resource within the production forests by a cutting cycle of 35 years as stipulated in the FMA or 40 years in the National Forest Policy.

3.1.4 Planted forests

To date, relatively little attention has been given to the promotion of reforestation and afforestation activities in PNG. It is reported that of the 64,408 hectares of forest plantations established in the country, only a meagre 2,131 hectares were developed after the National Forest Policy (1991) came into force. With the oldest plantation established in 1950, and the emphasis to promote more forest plantations using high value species as a priority, either through woodlot establishment, agroforestry or private sector industrial tree plantation, careful scrutiny is needed.

While supporting customary landowner participation, plantation forests is needed for a number of reasons; (1) creation of employment opportunities for the rural people, (2) development of competitive export production, (3) encouragement of economically viable downstream processing of forest products, and (4)

ensuring opportunities for the entire community to participate in the development process. It was noted that minimal monitoring is done for plantation sector which does not have a governing policy on reforestation at the national level. Sharing of experiences, lessons learnt, training, dissemination of information and knowledge among the 17 existing forest plantations from the different provinces is significantly absent.

Large areas of degraded land and grassland areas are available for establishing commercial forest plantations. However, this option is subject to availability of investment funds, willingness of the landowners to participate, ownership rights of the landowners being respected, availability of planting materials and appropriate seed sources. The role of the government agencies, private sector together with the customary landowners is the prime catalyst to stimulate the growth and further the plantation development.

3.2 Land use and Land use planning

Through the present system where land belongs to the customary owners, land use is complex and varies according to local customs. The complexity is further motivated by ownership through groups of people linked by genealogical lineage. With this backdrop, insecurity of land tenure is a major issue with reference to land use planning as well.

At present, there is neither national nor provincial-level land use planning being practiced as much of the land is held under customary land tenure or allocated to concessionaires whose primary interest is only the timber resources. Through existing acquisition processes, there is little interest in land use planning.

3.3. Forest Policies

Unlike many other tropical countries, PNG has several well-elaborated forest legislation and policies in place. However, on close examination, many of those policies and laws appear to be too cumbersome to ensure effective implementation. It is clear that most of the legislation and regulations have been enacted as a result of forest degradation, loss of economic returns, as well as dissatisfaction of landowners, donors and NGOs. There are also adjustments of preceding laws as remedies to problems associated with logging operations and trade. Although the legislation includes substantive social and environmental aspects, the emphasis has always been on logging operations. The following is a synopsis of policies pertaining to forests and related fields in PNG.

3.3.1 Legislations and Laws governing the forestry sector

PNG commitment to good stewardship of its forestry resources dates back to its constitution of 1975. Nevertheless, 15 years later, a Commission of inquiry (Barnett, 1989) concluded that logging practices in PNG were detrimental to forest resources, caused irreversible loss of biodiversity and deterioration of other environmental values and did not benefit local communities. In order to remedy an almost disastrous situation, the PNG government instituted a national forestry and conservation action program (NFCAP) in 1990. In effect, since 1990 the focus of practically all Forestry and Environment legislation and policy has been on reforming logging practises, increasing financial returns and responding to complaints by local communities (landowners), litigation by NGOs and the demands of donors. Nevertheless, at least on the surface economic, environment and the livelihoods of the local population were the driving force behind amendments to policies and the enactment of new legislation

All these efforts culminated in the 1991 Forestry Act that was meant to replace previous legislation related to forestry. The Act introduced new allocation procedures and a new administration system. It became operational in 1992, but some observers interpreted the delay in gazetting the act as an attempt to allow new forestry allocations (i.e. Timber Rights Purchase) under the old law.

Supported by the National Forestry Development Guidelines (NFDG), the National Forest Policy (NFP) was devised as the operational arm of the Forestry Act of 1991. It had two main policy objectives: firstly, to ensure the sustainability of the forest resources as a renewable resource through proper management practises and secondly to bring about economic growth, job creation and to increase participation of PNG population in forest industry and enhance domestic prosperity.

The 1991 Forestry Act detailed mechanisms and institutions for the implementation of the NFP, mostly for administration and control of the forest sector. The new mechanisms and institutions included the National

Forest Board (NFB), the National Forest Service (NFS), The Provincial Forest Management Committees (PFMC's). As noted previously, this law also centralized the control and management of forest areas intended for logging through the NFS and its Forest Management Authority.

Three strategies were devised for improving the overall objectives of the NFP:

- i. Collation of information,
- ii. Advancement of knowledge relating to forest utilization, and
- iii. Maintenance of PNG's forest resources through research.

Several regulatory and administrative changes have been put in place since 1992, including the National Forestry Development Guidelines 1993, the National Forest Plan 1996, the PNG Logging Code of Practice 1996 and the new Forestry Regulations 1998. The forestry act itself was amended in 2001 and 2005. Additional drafts of national policies prepared by the PNG Forest Authority include the National Policy on Downstream Processing of Forest Products and the National Reforestation Policy (2004) in addition to a new policy on research and development (still under development).

These strategies are meant to ensure the harvesting of timber at a sustainable rate (i.e. Based on the concept of sustainable yield), observing environmental standards on logging sites and the ensuring of biodiversity conservation. In other words, sustainable yield was adopted as the main criterion for sustainable forest management- an invalid assumption since SFM is far more than sustainable yield. Furthermore, "Sustainable yield" is not well defined in the 1991 Forestry Act, or other legal instrument. Sometimes it is misleading when the source of timber is not defined either. For example, the annual increment (yield) in plantations is many folds higher than natural forests; hence annual allowable cut should be site specific under PNG conditions.

Implicitly however, this could be interpreted as the need for the government to be informed and to monitor and control log harvesting and the sale or purchase of timber under the stated objective of achieving sustainable development of the forest resources. Notwithstanding the government's good intentions and responsibilities, it should be kept in mind that approximately 97% of the forest land is held under customary ownership which would introduce additional complications as will be shown later on.

Two principle institutions have been entrusted with regulating access to and use of forest resources: The PNG Forest Authority (PNGFA) and the Department of Environment and Conservation (DEC). The National Forest Policy is meant to be implemented through detailed standards and procedures elaborated by PNGFA and DEC individually and collectively.

3.3.2 Environmental legislation

The protection of the environment has been set as the Fourth National Goal and Directive Principle (Natural Resources and Environment) of the PNG Constitution. Several acts were enacted since 1975 including Environmental Planning Act, Environmental Contaminants Act, the Water Resources Act and finally a new Environment Act which was adopted in 2001. The Environment Act is meant to regulate the environmental impacts of development activities in order to promote sustainable development of the environment and the economic, social and physical well being of the people by safeguarding the life supporting capacity of air, water, roads and ecosystems for present and future generations and remedying and mitigating any adverse effects of activities on the environment – a direct quote from the Constitution of PNG. However, it was clear from the Mission review that the Environment Agency is under funded and weak, lacking the capacity to carry out the assigned responsibilities – at least with respect to those environmental and social aspects related to forests.

3.3.3 Other relevant legislation

Several additional laws and acts were enacted to regulate forestry and related sectors. For example the Organic Law on Provincial Government and Local-level Government elaborates the role of provincial and local government in matters related to concession approval policies through the Provincial Forest Management Committees in accordance with the Provincial Forest Management Plan through a process of consultation with local land owners. (The provincial plan should be consistent with national forest plans, which appears to be out of date). The jurisdiction of the provincial government does not, however, extend to

decisions on maximum or minimum volume to be harvested, quantities, export prices, tax measures or taxation, levies or dues to be levied, on large scale forestry projects. All these activities remain the prerogatives of the national government. As pointed out earlier, this presents an inherent conflict between the two laws which need to be reconciled. Other relevant legislation include: Customs (1951); Export (1973); Investment Promotion Act (1992).; Land Act (1996); Companies (1997) and Custom Tariff (1999).

3.4 Forest Administration

The forestry administration in PNG is comprehensive and involves a hierarchy of bodies and organizations with diverse, yet often overlapping, responsibilities. The following is short description of administrative units along with observations and comments on their respective performance. This chapter is intended to link the failure to achieve ITTO Objective 2000 with bureaucracy.

3.4.1 PNG Forest Authority (PNGFA)

The PNGFA was established under section S.5 of the 1991 Forestry Act. Mandated by the act, and operating through the National Forest Board, the National Forest Service and the Provincial Forest Management Committees, the PNGFA is managing the nation's forest resources through implementing the overall objectives of the National Forest Policy. The Forestry Act empowers the PNGFA to negotiate Forest Management Agreements (FMA's) with resource owners and select developers (concessionaires) and negotiate conditions under which Timber Permits, Timber Authorities and Licences may be granted. Moreover, the 1991 Forestry Act also has social and environmental aspects which appear to be inadequately or completely unaddressed by the PNGFA or any other government agency. A substantive review of the functions and roles of PNGFA in the context of sustainable forest management – and the 1991 Forestry Act - with recommendations for a scope of responsibilities, focus and interagency cooperation more consistent with SFM would be extremely useful.

Within PNGFA, there is also a general lack of capacity to assess the market for timber, valued added forest products and non-timber forest products. There is scant research and outlook, regionally and globally to enhance pricing of export products, apart from meeting the market demand in terms of standards of timber quality. The government does not have sufficient control over timber pricing as it is determined by market development which is somewhat confined to limited number of key industry players.

It is noted that PNGFA has a good percentage of well trained staff in technical forestry considering that PNG has only one university that produces tertiary level education in forestry science. The primary responsibility of PNGFA include planning, resource acquisition, selection of project operators, negotiation of license terms, control and regulation of exports, administration and enforcement, registration of forest industry participants and negotiation of international treaties.

Challenges on the ground: Makapa TRP, Western Province

For more than one year, the Project Supervisor of PNGFA has the largest staff number of 156 to oversee an area of more than 250,000ha and has to depend on the Permit holder or contractor's vehicle to carry out his daily duties. activities is inadequate.

Information provided during the ITTO Diagnostic Mission. February 2007.

Additionally and despite these shortcomings, the PNGFA is expected to contribute more towards the government's Medium Term Development Strategy (MTDS) by facilitating the development of ten new Impact Forest Projects. These would involve a commitment of further 2.1 million hectares of the remaining 2.4 million hectares of unallocated production forests. Discussions within PNG with the Mission Consultants sounded alarm bells on this ambitious strategy, because not only would this mean the allocation of almost all unallocated forest for production to developers, but the capacity of the PNGFA to manage even the existing forest sites is clearly lacking.

There is a little collaboration between the main primary governing and management institutions (PNGFA and DEC) of the forest resources. The role of PNGFA has in recent times, become one of an approval agency with general lack of environmental decision making, subject to clear direction and planning. The DEC on the other hand, having minimal presence at the provincial level, has

become weak in enforcement and implementation with no effective monitoring at the project sites. Environmentally sensitive areas are not identified through local level land use planning exercise which may further add to the deterioration of the countries biological diversity.

3.4.1.1 National Forest Board (NFB)

According to the 1990 Forestry Act, the NFB "...shall carry out the functions and objectives, management the affairs and exercise the powers of the PNGFA. Section 10 of the Act stipulated that the membership of the Board should include representatives of the National Forest Service; Environmental Protection; Trade and Industrial Development, Finance and Planning; one person with experience in commerce and finances ; Forest Industries Association, representative of NGO's; and four members representing provincial governments. However, the composition of the NFB has gone through several changes which, according to some observers reduced its effectiveness and credibility.

3.4.1.2 National Forest Service (NFS)

While the NFS was not assigned specific functions under the 1991 Forestry Act, it is given some very serious responsibilities including overseeing the administration and enforcement of the Act; evaluating and providing advice to the Minister on forest policies, and legislations; reviewing national forest plans, negotiating FMA's; selecting operators and negotiating conditions for granting Timber Permits, Timber Authorities, and large scale conversion, including for agriculture, roads and other land uses; control and regulate export of forest products (subject to related Acts); overseeing the administration and enforcement of the Act; registering persons or companies desiring to engage in forestry activities in PNG; and acting as agents for the State as required in relation to any forestry international agreements. This myriad set of responsibilities is constitutes the current essence of SFM in PNG and such an unclear delineation of authority invites serious obstacles to achieving SFM and therefore, of course, Objective 2000.

In terms of structure, the National Forest Service has the following Directorate and Divisions: Office of the Managing Director; Policy Directorate; Office of the General Manager; Finance Directorate; Corporate Service Directorate; Forest Management Division; PNG Forest Research Institute; Forest Resources Development Division; Field Services Division; Bulolo/Wau Plantation.

As of May 2006, the NFS had 460 posts, out of which 75 were vacant. It was also observed that the distribution of posts within the NFS does not correlate with the substantive responsibilities of each of the units. For example, with nearly one third of staff at headquarters; field operations, including the functions of monitoring and reporting, seemed seriously understaffed. The consultants saw these short comings first hand on visiting the provinces and their impressions were reinforced when talking to NFS field officers and other experts in the course of the consultations.

3.4.1.3 Provincial Forest Management Committees (PFMC's)

The functions and composition of the PFMC's, as stipulated in the 1991 Forestry Act, are mainly to enable consultation with and proper involvement of provincial governments and customary landowners. The composition of PFMC reflects this objective, and has not changed over time. In addition to the main function of consultation, PFMC's are entrusted with assisting provincial government in preparing forest plans and development programs; recommending to the National Forest Board on terms of FMA's, selection of operators and preparations of Timber Permits and enforcement of their conditions and making recommendations to the Minister on numerous other activities including extension, renewal, transfer, amendments or surrender of Timber Authority..

Clearly, PFMC's have significant mandates, authority and functions: at least as stipulated in the Forestry Act. However, there are indications that PFMCs are not functioning anywhere near the optimal level as anticipated in the law, due in part to lack of capacity to enforce their mandate. (This conclusion was clear from discussions between the authors of this report and provincial foresters in at least two locations).

3.4.1.4 Provincial and Local-Level Governments

While the 1991 Forestry Act has entrusted PFMC's with major responsibilities, it has vested less power in the provincial and local governments. The responsibilities that do reside with the PFMC's are related to: (i).

Development of Provincial Forestry Plans, consistent with National Forestry Development Guidelines and (ii). Issuance of Timber Authority. This is despite the fact that the “Organic Law” attempted to redistribute authority across the three levels of government, but it also restricts these authorities to small-scale ventures. Such a splintering of power has led to weakening of law enforcement and increasing tensions among the three levels of government.

3.4.1.5 PNG Forest Research Institute (PNGFRI)

The PNG Forest Research Institute was established in 1989, in Lae as an integral part of the National Forest Service (NFS). Its impressive physical facility was originally funded by Japan and it currently has facilities for the approximately 60 staff based there. On the visit by the Mission and during discussions with the Director and staff, however, it was soon evident that the scope of research undertaken at present is narrow. The institution would certainly need significant funding and logistical support to take advantage of its good facilities and technically trained staff. It would also need a revised research policy and financing to address new and emerging forestry issues such as forest policy, forest economics, forest management, forest plantations, community forestry, non-timber forest products, biological diversity conservation and payment for ecological services (PEF) among many other topics the institute could usefully address. The PNGFRI has great potential to be transformed into a regional class research resource.

Results from the 1993 ITTO project “Intensification of growth and yield studies in previously logged forests” has huge potential as a forest management tool in assisting forest managers and planners in decision making. Though the project was finished from ITTO’s perspective and no funding flowing to it, the project is still being implemented by the PNG Forest Research Institute (FRI).

The PNGFRI has recently been requested to develop a proposal for a National Forest Inventory to be submitted to the PNGFA Forest Planning Division. However, no financial provisions have been allocated within the National Forest Service budget for this activity. The project, if funding were made available, would form the basis of national and provincial forest development programs and forest management plans.

Financing the PNGFA

This chapter is included in this report due to its high relevance to the functions of the PNGFA and the execution of its responsibilities as the principle entity entrusted with PNG’s strive towards achieving SFM. It is based on a report prepared by the local consultants for the purpose of this study.

PNGFA is directly funded from the Department of Treasury through the payment of an “operating grant” supplemented by investment income, fees and levies etc. The annual budget appropriations from the government over the last 5 years averaged K 23 millions (plus around K3 million for the payment to SGS for log export monitoring) against estimated budget request of about K52 million. These estimates are based on work plans and targets set by the PNGFA to undertake forest management activities. Traditionally the annual budget submitted for PNGFA is based on actual costs for maintaining ongoing forestry projects, logistical support of new projects and costs of new “Impact Projects”. Implications of budget shortage include under-utilization of staff experiences and slow implementation of forest management objectives. It is clear that sufficient finances to PNGFA would greatly enhance its ability to implement the law and its mandate, particularly in the areas of monitoring, analysis, and reporting capabilities leading to much more effective control.

PNGFA also has good opportunities to secure more income, but it requires funding to support implementation of these activities. For example, PNGFA owns a number of plantations around the country, many of which have appreciable timber resources that could generate additional revenues if commercially managed. The difficulty with developing these assets is that PNGFA lacks entrepreneurial experience and management skills within the organization to properly manage such estates for profits. It would be desirable to seek external technical assistance in this regard.

3.4.2 Department of Environmental Conservation (DEC)

The Environmental Act of 2000 entrusts its implementation to DEC especially to:

- a) Regulating environmental impacts of development activities in order to promote sustainable development of the environment and the economic, social and physical well-being of people by safeguarding the life supporting capacity of air, water, soil and ecosystem for present and future generations and avoiding, remedying and mitigating any adverse effects of activities on the environment;
- b) Providing for the protection of the environment from environmental harm; and
- c) Providing for the management of national water resources and responsibility for their management.

According to DEC's mandate, any development (concessions related to timber exploitation, e.g. Timber Permits) cannot be effected without the approval of the Minister of the Environment and Conservation based on an accompanying environmental plan (environmental impact assessment). Furthermore, DEC staff is supposed to monitor the environmental aspects of logging operations under Timber Permits or Licences; sawmill operations and treatment facilities. DEC is also supposed to conduct environmental audits and investigation of compliance with environmental policies of all projects. The Head of the DEC is a member of the National Forestry Board by virtue of his position.

Nevertheless, during the field visits, it was clear that DEC does not have sufficient field staff, financial resources, nor logistical support to perform its mandated responsibilities.

3.5 Forest concession allocation processes

PNG has in place elaborate systems and procedures for allocating (granting) concessions for forest resources exploitation and development. The country also has numerous types of permits that evolved over the years, driven mainly by the need to correct the inadequacies of old systems and responding to the evolution of the forest sector, as well as to complaints by interest groups such as donors, the forest industry, NGOs and landowners. The regulations and procedures have been the constant subject of many studies, reviews, litigation and decisions to amend the existing law and/or enacting new laws. Many reports conclude that the current National Forest Plan is outdated and is inadequate to address issues relating to the granting of concessions.

A close study of the issues surrounding the allocation of concessions and the monitoring of logging areas reveals that it these are indeed the most controversial issues for the PNG forestry sector and perhaps contributes the most significantly to the failure to achieve Objective 2000. The system of allocation is enshrined in the 1991 Forestry Act very clearly and in great detail under a framework for sustainable utilization and management of PNG's forest. The 1991 Forestry Act recognizes three principle types of licensing for development (mainly log extraction) of forest resources: Timber Permits, Timber Authority, and Licenses. Large-scale forest clearance for agriculture and roads is governed by three other types of licenses. All permits to harvest need to undergo a stringent process of approval from designated government departments, including public hearings and ultimately approval of the National Executive Council.

The granting of concessions is always referred to as "forest development processes," reflecting the provisions that developers (concessionaires) would develop the concession area (which is usually referred to as a "Project".)

What follows are some observations on and diagnoses of the PNG allocation process:

- a) The National Forest Inventory is the basis for the National Forest Plan and is supposed to provide information on each of forest values (support of livelihood; timber production; conservation of biodiversity; water quality and stability); adhere to the National Forest Development Guidelines and provide the basis for determining the allowable cut in each province. The consultants noted that National Forest Plan is outdated as will be discussed later on in this report.
- b) As the National Forest Plan is supposed to be based on a National Forest Inventory, the current PNG National Forest Plan of 1996 did not meet the requirements of the National Forest Development

Guidelines. There are numerous allegations that the NFP was a development (resource allocation) plan developed by PNGFA with minimal consultation with the stakeholders.

- c) The Provincial Forest Plan is required to delineate five classes of forests at the provincial level as mandated by National Forestry Development Guidelines and set out broad objectives over a 40 year lifetime for forests, with a 5 year rolling forest development program. Ultimately, PFPs are intended as strategies for managing forest resources at the provincial level with the participation of local stakeholders. In many cases, however, PFPs are outdated and based on outdated and even erroneous information.
- d) The Forest Management Agreement (FMA) is the final step of allocating forest concessions to developers (exploiters). This is a much debated and frequently challenged process. The 1991 Forestry Act and the 2000 Environment Act 2000 unambiguously stipulate that there must be:
 - (i) Proper consultation with customary land owners when forestry sources are acquired by PNGFA prior to granting FMA's;
 - (ii) Competitive and transparent processes of allocation forest management rights or Timber Permits (logging licences) based on sustainable forest management principles specially environmental protection, and biodiversity conservation; and
 - (iii) Monitoring of logging operations and adherence to the terms of the FMA as related to other aspects of site development.

The FMA's are derivatives of several types of concessions granting modalities. Some observers noted that they retain some of the undesirable characteristics of their predecessors, especially as related to the rights of customary landowners and environmental protection provisions.

In summary, there are significant problems surrounding the process, starting from being based on a weak National Forest Plan that in turn is based on an outdated and deficient National Forest Inventory; going to the controversies associated with the selection of concessionaires (developers); difficulties with and the almost complete absence of field monitoring; questions arising about the calculation revenues and incomplete and delayed remittances to the land owners. Notwithstanding the fact that FMA has to go through extensive processes with many steps and a myriad of approving authorities, with the associated laws and regulations, the negotiations and eventually granting of an FMA is based on very little that would actually substantiate the decision.

There are additional controversies and misgivings about the extension of some FMAs beyond their geographic boundaries and the process of renewal of some agreements after they expire. The means by which the government, including the PNGFA, deals with such issues appear to be non-transparent and non-participatory. Many FMAs have been the subject of litigation over their validity and extension of licences and even the constitutionality of 1991 Forestry Act with respect to these matters have been challenged.

3.5.1 The Acquisition Process

According to the 1991 Forestry Act and 1996 Land Act, FMAs are granted and implemented on land that belong to customary landowners, and only the forest resources on the land are the subject of the agreement. They are implemented after the government leases the land, within areas pre-designated as productive forests, from landowners (see the issue of land ownership under chapter 7).

.For the purpose of commercial harvesting, the PNGFA uses two primary modes of resource acquisition from the landowners: (i) through Forest Management Agreements (FMA), currently under the Forest Planning Division and (ii) through Timber Authority (TA), managed by the Resource Development Division. Both the FMA and TA processes are under heavy criticism due to the lack of transparency, numerous steps, restricted landowner participation in decision making and for the high cost of implementation.

At present (February 2007) a total of 4,921,465 hectares of natural forests are under timber harvesting operations. Of this total, Rimbunan Hijau (RH) or its affiliated companies exploit logging concessions amounting to 2,550,864 hectares or over 50% of forests designated for timber harvest in Papua New Guinea.

The majority of NGO's consulted by the Mission are of the opinion that the current use of Incorporated Land Groups (ILGs) in obtaining landowner consent for log extraction is flawed, with abuse and is an inadequate basis for sustainable forest resource management. The consultation mechanisms with landowners through the Provincial Forest Management Committee, is not transparent, may not be representative of the true views and decisions of the clans which the land group representative is intended to reflect.

The current acquisition process as executed by the PNGFA appears to give only superficial attention to the rights and choices of customary landowner in their lawful right to decide on the activities that are permitted/wanted on their land as stipulated in the 1990 Forestry Act. Moreover, processes for community resource mapping, community visioning, setting shared goals, identification of conservation areas, ancestral areas, resolving boundary issues, etc are seriously absent under the current mechanism of resources acquisition.

3.6 Land Ownership

The system of land tenure plays a critical role in Sustainable Forest Management in PNG by virtue of the fact that 97% of the forest is owned by customary landowners. There are a number of complications in effectively addressing these rights, however, including a common reluctance by customary owners to register their title to the land, compounded by vaguely defined and often disputed boundaries of ownership.

While the state has no ownership rights over land nor its forest resources, the governments under the 1991 Forest Act exercise acquisition of private (customary) property rights in the public interest for forest development. This is a point of contention in the system of granting forest logging licences.

The processes leading to granting FMAs (and Timber Permits, Timber Authorities, Licences) requires PNGFA to acquire/lease land from customary owners then select developers and negotiate terms of the agreement with full participation of the resource owners. However, the enactment of the Land Groups Incorporated Act (ILG) in 1974 has empowered land owners within a "group" to form a single legal body (ILG). Each ILG is required to list its members and their land boundaries. The land is not usually registered in the specific ILG names, however. Due to certain shortcomings of the ILGs as related to undefined boundaries, lack of pre-informed consent and failure to follow formal procedures, many logging projects proceed without ILG certificate. The system appears to be functioning with serious structural flaws.

Furthermore, proceeds from FMAs, the royalties from logging operations, are paid directly to the clan agents representing land owners who are supposed to distribute the money among clan members according to customary laws. The delay in the disbursement of royalties from PNGFA to the agents exacerbated by disputes about land tenure compound the inefficiency of the system. Several modifications of this system have been proposed and some were implemented, but there is a growing criticism by land owners about the effectiveness of the systems.

Another matter of concern to both national and provincial government as well as to local communities is the failure of developers (logging companies) to honour the terms of FMA not only as related to the volume logged and compliance with environmental provisions but also not developing necessary infrastructure on site (schools, health clinics, etc).

This being said, and cognizant of the legitimate rights of landowners, it would be a challenge to any forest administration in the world to deal with a diverse population of owners having a spectrum of traditions of land ownership systems, and customs for distributing wealth within the clans. Undefined and often overlapping boundaries, both within and between clans, exacerbate already complicated landownership traditions. It is not uncommon under such circumstances that the leaders of some communities by-pass the government authorities and convince the clan to sell timber extraction rights directly to logging contractors, with subsequent disputes arising when the proceeds are collected. On the other hand, it is very difficult to justify the claims of some landowners that they have never consented to logging operations when they receive royalties directly from the operators.

3.7 Monitoring

The main responsibility of the National Forest Service under PNGFA is the overall administration of the 1991 Forestry Act and other legislation pertaining to forest management, such as the forest policy as approved by the National Executive Council. Monitoring of forestry operations (logging concessions) is the backbone for the implementation of the NFP.

Within the NFS, the Field Services Division is a core functional division in charge of field monitoring. Its activities are executed through four main regional offices: Southern, Island, Coastal Mainland and Highland, with a total of 14 provincial forest offices. The Field Services Division is the largest within NFS, with 130 staff (May 2006) responsible for field inspections and monitoring of all field operations and activities. It is obvious that 130 field officers cannot adequately monitor logging operations assigned to them, let alone performing their other functions for sustainable forest management.

Apart from monitoring and supervising harvesting operations, forest officers on the ground have to mediate, address landowners' disputes, monitor the logging company for compliance, with due consideration of landowner rights. It is also noteworthy that the Department of Environment and Conservation have very few staff stationed in the field to implement the standards and operating practices set out in the PNG Logging Code of Practice, hence the PNGFA staff is obliged to monitor these aspects of the Code in addition to the forestry aspects.

According to the draft National Forest Plan 2006, the area classified as "production forests" amount to 13,748,920 hectares out of which the area under concession (projects) is 11,336,000 hectares. A simple calculation of the concession area per field forester reveals that on the average each field officer would be responsible for nearly 85,000 hectares. Add to this the shortage of equipment and infrastructure in the forest (for example vehicles) and low salary and it becomes clear that satisfactory monitoring of logging operations and development projects is next to impossible. Even when the functions of the field officers are reduced to merely policing the logging operations, they cannot perform this function properly. The consultants met with several field officers from both NFS and DEC and observed such difficulties first hand. During the discussion, the staff met appeared overworked and seriously challenged.

As of Feb 2007, there were an estimated 4.9 million hectares of forests under active timber extraction licenses. At the time of assessment, 41 Project Supervisors of the PNGFA have been assigned in the field to monitor vast areas of forest harvesting activities. The proportion of Project Supervisors allotted range from 26,767ha per Project Supervisor in Manus Province to as high as 315,146ha per Project Supervisor in Western Province.

Monitoring at the forest management unit level handled by Project Supervisors is at best poorly carried out. Evidence from interviews at a number of logging sites visited failed to impress the Diagnostic Team; it was obvious that monitoring and enforcement was seriously inadequate, especially on reduction with respect to the adverse impacts of logging on the forest ecosystem and the communities living in them.

3.7.1 Third Party Log Export Monitoring

After many years of debate and litigation, particularly as related to transfer pricing through failure to declare accurate shipment figures and artificial pricing of logs which led to major financial losses to PNG government, export monitoring has been devolved to an independent entity, the Societe General de Surveillance (SGS) since 1994. This private company is contracted to monitor all export log shipments, provide “real time statistics to government agents” and ensure all duties and taxes are collected for the government. The contract with SGS is supported by donor funding so as to maintain its independence. The process has led to capturing substantial revenues for the PNG government.

However, the monitoring is done at the tail end of the chain of custody and is not carried out from the stump in the forest to the point of export. The existing tracking system also does not provide the basis for assessing information on the level of sustainable practice by the timber permit holder.

3.7.2 Monitoring by Other Entities

Monitoring for compliance with environmental protection and biodiversity conservation laws stipulated in the 2000 Environmental Act for which implementation is entrusted to DEC is even more inadequate, to say the least. DEC field staff (at the provincial level), are far too few to perform their duties satisfactorily and they suffer from lack of facilities as well.

Like almost all tropical countries, the PNG logging operations and log export are under close scrutiny by major international NGOs as well as by national NGOs in PNG. The NGOs are very active in monitoring the concession allocation processes, logging operations (and concerned especially with illegal and corrupt activities) and with community development projects. Most NGOs expressed the view that they would be supportive of outsourcing the monitoring of upstream harvesting and compliance with the provisions of FMA's to “third parties”. Yet, there is a strong feeling (especially among foresters interviewed by the consultants) that it would be better to build capacities within NFS for these tasks and provide necessary incentives and logistics to field staff. There is also a general consent among several NGO's that they should not be contracted to perform third party monitoring in order to maintain their independence.

3.8 Forest Governance and Law Enforcement

A consistent theme heard throughout the Technical Mission was the strongly held view that the laws of the Independent State of Papua New Guinea are generally excellent, though with far more steps and complexities than necessary. On the other hand, in almost every consultation concern was raised about the capacity of PNG to monitor and enforce its own laws. A striking example of this is that each of the current FMAs – ranging in size up to 750,000 ha has a maximum of two project supervising officers assigned to monitor compliance with the law.

Project Supervisors assigned on-site at FMA's are responsible for overseeing compliance with the forestry laws and the conditions required under the agreement for the timber permit holder or its subcontracting company. In addition, however, the project supervisor has the very visible and politically complex job of distributing the landowner's allocation to the community. The percentage of funds mandated in the agreement which revert to the landowners is sent every three months by the company to Port Moresby, and then returned through government channels to the FMA for distribution by the project supervisor.

The Project Supervisor is also responsible for monitoring the entire FMA, the rotation of logging under the agreement, compliance with the size of trees harvested and independent verification of rent capture. At the same time, however, no environment enforcement capacity exists on the FMA and therefore the project supervisors assume the responsibility for reporting violations under environment law to the DEC.

In one of the FMAs (350,000 ha) visited by the Technical Mission, the project supervisor flew in with the team that day, but his first focus was on issues other than those of the ITTO technical mission's information gathering process. At least a hundred men, women and children - having walked half a day from the traditional village area - were waiting for the three-month disbursement of the financial allocation by this representative of the government in PM. The project supervisor came with no cash in hand, however; the FMA is caught in the middle of a legal conflict over landowner claims to the area being played out in court in Port Moresby. He had to tell the landowners that they were not getting their money that day, that it might come on the following week (this did not, in fact, occur). Obviously a great deal of time, effort and energy was expended by this project supervisor in addressing financial problems in his FMA.

In addition, however, in this particular FMA the project supervisor said his vehicle had been non functional for a year and a half. The closest area being logged on the FMA was 70 kilometres away. He was dependent on the logging contractor for rides to the area being logging and clearly had little or no way to investigate what was happening in other areas of the FMA. There is no easy communication between headquarters and project supervisors. No roads exist to many of the FMAs from Port Moresby, no telephones and no functioning radio communication. Government field staffs are dependent on the contractor's transport in most instances.

Another significant issue affecting the landowners and the government representative on-site is that few FMA's set up schools or hospitals in the logging camp. This is in part an issue of conflict with some clan leaders, who do not wish to see clan members migrate from traditional village areas. It is sometimes the position of the logging contracting companies itself. However with contracts functioning for at least 35 years, one or two generations working with the logging contractor can be half a day or more from their traditional homes. The effect is a significant disruption to families – father's separated from wives and children for long periods of time. Both the project supervisor and the timber company chief forester told the mission that they had sent their families home to their own regions to ensure an education for their children.

3.8.1 Compliance with Laws

The sensitive issue of compliance with laws is a difficult topic for any government around the world. One of the specific issues that arose in all conversations held with the Mission was the question of whether or not significant non-compliance with the law was occurring in PNG in forests sourcing tropical timber for international trade. The almost universal response to this question, when posed, was "it depends." In fact, most government, private sector, NGO and landowners responded that "illegal" logging on a commercial scale was not the major problem– unsustainable logging was certainly the primary issue within the narrow forestry context.

As is discussed in prior chapters addressing forest management, there are clearly inconsistencies in PNG with the basis for determining what sustainable logging levels, rotations, extent of harvest, frequency of harvest and other forestry-related matters that constitute sustainable forest management. As PNG law or policy is the context for these issues, e.g., determining an acceptable minimum diameter for timber harvest, the number of mature individuals which can be removed per hectare, per species, per cycle and still maintain acceptable yield sustainability levels, the basis for determining the answers may not be clear in current PNG law. These circumstances clearly present an almost insurmountable obstacle to meeting Objective 2000 for PNG.

However, when looking at the forest – not just forestry– within PNG the more significant questions which have been raised are to do with the compliance of the government itself with the laws of PNG when deciding to negotiate a forested area for logging purposes, when negotiating the agreement and terms with landowners, when managing, monitoring and enforcing the agreement with all constituencies and when extending current agreements (e.g., existing Timber Authorities and Timber Permits). It became clear that problems with compliance are most evident not when implementing just the 1991 Forestry Act, but when implementing the full suite of laws which apply to forest areas, including in particular issues related to the social aspects of forests in PNG – notably the laws which mandate the rights to the land and natural resource ownership of forests by 97% of the population. This ITTO Technical Mission did not include expertise in

law, however a number of previous studies and reports provide significant information on this set of issues (ODI 2007 “*The Current Legal and Institutional Framework for the Forestry Sector in Papua New Guinea.*”)

3.8.2 Optics, Ethics and Capacity

As described previously, the absence of effective capacity for monitoring and enforcement by the PNGFA precipitates a dependent relationship between government representatives and the forest industry in PNG. Whether what results is symbiosis or a violation of ethics is, to some extent, in the eye of the beholder. The Mission heard a range of views on this matter. However, there is no doubt that this is an unhealthy – and unsustainable – situation.

At an even bigger scale, there are those who also believe that the narrow focus of the PNGFA on exploitation of the forest resource for the primary benefit of the national government presents a conflict of interest which colors decisions made by the government of PNG from some of the most junior to some of the most senior government officials.

This criticism would appear to have some basis in fact. When one looks at the approach to resource acquisition, the emphasis on rent collection and other market-driven responsibilities by the PNGFA and NFS, rather than a more comprehensive responsibility for sustainable forest management, there is clearly a prejudice in favour of these issues vs others included in the law. Examples of some of the problems that this creates can be found in the scarce number of personnel and financial resources provided to the technical and scientific arms of the government in forestry (e.g. PNGFA and NFS), versus the marketing and development, financial management and other industry-related organizational components.

The National Forest Board has also, on occasion, taken decisions without the due process procedures required in the Forestry Act 1991 (e.g., extension of Timber Authority and Timber Permits). Although this is the most senior administrative body in the national government, it appears that the Board and other senior government officials have – on occasion – taken decisions without the consultation required by law. Whatever the motivation, these actions undercut the objectives of a well conceived law.

3.9 Industry

One of the areas where the Mission had relatively few consultations was with industry operating in PNG. Through consultations with the association of industry representatives, some domestic timber operators (but not the FMA owners themselves), the Mission was able to get a sense of the more significant issues facing the industry. Rather than depend extensively on other background material, the consultants chose to focus on those aspects of industry and the market that arose in other contexts during the technical assessment mission. As general background the following information from the ITTO report on Sustainable Forest Management in the Tropics 2005 is very useful in the context of the trade in PNG (statistics updated to 2005 by ITTO Secretariat):

In 2005, PNG produced an estimated 7.2 million m³ of roundwood, of which about 76% (5.5 million m³) was fuel wood for domestic use (FAO 2007). Total industrial log production was an estimated 2.3 million m³ in 2005, up from 2.1 million m³ in 1999 and well below the estimated sustainable yield of 4.7 million m³. The forest industry is predominantly based on log exports; an estimated 2.282 million m³ were exported in 2005 which makes PNG the world’s second largest exporter of tropical logs after Malaysia. PNG earned US\$ 177 million from exports of tropical timber in 2005, US\$ 138 million of which was from logs. The principal exports markets for logs in 2005 were China (80%), Japan (10%) and Korea (4%).

The national forest policy anticipates increased domestic processing of forest products to create employment, facilitate the transfer of technology and promote the export of value-added products. However, little progress has been made so far in this regard. Processed timber exports (including woodchips) accounted for about 20% of total export earnings in 2005. Woodchips accounted for more than half of the volume of non-log (processed) timber exports in 2005 (120,279m³), but less than 10% of the value of these (US\$3,059,950). The bulk of PNG’s processed timber exports by value are sawnwood and veneer (around US\$14 million each in 2005).

The part of the industry most concerned with logging in PNG is to be found in those companies grandfathered under the plantation agreements, the Timber Authority and related Timber Permits and those with FMA's. There are very few domestic companies with the primary authorization to harvest in production forests. Most companies are foreign-based and have an extensive foreign employee base overseeing their PNG activities, though some have hired domestic logging companies as subcontractors for some aspects of the work. (In fact, a single foreign company is the concessionaire for as much as 70% of the current area being logged.)

One interesting model for domestic industry in plantation forests which is not well described in the literature is the existence of landowner woodlots – basically forestry by clans, resulting in timber for domestic use or export. Companies will contract with landowners, sell them seedlings and then purchase the timber from the clans at a negotiated price. Data on the extent of this model was not available to the Mission, but it offers some promise for engaging landowners more effectively in some aspects of logging on a sustainable basis.

In the Mission consultations, one senior industry leader expressed concern that the NFS focus was on “timber yield,” stating that it was not clear what the government was trying to sustain. Another said that there was a need for third party, independent monitoring to counteract misinformation by consuming countries on illegal logging in PNG. “SGS provides only a rent capture function,” it was said, fine as far as it goes, but not far enough to have addressed the rampant criticism by consumers and allegations of illegal logging. Industry also expressed concern about the conflict of interest presented because housing and other support for government officers on-site is required by the State.

Industry is also considering the development of a “Code of Social Responsibility” to which its members would subscribe in order to address consuming country concerns about legal compliance.

Issues of concern with industry operating in PNG also, however, include rampant transfer pricing. ODI's January 2007 report *Issues and Opportunities for the Forest Sector in Papua New Guinea* stated “The risk of transfer pricing can be managed in several ways. The risk of import transfer pricing can be reduced by limiting the opportunities for forest-related tax deductions followed by a concomitant reduction of the log export tax. The risk of export transfer pricing through the under reporting of log prices can be addressed by i) developing a more objective means to assess international market prices for PNG logs; ii) by setting a monthly determined price on the basis of which export taxes are calculated regardless of the operators contract; and iii) by making the price endorsement procedure more transparent by subjecting it to scrutiny by an interagency committee between the PNGFA and a number of government bodies, including those responsible for revenue collection.” This is a recommendation which should be seriously considered by the Government of PNG.

The significant absence of independent market intelligence for a wide range of information on the forest and its goods and services provides an excellent opportunity for initiatives that would benefit industry, but also the PNG government and the landowners themselves and would also contribute positively to advancing the objective of transparency in the forestry sector in PNG. The Mission saw this as a value-added area for possible contributions by ITTO.

In addition, however, with respect to concerns raised by almost all consulted on the subject of timber pricing, the Mission concurs with ODI's observation that, “Notwithstanding the fact that the PNGFA is an independent statutory body, cross-departmental scrutiny plays an important role in overseeing the forest sector ... Amongst others, there may be justification in broadening involvement in the approval of log export prices beyond the NFS Marketing Branch to include the Treasury and Internal Revenue Commission (IRC). As a measure against transfer pricing, transparency is essential.” (ODI report *The Current Legal and Institutional Framework of the Forestry Sector in Papua New Guinea*, January 2007, Summary of Findings, VI, paragraph 3.)

Provincial Forest Management Committee

As previously described the PFMC's function at a local level and have the capacity and legal authority to take on a far more effective role in ensuring sustainable forest management. The majority of those consulted by the ITTO Technical Mission believed that PFMC's are at the right level of governance for a more effective role in the management and use of forests and forest products by the national government and in increasing the effectiveness and transparency of consultation, including and most importantly with engaging landowners more directly in the decisions with respect to the forests of PNG. Those advocating this, however, also strongly recommended enhancing the technical capacity of the PFMC's and increasing the representation of civil society in its functioning. It was also noted that such a role could ease the

overwhelming burden of the PNGFA, strengthen the decision at a more local level in terms of the use of the forest resource.

3.9.1 The Role of Civil Society

Papua New Guinea has all of the right ingredients for effectively engaging civil society in the sustainable management of forest resources. The Constitution underscores the priority when it states, “We declare our fifth goal to be to achieve development primarily through the use of Papua New Guinean forms of social, political and economic organization. We accordingly call for ... particular emphasis in our economic development to be placed on small-scale artisan, service and business activity.”

The role of NGOs in engaging landowners in “ecoforestry”, interpreted as: forests managed by communities on a small scale for their forestry resources, is already functioning beyond the pilot level and provides some excellent models which could be replicated on a far more significant scale. While there are a number of examples which could be provided as models which should be further developed, two in particular were of interest to the Mission. The first is the work being carried out in ecoforestry with communities by the Foundation for People and Community Development (FPCD) in PNG. The second is work with communities by The Nature Conservancy (TNC).

A model on a large scale: The Nature Conservancy Conservation Covenants

The Nature Conservancy has one of the most significant track records in developing a series of approaches to conservation in PNG, including some which explicitly allow for timber for harvest purposes. In the Adelbert Mountain area north of Madang, the Conservancy has negotiated with local clans to pioneer a new conservation mechanism — Conservation Covenants, which are essentially long-term land leases. TNC believes that this mechanism offers great promise in securing lasting conservation of Papua New Guinea’s forests. This agreement is negotiated with landowners in a similar fashion to the FMA’s. The conservation mechanism requires landowners to agree to protect their lands for conservation over long periods of time in exchange for sustainable development benefits such as roads and schools. At a recent ceremony clan leaders signed the first agreement to manage 965 square miles and are implementing it in this important natural tropical forest. In meetings with ITTO Technical Mission representatives, the TNC project staff and one of the senior clan leaders for this Covenant the project participants outlined the activities covered in the beginning initiatives of the project. Currently logging for export is not a part of the activities at this point in the project, but it is among the potential activities included in the scope.

(TNC Website: <http://www.nature.org/wherewework/asiapacific/papuanewguinea.>)

ITTO has contributed to the Conservation Covenant approach recently. ITTO has already invested in advancing these innovative approaches to assisting the landowners of PNG in collaboration with the government of PNG and TNC, in the context of the TNC’s Conservation Covenants, through PD 324/04 Rev.3 (F) “Sustainable Management of Tropical Forest Resources through Stakeholder Agreements in Traditionally owner areas of Papua New Guinea.” The project was initiated in November 2006.

3.10 The importance of Transparency for Sustainability

One of the key findings of the Mission is that there is a significant problem with information on the forest sector and its management. It appears useful in the context of this chapter to recall that the 2004 *Civil Society Advisory Group (CSAG) and Trade Advisory Group (TAG) Joint Workshop on Illegal Logging and Illegal Trade “Report to ITTC”* recommended the following actions by governments and by ITTC: “Increased transparency and access to information are essential for progress in the effort to combat illegal logging and illegal trade. Governments and other stakeholders need to be able to generate and verify data in a transparent and accessible manner. This will include mechanisms for independent third party monitoring, protocols for data verification and publication of data, and ensuring easy access to information.”

The trade and civil society members at this workshop agreed on the following specific actions:

- Encourage country-level projects to promote transparency and access to information, in particular regarding concession allocation, mapping, management plans, revenues from taxes and fines and how they are distributed;
- Support studies to identify best practices in independent third party monitoring as a tool to combat illegal logging and promote consumer market confidence;
- Ensure that all ITTO projects to develop national-level databases and Management Information Systems include protocols for transparent data collection and verification through multistakeholder processes, and guarantee improved transparency and access to information;
- Ensure all ITTO data on tropical forests, forest products and trade are made publicly available in an easily accessible manner (e.g. through the Web);
- Encourage ITTO to undertake an evaluation on how its data is collected, managed and made public.”

This list of actions recommended by the trade and civil society alike are of particular relevance to Papua New Guinea based on the findings of the ITTO Technical Mission. Previous findings in this report about the absence of knowledge of the forest estate, the concessions, the concession allocation process, the revenues and fines and other significant aspects of forest management in PNG have demonstrated the importance of a far more transparent process of governance of forests in PNG.

Transparency is not only a benefit in combating illegal logging and illegal trade, but also a major preventative for corruption. Transparency provides a basis for counteracting false claims of illegal or corrupt activity. In the PNG context it also should provide to the landowners substantive information which adequately demonstrates that the stewardship of their natural resources is indeed being managed sustainably and to benefit the people of PNG, as required by the Constitution.

In consultations held by the Mission it was clear that very little information is transparently available to the public in PNG. For example, in the acquisition of forest areas for FMAs the only aspect publicized is the notice of tender. No subsequent steps related to the acquisition and management of the FMAs, to Timber Authority extensions, to Timber Permits and the associated financial assessments are available to the citizens of PNG. The Mission believes that adopting wide-spread transparency in the implementation of actions related to the Forest estate is necessary for achieving Objective 2000.

4. Conclusions

The general conclusion of this “Diagnosis Mission” is that PNG has many acts, laws and policies in place, but implementation is problematic due mainly to administrative and governance constraints. The government and industry have not been able to demonstrate economically viable, socially and ecologically beneficial forest management practices in line with ITTO Criteria and Indicators. The environmental impacts of timber harvesting operations are poorly controlled and the regulatory framework is not being enforced through the collaborative efforts of PNG Forest Authority and DEC in field monitoring and control. The following are some specific conclusions pertaining to areas identified by the mission as crucial for working towards sustainable forest management.

4.1 Forest Management

Forest management in its traditional sense is not practiced in PNG at present. It addresses one aspect almost exclusively, and that is in acquiring and managing the timber harvesting processes.

4.1.1 Forest information

- There is no holistic baseline information on the heterogeneous forest resources of Papua New Guinea. All existing national and provincial level plans are not based on sound field forest inventory but are based on “guestimates” of the timber stand density which vary tremendously from region to region.
- Forest cover statistics are not based on a national forest inventory and therefore at present the information available on forest cover, its management, protection, planted forests, areas of forests under protection, etc is seriously insufficient.
- The present forest classification system: production, reserve forests, salvage forests, protection forests, afforestation potential seem to be based on areas identified by the government for the purpose of timber extraction and not for the long term sustainable forest management with its pillars of economic, social and environmental foundations.
- With the customary land ownership that is dominant in Papua New Guinea, the identification and management of Permanent Forest Estate for long term sustainable management will be challenging.

4.1.2 Protected areas

- A comprehensive national definition of protected areas is lacking in Papua New Guinea. What constitutes protected area has not been defined, accepted and documented, nor do the actions taken related to protected areas occur through stakeholder consultation processes with the participation and prior informed consent of landowners.
- Statistics on protected areas and protection forests within production forests is vague and the status is unclear if there are significant overlaps between protected areas and areas under harvesting.
- There is a weak institutional working relationship between the two primary agencies (PNG Forest Authority and DEC) responsible for the sustainable management and protection of forests in PNG.
- Funding constraints and shortage of human resources of the PNG Forest Authority and Department of Environment and Conservation are a primary limitation for the achievement of appropriate protected areas management.
- Although the forests of PNG are biologically diverse, the conservation of ecosystem diversity at the national and provincial levels through the establishment of a system of protected areas is not taking place.
- Evidence shows there are government declared Wildlife Management Areas present in Forest Management Agreement areas that are subject to timber extraction.
- Landowners are seldom actively engaged through the present customary landownership of forest resources for the protection and sustainable management of their natural resources.

4.1.3 Planted forests

- The design and layout of planted forests established to date are not adequate to demonstrate the protection, restoration and conservation of natural forests and does not seem to minimize pressure on natural forests
- The Reforestation Policy has not been finalized and the Forest Plantation Development Program has not been completed which is one of the reasons for the laggard approach in development of this sector.
- The existing planted forests are burdened with administrative and governance difficulties. Among them are landowner disputes (e.g. Gogol Forest Plantation and Jant Wood Chip mill) and operations that are heavily subsidized by the government (e.g. Bulolo Forest Plantation).

- The present FMA system lacks the necessary framework to address future rights over planted forests or their land use rights.
- There is a general need for research on indigenous species performance in planted forests.
- No comprehensive and systematic review on the economic viability, social and environmental benefits of all existing planted forests have been carried out by PNG Forest Authority, which can guide the establishment of new areas for planted forests.
- Future land use rights over forest plantation lands remain uncertain under the FMA.

4.2 Policies and legislation

- Most of the legislation's, forest management activities tend to address how to make logging of PNG forests more "sustainable", i. e. ensuring supply of logs. Forest management eventually drifts towards more talk than action regarding deforestation and governance. On the ground activities to manage the forests sustainably, i.e. with a balance between their economic, environmental and social functions which may include aspects of forest extension and coverage, production functions, protection functions, forest health and vitality, conservation of biodiversity and social and cultural values are in short supply.
- The National Forest Plan is outdated and in its present form contributes to unsustainable forest management in PNG. The environmental impacts of timber harvesting operations are poorly controlled and the regulatory framework is not being enforced through the collaborative efforts of PNG Forest Authority and DEC in field monitoring and control. It is impossible to analyze National Forest Policies, without reliable data hence there is no acceptable basis for a diagnosis of obstacles for evaluating SFM.
- There are no clear policies for land use planning including conversion of forest land into large-scale agriculture (e.g oil palm production), although there is some delineation of Productive, Protective, Salvage, and Reserve forest areas, but it is based on old data. There is a need for further up to date information that would distinguish between forest conversion, i.e. clearance for large-scale agriculture and changes in the status of the forest after selective or clear-cutting, keeping in mind that natural regeneration when it occurs. Such information may be in the hands of some NGO's and industry.
- The diverse interests of landowners and lack of extension services augmented by ill-advice to local people from certain interest groups complicate the efforts to achieve SFM.
- The PNGFA acknowledges that it does not have the human and financial capacities to adequately monitor all logging operations, let alone other provisions of FMA's.
- The government should periodically check the claim by SGS that all log exports are legal.

5. Recommendations

The following recommendations are addressed mainly to the PNG government (PNGFA), bilateral development assistance agencies and international organizations, particularly ITTO.

5.1 Forest management

- Conduct a national forest inventory as soon as possible. A multidisciplinary team of foresters, environmentalist, conservationist to be involved in a National Forestry Inventory every 5/10 years as per recommended in the PNG Forest Policy.
- Promote trans-boundary protected areas in collaboration with relevant authorities in Indonesia for high priority biodiversity sites identified under CNA (1992). There is a need for a scoping study to study existing law. Need for DEC to set up a Secretariat.
- Undertake a full review of the economic, environmental and social feasibility of the existing planted forests before any further expansion of plantation forests. Document lessons learnt from existing areas.

Review the project agreements for plantation forests, based on the economic value of species and environmental benefits gained and the social returns which should accrue to the landowners.

- Review the present 35 years harvesting cycle. Develop a volume table for all major commercial natural and planted species and adjust according to species with different forest management scenarios.
- PNGFRI review its current operational plans and strategy and develop a new one that addresses new forest paradigms, emphasising research on community/landowner perception and communication. Strengthen links with DEC and PNGFA to identify gaps in environmental and social aspects to cover forestry, oil palm, mining, and agriculture projects.

5.2 Forestry policies

- Urgent need to improve institutional capacities for inventory, forest resources assessment and monitoring of implementation of the conditions of FMA's. This should include NFS and DEC staff at national and provincial levels as well as local communities. External assistance could be sought for this purpose.
- Seek assistance for redrafting NFP from international organizations such as ITTO, FAO, External assistance, especially of capacity building, should be a long-term process until local institutions are equipped to deliver such services.
- The present regulations, which include between 29 and 34 steps and the environmental planning processes to approve an FMA area and grant Timber Permits, appear beyond the current administrative capacities of PNGFA and DEC. It is felt that excessively complex procedures which are difficult to implement create additional incentives for concessionaires to cut corners and for some public servants and local landowners to be engaged in "rent-seeking behaviour". These steps should be reevaluated for efficiency in the context of the overall objective.
- PNG needs to make the processes of negotiating, granting and monitoring of FMA's more transparent and participatory, in particular the extension of FMAs, Timber Authorities or other existing agreements which have, or which will shortly expire.
- Address the issue of Forest Law Enforcement and Governance (FLEG) in a transparent manner and implement the recommendations of the latest Regional FLEG workshop in PNG (Oct. 2006), taking into consideration the ITTO's Civil Society and Industry Advisory Group's recommendations on related matters.
- Integrate landowners into the full suite processes of Sustainable Forest Management and study the current royalties and the process of disbursement with a view to meeting the relevant Constitutional requirements of PNG, which would also go a long ways towards achieving the social and economic aspects of Objective 2000.
- Central government agencies should devolve some authorities, funds to provincial and local administrations and civil society organizations with associated technical and legal support during a transitional period.

5.3 Forest Governance and Law Enforcement

- ITTO should provide a technical mission to assess specific monitoring and capacity needs for areas of forest being harvested; either as FMAs, plantations, woodlots or under the former Timber Authority provisions, particularly focused on:
 - The capacity of the PNGFA to provide the monitoring for which it is responsible
 - Identifying the technical, management and physical equipment requirements for on-site monitoring
 - Consider and carefully review the transparency requirements of PNG law in this regard

- Assessing and providing recommendations on the communication requirements for effectively providing information to the company, the PNGFA, the PFMC, the community (landowners, industry, NGOs) related to the monitoring of these sites for forest law compliance and subsequent enforcement if necessary.
- ITTO should provide support in analyzing how to utilize PFMC's to increase their effectiveness in the management and use of forests and forest products, including developing their capacity and that of the landowners, industry and civil society in a provincial area to make informed decisions about sustainable forest management. In this regard, ITTO develop and implement a pilot training program which would serve as a basic primer on SFM for the provincial representatives, including landowners. This program could provide some basic education on principals and practice of sustainable forest management.
- ITTO should, in its discussion and decisions associated with this Mission, strongly advocate for more effective involvement of landowners and NGOs in the process of sustainable forest management, including on the National Forest Board, the PFMC and in other forest decision-making processes.
- ITTO should offer the government of PNG an initiative, working closely with other partner international organisations and bilateral donors to further develop landowner-managed concessions, focusing on the Nature Conservancy model including the contribution through ITTO's project PD 324 Rev.3 (F) as one successful approach and the FPCD Eco-Forestry Programme, focused on communities managing small scale forest areas for their forestry goods and services, including timber for domestic use or export as another example of projects which can and should be replicated. In this regard, ITTO would facilitate an initiative with the government of PNG, the NGOs and landowner representatives for these model initiatives and:
 - Working with the Government of PNG, the landowners, NGOs and experts, develop an assessment of "lessons learned" from the example of these two model projects.
 - Present the success story of these initiatives to multilateral donors, including at meetings and conferences of the GEF, the UNFF, the FAO, the CBD, IUCN and any other organizations, institutions with the potential to replicate this success in PNG and in other producing countries. (Note that Australia's announcement of a new forest fund to prevent deforestation provides an excellent opportunity for this purpose).
- ITTO should propose a joint initiative with IUCN which will offer assistance to the Government of PNG, working with the DEC and the PNGFA to carry out a comprehensive assessment of forests in Papua New Guinea which are protected. The initiative would include, inter alia:
 - An inventory of existing protection and protected forest areas and the type of protection offered under the laws of PNG for forests, for wildlife living in forests and for other biodiversity, focused in particular on areas adjacent to areas being harvested (FMAs, Timber Authority, landowner woodlots).
 - The development of recommendations for PNG for the different classifications of protection, and for reconciling and rationalizing those between government agencies, laws and regulations.
 - Recommendations for monitoring and enforcement.
 - A specific analysis and recommendations on the potential for transboundary protected areas with Indonesia.
 - An analysis of the unique problems of the small islands in PNG with protection of biodiversity.
- Recommend that ITTO offer to carry out an independent survey of market intelligence needed within PNG, building on recent work such as that by the ODI which identifies some of these areas and including working with the Research Institute of PNG in Lea to begin to develop a basis for future research and including:

- Identifying the relevant scope and process for updating the PNG forest inventory and in that context identifying the individual tree species, the relationship of those species to what is known about their domestic and export history, including possible studies of the potential changes in those patterns;
 - Assessment of the planted forests estate, species and market potential;
 - Survey of existing process for timber market prices, taxes and recommendations for a future system, including the provision of transparently available information for all aspects of the timber market.
- Recommend that ITTO provide information on the Freezailah Fellowship to the PNG government, including to the Research Institute specifically and recommend a more structured approach to proposing candidates for education and training for the outstanding foresters in PNG through this vehicle.

Ultimately, without a strong political will to change the status quo, all of the problems addressed by this report will simply remain or become worse before they are repeated in a future report.

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Papua New Guinea Forest Authority. 1998. Forest Resource Acquisition General information.

APPENDIX 1

MISSION MEMBERS

International Consultants:

1. M. Hosny El Lakany, *PhD, DSc.* Mission Leader
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National Consultants:

1. Oscar O. Mamalai,
Director of Niugini Forest Planning & Management LTD, PNG
2. Sammy Toti
Managing Director, National Resources Management Consultants, PNG.

APPENDIX 2

ITINERARY

- 17-18 February 2007** Arrival of International Consultants.
- 19 February 2007** Courtesy call on Minister for Forests and Acting Managing Director.
- Meeting with Acting Managing Director, Divisional Managers and Senior Officers, PNGFA.
- Consultation with selected Divisional Managers, PNGFA.
- Consultation with Executives of the Association of Foresters.
- Consultation with Secretary/Senior Officers, Department of Environment & Conservation (DEC).
- Consultation with Senior Officers, Department of Planning & Monitoring.
- Consultation with Senior officers Department of Trade & Industry.
- Team reviews of day's dialogue.
- Dinner hosted by the Acting Managing Director.
- 20 February 2007** Consultation with Secretary/Senior Officers, Department of Agriculture & Live Stock (DAL).
- Meeting with Executives, PNG Sustainable Development Program.
- Consultation with Executives, Eco Forestry Forum & related NGOs.
- Meeting with the Honorable Minister of Forests, Patrick Pruaitch.
- Consultation with Executive Officer/Senior Members, Forest Industry Association (FIA).
- Consultation with Institute of National Affairs (INA) Executives.
- Meeting with Area Forest Manager, Southern Region.
- Missions Review of day's Consultation.
- 21 February 2007** Depart on plane charter for Gulf and Western Provinces.
- Arrival at Sasereme, followed by briefing by Company's Forest Officer and Project Supervisor Visit around the camp site.
- Depart for aerial survey of Middle Fly forest areas.
- Arrive at Kamusi.
- Debriefing by Project Supervisor and Camp Manager, Visit to Sawmill.
- Depart Kamusi for Panakawa Vist Plywood Mill.
- Depart Panakawa for Vailala, Gulf Province.

- Meet Project Supervisor and Camp Manager. Brief visit at camp.
- Depart Vailala for POM via East Kerema forest areas.
- Missions review of days trip.
- 22 February 2007** Depart POM for Lae, PX100 ETA Lae. Met by FRI & NFS Officers.
- Consultation with Area Forest Manager, Momase and Senior Officers.
- Consultation with Director of FRI and Senior Officers.
- Depart Lae for Bulolo via Oomsis Station and TSI plots.
- Consultation with Forest Plantation Manager and Senior Officers.
- Visit Bulolo Forest Plantation.
- Mission review of days findings.
- Over night at Bulolo.
- Consultation with PNGFP Manager. Followed by late visit to Mills.
- 23 February 2007** Depart Bulolo for Lae.
- Arrive Lae.
- Visit TFTC and meeting Principal
- Review of days events.
- 24 February 2007** Visit University of Technology Forestry Department.
- Consultation with Head of Department.
- Depart Lae for Madang.
- 25 February 2007** Breakfast with Provincial Forest Officer, then visit Gogol Forest Plantation.
- Visit North Coast Forest Plantation.
- 26 February 2007** Aerial Survey (2 hours) of Middle Ramu and Upper Ramu. forest areas, using fixed wing aircraft.
- Return to Madang
- Visit Jant Wood Chipmill and Consultation with Manager.
- Debriefing with Provincial Forest Officer.
- 27 February 2007** Depart Madang for Hoskins, WNBP.
- Consultation with Area Forest Manager.
- Consultation with Provincial Forest Management Unit.
- Visit SBLC and its forest plantations.

- 28 February 2007** Depart on helicopter aerial survey (3 hours) of logged-over forest areas, South Coast of WNB.
- Depart Hoskins for Rabaul.
- 1 March 2007** By helicopter to Open Bay. Meet Forestry Officer and visit Forest Plantation.
- Depart Rabaul for POM.
- 2 March 2007** Debriefing with Acting Managing Director and Senior Officers, PNGFA.
- Mission's review of whole consultation process

APPENDIX 3

PEOPLE MET, INTERVIEWED AND CONSULTED

NAME	POSITION	ORGANIZATION
The Honourable Patrick Pruaitch	Minister of Forests	The Government of PNG
Mr. Dike Kari	Managing Director, National Forest Service Chair	PNG Forest Authority
Mr. Janis Kupa	Marketing Branch, Resource Development Division	PNG Forest Authority
Mr. Frank Agaru	Aid Coordinator	PNG Forest Authority
Mr. Dambis D. Kaip	Acting Director, Policy and Aid Coordination	PNG Forest Authority
Mr. Kini Karawa	Officer Marketing Exports, Resource Development Division	PNG Forest Authority
Ms. Magdelene Maihua	Manager – Projects, Resource Development Division	PNG Forest Authority
Ms. Caroline		PNG Forest Authority
Mr. Joseph Badi	Manager, Forest Planning Division	PNG Forest Authority
Mr. Tunou Sabuin	Divisional Manager, Resource Development Division	PNG Forest Authority
Mr. Benjamin Taupa	Divisional Manager, Field Services Division	PNG Forest Authority
Mr. Goodwill Amos	PNG MDG7 Coordinator	PNG MDG7 Initiative
Mr. Kanawi Pouru	President	Association of Foresters
Yati A. Bun	Executive Director	Foundation for People and Community Development Inc.
Michael Avosa		WWF South Pacific
Mr. Kenn Mondiai	Chairperson	Eco-Forestry Forum
Mr. Thomas Paka	National Coordinator	Eco-Forestry Forum
Paula Bariamu-Natu	Lawyer	CELCOR
Dorothy Tekwie	Forest Campaigner	Greenpeace Australia and Pacific
Mr. George	Project Supervisor	Sasereme
R. (Bob) Tate	Executive Officer	PNG Forest Industries

NAME	POSITION	ORGANIZATION
		Association Inc.
Paul Barker		Institute of National Affairs
Terry Warra	Director	Forest Research Institute
Cossey Yossi		Forest Research Institute
Roy Banka	Program Leader – Forest Biology	Forest Research Institute
Billy B. Bau	Botanist	Forest Research Institute
John William Dobunaba	Entomologist	Forest Research Institute
Dr Ruth Turia	Lecturer, Forestry Department	PNG University of Technology, Lae
Peter Unumbu	Royalty Officer	Madang PNGFA
Richard Iuimkake	Forest Consultant	
Paul Marai	Project Supervisor	MNC
Michael Mading	Project Supervisor	Gogol/Madang PNGFA
Eillen Kolokol	Provincial Forest Officer	PNG FA
Kenneth Manui	Project Supervisor	PNG FA
Jeffrey Sapak		Jant Limited
Thomas Cholai		Jant Limited
Sylvia Avitu	Communication Officer	The Nature Conservancy Madang Field Officer Madang
Cosmas Apelis	Conservation Science Officer	The Nature Conservancy
Lisa Linibi	Program Project Assistant	The Nature Conservancy
Theresa Kas	Partnership Coordinator	The Nature Conservancy
Warren Jano	Conservation Planner	The Nature Conservancy
Felix Genlin	Vice President, Almani Local Level Government	Local Level Government
Mr. Isidore Teli	Landowner representative	West New Britain Provincial Forest Management Committee P.O. Box 644, Kimbe West New Britain Province PNG Tel: 983 4800
Mr. Peter Sanamia	Forest Division	West New Britain Provincial Administration

NAME	POSITION	ORGANIZATION
		P.O. Box 816, Kimbe West New Britain Province Papua New Guinea Tel/Fax: 983 5558
Mr. Joshua Giru	Provincial Administrator	West New Britain Provincial Administration P.O. Box 816, Kimbe West New Britain Province Papua New Guinea
Mr. Vincent Batau	Area Manager – Islands Region	PNG Forest Authority P.O. Box 370, Kokopo East New Britain Province Papua New Guinea Tel: 983 9161
Mr. Allai Aina	Supervisor Reforestation	PNG Forest Authority West New Britain Province Papua New Guinea Tel: 9854003
Mr. Sebastian Anthurking	Provincial Forest Officer	PNG Forest Authority West New Britain Province Papua New Guinea Tel: 9854018
Mr. Jofite Inas	Project Supervisor	Bulolo Plantations
Mr. Peter Damba	Acting Manager	Bulolo Plantations
Mr. Arinaso Pilisi	Management Supervisor	Bulolo Plantations
Mr. Mondo Karmar		Forest Research Institute
Mr. Reddy Victor	Acting Insp. Supervisor	Area Office, Lae
Mr. John Worimbangu		Area Office, Lae
Mr. Nisa J. Welali	Acting Area Manager	PNGFA
Mr. Maliso Miningi	Project Supervisor	PNG FA
Mr. Wape Pundiap	Inventory Officer	PNG FA
Mr. Max Marupi	Draftsman	PNG FA
Mr. James Sabi	Manager, Biodiversity Assessment	Department of Environment and Conservation
Dr Gae Gowae	Deputy Secretary, Conservation	Department of Environment and Conservation
Mr. John Mosoro	Manager, EIA	Department of Environment and Conservation

NAME	POSITION	ORGANIZATION
David Freyne	Attache	EU Office, Port Moresby
Imelda Kavu		EU Office, Port Moresby
David Cassells		Brisbane, Australia
Dr. James Douglas	University of Australia, Canberra	Canberra, Australia

APPENDIX 4

PROTECTED AREAS IN PAPUA NEW GUINEA

(Information provided from Department of Environment and Conservation, February 2007)

	NAME	TYPE	PROVINCE	AREA (HA)
1	Tonda WMA	WMA	Western	590,000
2	Crater Mountain WMA	WMA	Chimbu, Eastern Highlands, Gulf	270,000
3	Hunstein Range WMA	WMA	East Sepik	220,000
4	Maza WMA	WMA	Western	184,230
5	Kamiali WMA	WMA	Morobe	65,541
6	Crown Island Wildlife Sanctuary	S	Madang	58,969
7	Pirung WMA	WMA	North Solomons	43,200
8	Ranba WMA + Sanctuary	WMA	Madang	57,646
9	Lake Kutubu WMA	WMA	Southern Highlands	24,100
10	Oi Mada Wara WMA	WMA	Milne Bay	22,840
11	Lihir Island	PA	New Ireland	20,208
12	Bagiai WMA	WMA	Madang	13,760
13	Siwi-Utame WMA	WMA	Southern Highlands	12,540
14	Pokili WMA	WMA	West New Britain	9,840
15	Garu WMA	WMA	West New Britain	8,700
16	Ndrolowa WMA	WMA	Manus	5,850
17	Klampun WMA	WMA	East New Britain	5,200
18	Mojirau WMA	WMA	East Sepik	5,079
19	Jimi Valley National Park	NP	Western Highlands	4,180
20	Neiru (Aird Hills) WMA	WMA	Gulf	3,984
21	Iomare WMA	WMA	Central	3,828
22	Lake Lavu WMA	WMA	Milne Bay	2,640
23	Tavalo WMA	WMA	East New Britain	2,000
24	Mc Adams National Park	NP	Morobe	1,821
25	Zo-oimaga WMA	WMA	Central	1,510
26	Mt Kaindi WMA	WMA	Morobe	1,503
27	Variarata Nat. Park	NP	Central	1,063
28	Mt Wilhelm National Reserve	NP	Western Highlands	817
29	Sawataetae WMA	WMA	Milne Bay	700
30	Balek Wildlife Sanctuary	S	Madang	470
31	Hombareta WMA	WMA	Oro	130
32	Loroko National Park	NP	West New Britain	100
33	Mt Gahavisuka Pro. Park	PP	Eastern Highlands	77
34	Baiyer River Sanctuary	S	Western Highlands	64
35	Mt Susu National Reserve Par	NP	Morobe	49
36	Moitaka Wildlife Sanctuary	S	National Capital District	44
37	Baniara Island WMA	PA	Milne Bay	37
38	Namanatabu Reserve	R	Central	27
39	Nuraseng WMA	WMA	Morobe	22
40	Paga Hill Nat. Park Scenic R	NP	National Capital District	17
41	Nanuk Island Reserve	R	East New Britain	12
42	Talele Is. Nat. Park Reserve	NP	East New Britain	12
43	Kokoda Historical Reserve	R	Oro	10
44	Cape Wom Memorial Park	MP	East Sepik	2
45	Wewak Peace Memorial Park	MP	East Sepik	2
46	Kokoda Memorial Park	MP	Oro	1
47	Kavakuna Caves	WMA	East New Britain	
48	Sinub Island	WMA	Madang	
49	Laugum Island	WMA	Madang	72.95

	NAME	TYPE	PROVINCE	AREA (HA)
50	Tab Island	WMA	Madang	984.30
51	Tabad Island	WMA	Madang	16.30
52	Kau Wildlife Area	Informal	Madang	
	Managalas Plateau	Proposed	Oro	
	Tonda Extension	Proposed	Western	
	Sulamesi - Mt Bosavi	Proposed	Southern Highlands	
	Wereaver-Baro	Proposed	Western	
	Suki-Aramba	Proposed	Western	
	Simbine	Proposed	Madang	
	Me'ha	Proposed	East Sepik	
	Uma	Proposed	East Sepik	
	Libano-Hose	Proposed	Southern Highlands	
	Libano-Arisai	Proposed	Southern Highlands	
	Wiad	Proposed	Madang	
	Milne Bay Marine	Proposed	Milne bay	
	YUS Conservation Area	Proposed	Morobe	
			TOTAL	1,643,898.55

MP – Memorial Park, NP – National Park, PA – Protected Area, PP - Provincial Park, R – Reserve, WMA – Wildlife Management Area, S – Sanctuary

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