Climate Community and Biodiversity Standards

Project Design Document

April Salumei

East Sepik, Papua New Guinea

June, 2010 (CCBS PDD)

Preface

In 1973 when Papua New Guinea became self governed the then Chief Minister Michael Somare commissioned the development of the "Eight Aims'. This was later renamed the *Eight Point Plan.*

The objectives were;

- Increased indigenous participation in the community
- Equality among ethnic groups, gender and between areas
- Greater attention to rural and village development , and
- Self reliance.

These same principles are reflected in the recently developed Vision 2050. Papua New Guinea Government officially launched "The Papua New Guinea Vision 2050" in October 2010.

The Papua New Guinea Vision 2050 is a long term strategy to map out the future directions of Papua New Guinea and its people.

The Papua New Guinea Vision 2050 is underpinned by seven strategic areas or 'pillars. They are;

- Human Capital Development, Gender, Youth and People Empowerment;
- Wealth Creation;
- Institutional Development and Service Delivery;
- Security and International Relations;
- Climate Change and Environmental Sustainability;
- Spiritual, Cultural and Community Development; and
- Strategic Planning, Integration and Control.

The implementation of these pillars will be a holistic approach through government sectors, provincial governments (their districts, local government and wards) non government organisations, donors and private sectors.

In developing the April Salumei Rainforest Preservation Project it became apparent the objectives of this vision are closely aligned with the potential of the project and furthermore some of the individual objectives in the Vision 2050 have been adopted for the April Salumei project.

When we look at the seven pillars we can distinguish were some of the key pillars will be positively enhanced by the April Salumei project.

Human capital development is addressed in the projects with local people empowered to manage their own project in the roles of community stewards. There is no discrimination between gender and youth roles have been designed to facilitate the development of the roles as people grow.

Wealth Creation is obvious with funds being delivered to the landowners and stakeholders in the area.

Improved service delivery is necessary to ensure the landowners receive the benefits they require and have planned for.

Pillar 4 which emphasis security, law and justice sector must be embraced as well as the society and communities face new challenges and models of rolling out economic development. It is important any social and cultural hiccups are managed urgently.

International relations will naturally be strengthened as more people 'invest' into the carbon sequestered in the forests of the projects that are developed.

Climate Change and Environmental Sustainability is most obviously the pillar under which this project fits directly.

Spiritual, Cultural and Community Development is addressed directly. Project funding is available for all of the community and this includes church groups. Local customs and beliefs along with special sites are recorded as part of the project. Plans are currently afoot to develop a curriculum to represent traditional beliefs of the local area and community development is the aim of the project funds.

Finally strategic planning integration and control need to compliment PNG Development Strategic Plan 2010-2030 which then further streamlined into Provincial and District and Ward plans. The Department of National Planning and Monitoring has been mandated to ensure the PNG Vision 2050 and projects like the April Salumei compliments the PNG Government and its communities.

When we examine the micro details of the "Papua New Guinea Vision 2050" (and the PNG Development Plan) we can see an alignment with specific objectives.

These include;

1.17.2 Education

1.17.2.1 Free and Universal education for all school-age children from Elementary to Grade 12. The Landowner Company Chairman has requested to review the current education facilities and capacity with a view to providing free education to all children. This will be represented n the aims of our Education Superintendents for the respective project.
1.17.2.2 100% literacy for the adult population over 15 years of age.
Literacy levels will also be monitored to ensure continuous improvement in the community.
1.17.2.17 Establish public-private partnerships in the delivering of education.
1.17.2.18 Introduce Climate Change and Environmental sustainability as school subjects into the National Curriculum.

1.17.3 Health

1.17.3.2 Reduce tuberculosis prevalence from 51 per 100,000 to 10 per 100,000 of the population.
1.17.3.2 Reduce malaria deaths from 51 per 100,000 to 10 per 100,000 of the population.
1.17.3.5 Establish one aid post per ward area.
1.17.3.6 Provide two health workers per ward area

1.17.3.7 Establish one basic health service centre with two doctors and support personnel per district;
1.17.3.8 Improve the terms and conditions of employment of health officers.

These objectives have been integrated into our health outcomes.

1.17.7.3 Infrastructure and Utilities
1.17.7.3.1 Increase the national road network from the current 25,000 km to complete road networks throughout Papua New Guinea.
1.17.7.3.4 Increase the availability of rural electrification from 15% to 100%
1.17.7.3.5 Increase access to clean water from 39% to 100%
1.17.7.3.6 Increase communication access from 10% to 100% of the population.

Additionally these objectives reaffirm and support the Ambunti-Drekikir District Joint District Planning and Budget Priority Committee (JDP & BPC) as part of their 10 year plan.

The success of the implementation of the April Salumei Rainforest Preservation Project will depend on an holistic approach where the developer through the Papua New Guinea Vision 2050, engages all the stakeholders, from governments, non government organisations, private sectors, local communities, multilaterals, bilateral and others to ensure the REDD Pilot Project for the country is embraced by all.

Rainforest Project Management Limited is proud to have been involved in the development of the pilot project for Papua New Guinea. The landowners stand to gain significant benefits from the ongoing development of the project and these benefits to landowners have always been at the core of the projects design.

Finally we would like to thank our project development partners for their assistance;

- The landowners and the executive of Hunstein Range Holdings Limited,
- Papua New Guinea Vision 2050, the Prime Ministers Department and the NEC,
- University Papua New Guinea – Centre for Climate Change and Sustainable Development,
- Papua New Guinea Forest Research Institute,
- University of Technology
- Office Climate Change and Development
- Partners with Melanesians

Executive Summary

The April Salumei Sustainable Forest Management Project is located within the district of Ambunti in the province of East Sepik, Papua New Guinea. The Forest Management Agreement (FMA) encompasses a total area of 521,000ha with a total production area of 177,200ha for designated logging and a net production area of 150,620ha. (FMA and TACK Realty 2004)

The April Salumei Sustainable Forest Management Project is being submitted as the pilot project for REDD in Papua New Guinea.

The project is located in the Ambunti- Drekikier electorate in the East Sepik Province. This area is recognised as one of the least developed areas in Papua New Guinea and will avoid the emission of 33,934,761 tonnes of carbon over the project life of 20 years.

All project assumptions and calculations will be made available to the validator.

The land is owned by 163 Incorporated Land groups (ILG's) who have all given Free Prior and Informed Consent consistent with the UN Rights of Indigenous People.

The Project Area is currently subject to a Forestry Management Agreement (FMA). The FMA is a legal agreement between the landowners and the government and gives the government, through the PNG Forest Authority, the right to identify a project partner to harvest timber contained in the project area.

Under the agreement landowners would receive royalties and infrastructure development as compensation for the harvesting of the timber in the FMA.

However it is generally understood that the key benefit to landowners from logging, is that of direct royalty or premium payments, which has done little to improve the quality of life for people in rural PNG as the funds are usually wasted or misused.[1]

Logging projects in PNG do not deliver long term benefits to landowners[2]. Forests are not being managed sustainably[3] and "Some infrastructure is developed, but it is generally only planned around logging requirements and is not maintained after logging ceases. Lasting infrastructure that does accrue is off-set by the social and environmental cost borne primarily at the local level."[4]

[1] Eg. Filer and Sekhran (1998) ; Forest trends (2006)
[2] Forest Trends (2006)
[3] Forest trends (2006)
[4] Forest Trends (2006) p. 50, quoting the Independent Review Observations and Recommendations report.

As logging companies finish harvesting an area the landowners are left with serious environmental damage, high social costs and disillusioned rural populations with little sustainable infrastructure and few services.[5]

PNG's Forests

Forests are the dominant feature of the country's ecology extending over 33 million hectares.[6] The country's forests provide vital ecological services that maintain the functioning of its land and coastal marine ecosystems. They also play a major role in the steady cycling of water and carbon dioxide, helping to regulate climatic stability.[7]

Deforestation

It was estimated that in 2002, 1.41% of Papua New Guineas' tropical forests were being deforested or degraded annually.[8] It is also estimated that by 2021, 83% of Papua New Guinea's forests would have been cleared or degraded if the current rate of logging continues[9]. Approximately 16.3 million hectares of primary forests (roughly half of PNG's forests) is currently under threat of being selectively logged.[10]

Credible Threat

The approval of this project will stop the logging of the FMA which consists of 521,000 ha of which a net area of 150,620ha is harvested.

In addition to meeting the CCB Standards for approval we believe the project meets the Community and Biodiversity criterion for Gold Level Approval.

Biodiversity

Papua New Guinea probably harbours more than 6% of the world's most biologically diverse communities.[11] The lowland tropical and subtropical moist forests of New Guinea have been ranked among the world's ten most ecologically distinctive forest regions.[12]

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[5] Forest Trends (2006) ;Greenpeace 2008; Jipsy I (2009) Case Study Logging Operations Vailala Block 2 and Block 3 Ihu District, Gulf Province PNG B SC Hon Thesis (Unpublished)

[6] Shearman, P.L., Bryan, J.E., Ash, J., Hunnam, P., Mackey, B. And Lokes, B., The State of the Forests of Papua New Guinea. Mapping the extent and conditions of forest cover and measuring the drivers of forest change in the period 1972-2002. University of Papua new Guinea, 2008

[7] Hunt 2006

[8] Shearman, P.L., Bryan, J.E., Ash, J., Hunnam, P., Mackey, B. And Lokes, B., The State of the Forests of Papua New Guinea. Mapping the extent and conditions of forest cover and measuring the drivers of forest change in the period 1972-2002 University of Papua new Guinea, 2008.

[9] Shearman, P.L., Bryan, J.E., Ash, J., Hunnam, P., Mackey, B. And Lokes, B., The State of the Forests of Papua New Guinea. Mapping the extent and conditions of forest cover and measuring the drivers of forest change in the period 1972-2002 University of Papua new Guinea, 2008.

[10] Greenpeace (2008)

[11] Davis et al, 1995; European Union, 2006

[12] Olsen and Dinerstein, 1998; Brooks et al, 2006; Bryant et al, 1997

PNG's forests contain at least 191 species of mammals (of which 80% are endemic), 750 bird species (greater than 50% are endemic), 300 species of reptiles, 197 species of amphibians, 3000 species of fish and an estimated 200,000 to 400,000 insect species most of which are yet to be described and classified.[13]

The International Union for the Conservation of Nature lists the most threatened animals in Papua New Guinea which includes 38 species of mammals, 22 species of birds, 8 species of reptiles, and 26 species of invertebrates[14]

Community

According to the 2000 Census the area had a population of just 7,696 people. Most of these villages are located along the mighty Sepik River. As you move away from the river population density decreases to approximately 4 persons per Km2.

The people of the area have an average income as low as PNG K 20 – K40 per year up to a high of K100 to K200 per year where transport and infrastructure allow for the sale of Fish, Sago and some alluvial gold mining.

Education levels are very low, with the few schools that do exist, often lacking support such as teaching materials. The difficulty for parents to pay school fees also sees a number of students drop out of school.

Project Activities

Health services are minimal and villagers travel long distances walking for as long as eight hours to seek medical attention.[15] First aid has largely been provided by the missionaries located in the area.

A total review and analysis of the health and education needs of the local communities will be undertaken at the request of the local people. Following this review the project representatives and the relevant government bodies will develop and implement an improvement plan to address any deficiencies found during the review. It is anticipated this will include the establishment of health centres and educational support programs through the provision of resources and infrastructure.

One of the key aims of the project is the building of a road to provide access generally and to provide river transport which will facilitate transportation of produce to market which will assist the local people to increase their income.

Other priority projects to be implemented at the request of the project stakeholders include the establishment of four resource centres including the renovation of the

[13] Sekhran and Miller, 1994
[14] IUNC, 2006
[15] Hanson et al 2001

“White House” at Ambunti which will become the project head office. Each resource centre will be equipped with V-Sat communications to allow local people communication through phone connection and internet. Training is planned for the operational staff.

Transparency

The landowners are able to apply for funds to establish sustainable projects in the area through a transparent and well supported process.

An independent governance committee comprising three independent and appropriately qualified people will be formed to ensure the landowner funds are not misused or unfairly allocated.

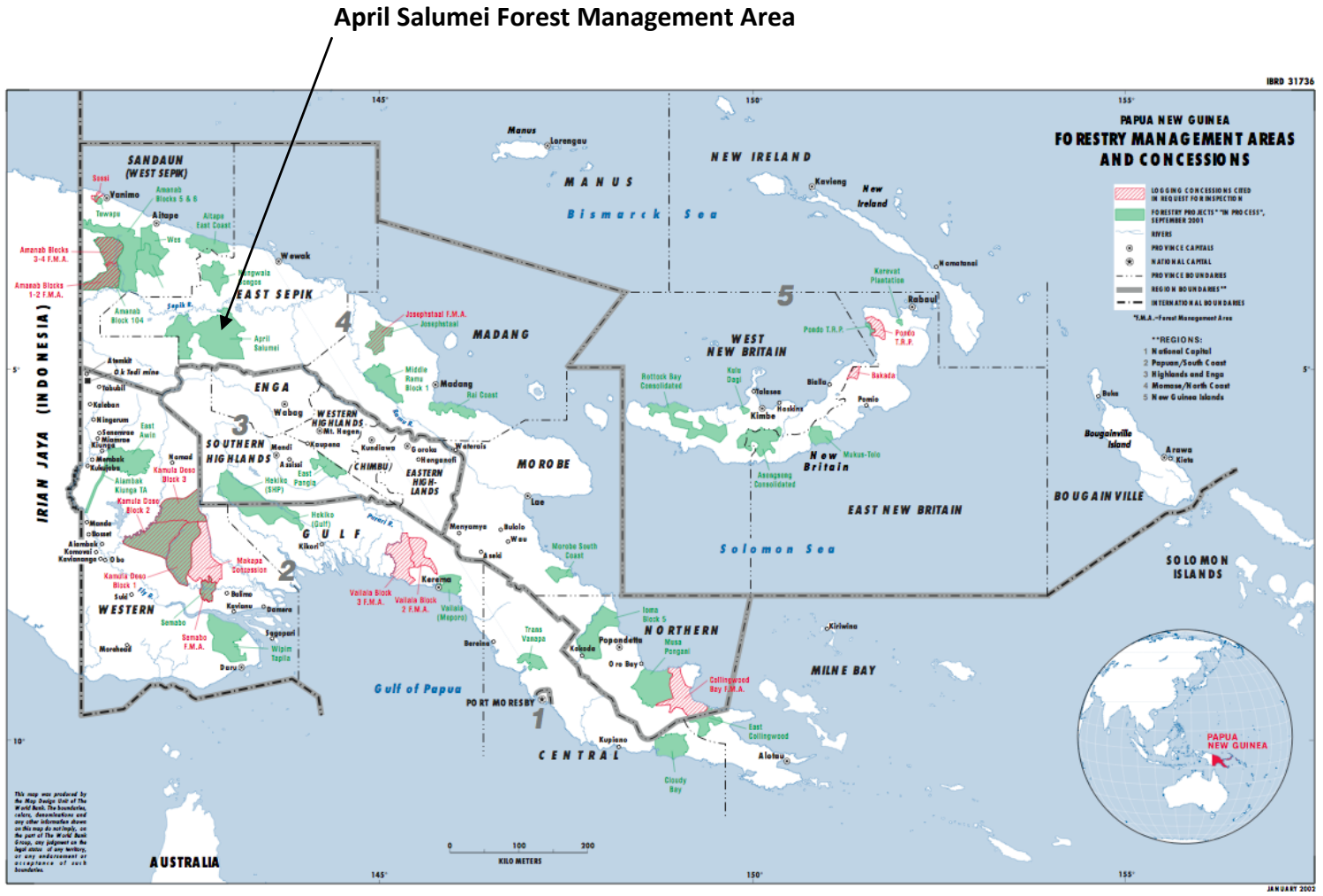
Funds will also be used to provide wages and training for the Community, Biodiversity and Climate Stewards.

Summary

A key outcome from this project and other planned pilot projects will be to facilitate the building of capacity for Papua New Guinea to meet the requirements of international compliance.

Additional to this the management and continued engagement of all stakeholders will assist the government through its Papua New Guinea Vision 2050 in developing their policy and legislation in avoided deforestation opportunities.

Map 1: Project Location: (Source PNGRS 2007)



General Section

G1. Original Conditions in the Project Area

G1.1 Project Location and Physical Parameters

Location and Access

The April Salumei Forest Management Area (FMA) is located within the district of Ambunti in the province of East Sepik. The FMA encompasses a total area of 521,000 ha, with a total production area of 177,200 ha for designated logging and a net production area of 150,620 ha.

The FMA is located approximately 122 km south west of the provincial centre, Wewak.

The FMA is located within swamp associated forests, lowland and hill forests, lower and higher montane forests (Tack Realty 2004). Elevations range from 20 m in the Sepik valley up to 3000 m in the Central ranges (Hanson et al 2001). Wetlands and a few main rivers intersect the FMA including the Leonard Schultz, the April, the Salumei and the Korosameri River. The area is relatively flat to undulating yet tends to be more hilly and rugged within the vicinity of Hunstein range and the headwaters of Ario, April (Salumei and Korosameri rivers). The flatter areas comprise of back swamps, whilst higher grounds comprise the bulk of the FMA area.

Soil

The soil composition of the FMA includes *hydraquents* and *fluvaquents* which are largely associated with wetlands and river embankments whereas *humitropepets* and *dystropepts* soils dominant at higher elevations.

The detailed soil types are presented in Map 2. However, there are three dominant types of soil groups which are evident in the area. The first type is of *hydraquents* nature. These soils are found to be permanently saturated undifferentiated soil which tend to be soft underfoot and of mainly fine textures. Between 30-50% of the area is of this soil type with a soil depth greater than one meter.

Drainage is considered poor as the soil is always water-logged, being swampy in nature. The erodability of this soil is moderate with acid reaction depending on available water capacity; 0-25 cm is considered low, 0-50 cm is considered moderate and 0-100 cm is

considered high. Soil texture both on the surface and at the subsoil level tend to be very fine. Hence where this type of soil is found, less than 1% is stony or rocky in nature.

The second group of soil found in the area is of *fluvaquent* nature. Areas with this soil are normally poorly drained with undifferentiated soils with high variable carbon content. The extent of this soil type is between 20-40% of the area and is of moderate erodability and acid reaction. The depth of this soil type generally is normally greater than 1 meter. These areas are waterlogged, being swampy in nature.

The raised and high altitude areas comprise *dystropepts* soil types. These are well drained moderately weathered soils with finer textured sub-soils and altered B horizons and low (less than 50%) sub-soil base saturation values respectively. The creeks and the river systems comprise of rocks of various sizes.[16]

The rock formation of the April Salumei comprises mainly of alluvial deposits originating from the main tributaries of the Sepik, Wario, April, Salumei, Hunstein and Korosami Rivers. The area is also known for metamorphic rock formation and igneous intrusions. Mineral composition is found in the area allowing small scale alluvial mining continuing to this day in the FMA.

Hydrology

The main hydrological features of the FMA are the numerous tributaries of the Sepik River which traverse through the wetlands and the FMA, generally. The tributaries include the April, Silipa, Salumei, Wario and Korosameri rivers, they originate from the range extending to the south of the FMA.

There are four tributaries of the Sepik River within the April Salumei FMA. These tributaries are the main influences in terms of soil types, relief and forest types. Drinking water quality varies from location to location with better cleaner water found in the headwaters of Wario, April, Salumei and Korosameri rivers.

All of these rivers drain into the main Sepik River. Apart from these main rivers, there are numerous known and undiscovered creeks originating from the hinterlands of the southern parts of the FMA.

Climate

The annual average rainfall within the forest area is between 2500-3500 mm which is fairly high and characteristic of lowland humid climatic type. Rainfall is experienced all

[16] Sources: Development Option Study (DOS) for April Salumei, 1996

year around. Seasonal averages vary from 100-200 mm to greater than 200 mm per month.

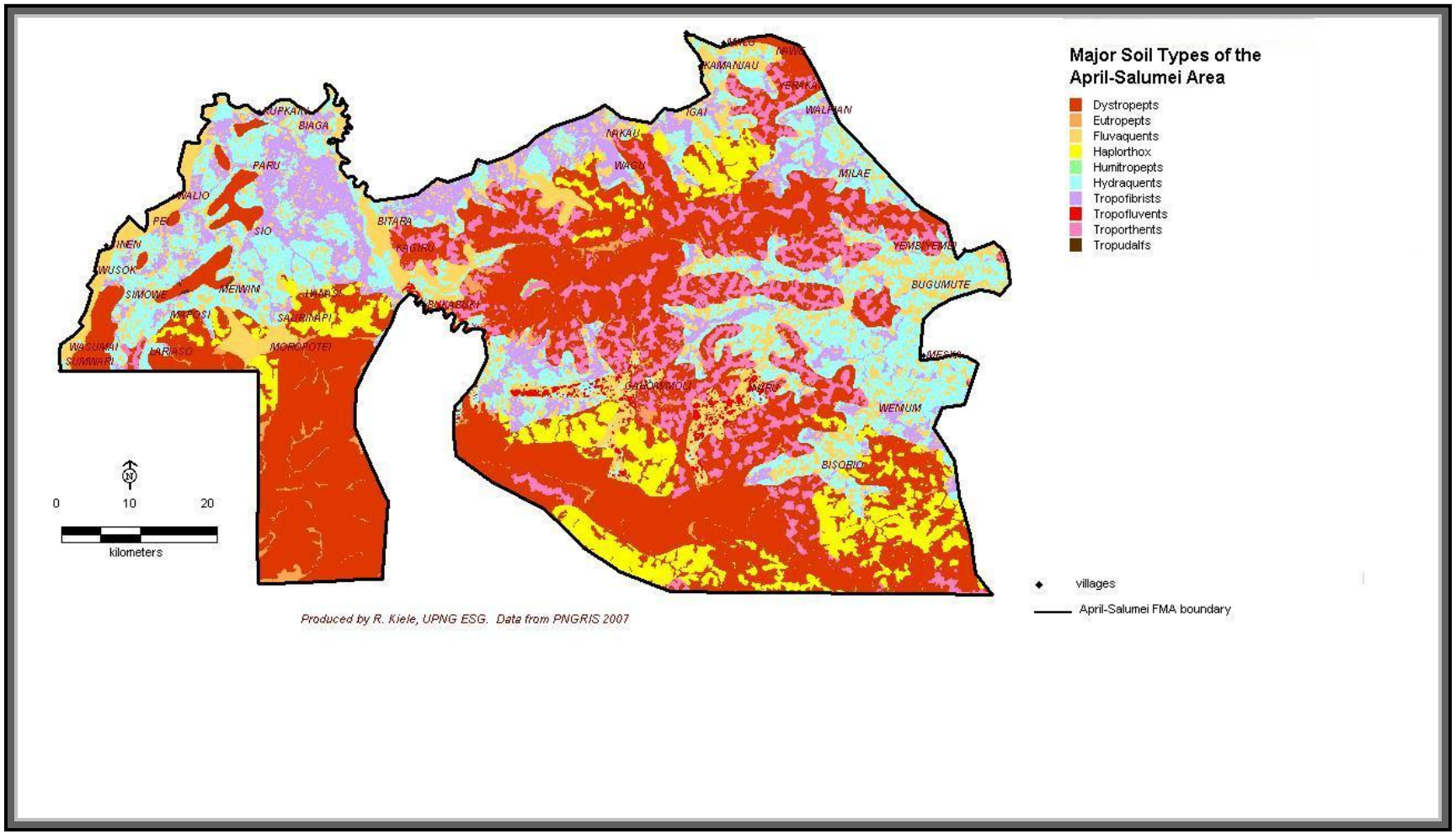
Owing to rainfall all year around water deficit is rarely experienced giving a moderate surplus of water in the area.

The maximum annual temperatures within the area rarely exceed 32^0C. It is generally within the range of 30-32^0C.The minimum annual average range from 19-23^0C.[17]

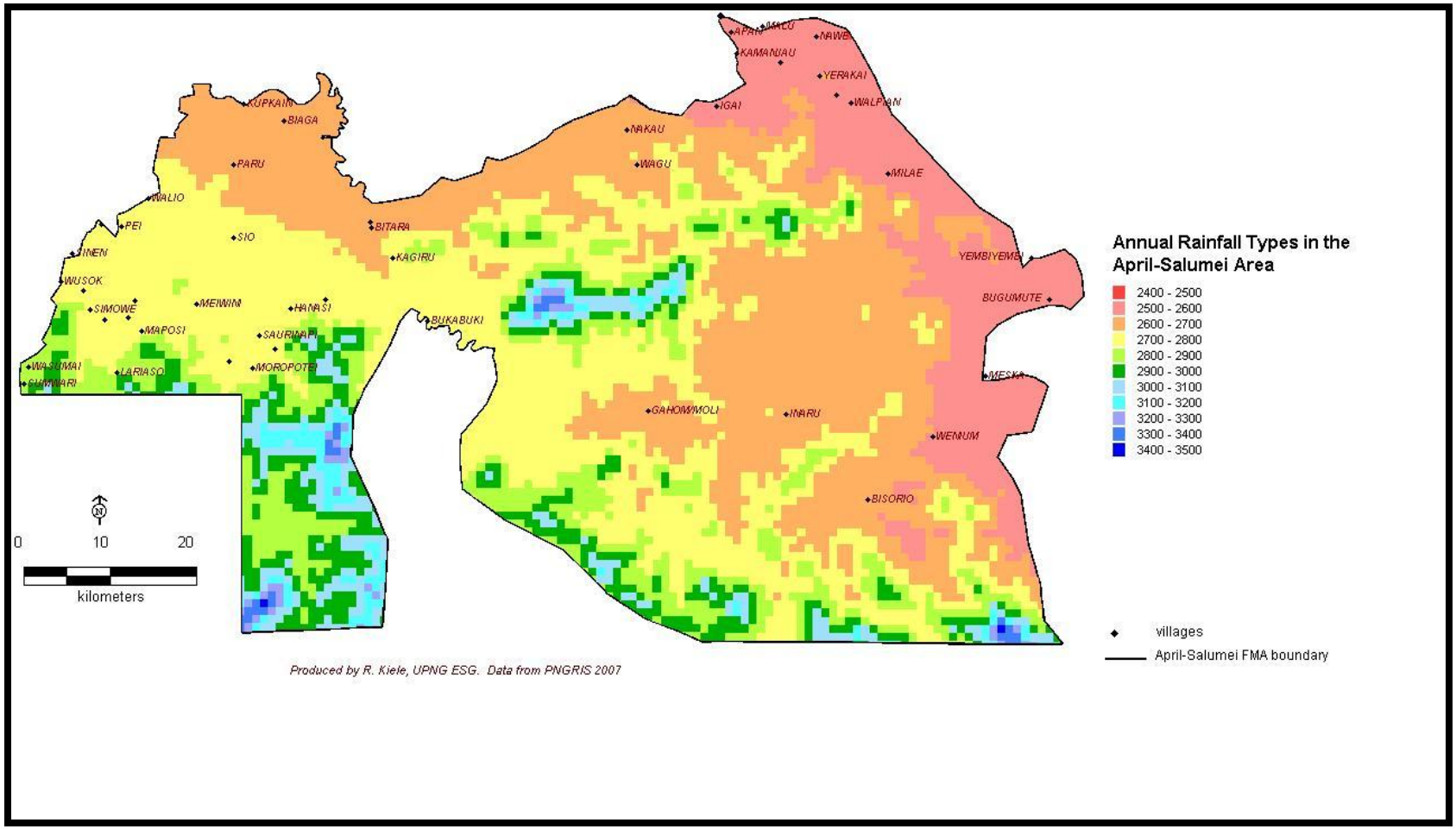
Photo: Preparing to travel - Awareness November 2009.

[17] Sources: Bryan & Sherman 2008,; DOS 1996

Map 2: Soil map of April Salumei Project Area. (Source PNGRS 2007)



Map 3: Mean annual rainfall in project area (Source PNGRS 2007)



G1.2 Types and condition of vegetation within the project area

The floristic composition of most of New Guinea's vegetation types are closely allied to the region of Southeast Asia called Malesia (which include Malaysia, Indonesia and the Philippines), however, the montane vegetation types do show strong affinities to the Australian flora, e.g. the dominance of certain plant taxa (e.g. *Nothofagus* spp., *Araucariaceae*, *Cunnoniaceae*, etc.).

There were two main vegetation types identified in the FMA at the project commencement; *forest* and *woodland*. The forest vegetation comprises forest types of swamp and succession (seral) swamp forests up to the lower montane forest type while the woodland vegetation comprises successions dominated by woodlands. The only identified anthropogenic land use change at the project start was due to settlement expansion, mission stations, airstrips, aid posts and similar developments. Agricultural activity is subsistence based on the cultivation of localized small scale gardens.

The detailed vegetation and forest types found in the FMA are shown in Map 5 of which the forest vegetation types occupied over 80% of the total area. The swamp and woodland forests constitute much of the unproductive forest areas including the buffer zones, whilst the forest types constitute the most productive forest area of the FMA.[18]

The wetlands vegetation types cover much of the area along the main Sepik River and its tributaries, including April and Salumei rivers. Moving away from the Sepik River toward the east, the predominant vegetation type becomes medium crowned forest. Interspersed with this medium crowned forest are patches of open forests that tend to be found at higher elevations. Small crowned forests are not common in the FMA and are evident in very few locations along the Sepik River.

The following is a brief description of the identified vegetation types which are based on descriptions provided by Hammermaster and Saunders[19].

Seral and Swamp Forests (76,688 ha)

Seral and swamp forests include riverine mixed succession and swamp forests. The riverine mixed secession forest has an irregularly open to open irregularly uneven, medium to small crown canopy up to 30 m in height. Large crowned emergents, notably *Octomeles sumatrana*, may be present.

The forest is heterogeneous, comprising many seral changes, from low forest to original levee forest, following changes in the course of a river. Consequently species

[18] Sources: FIMS 1998

[19] Hammermaster, E. T. and Saunders, J.C. and CSIRO and Australian Agency for International Development *Forest resources and vegetation mapping of Papua New Guinea*

composition is highly variable ranging from a low stand of Octomeles sumatrana and/or Artocarpus to a mixed species mature forest similar to medium crown forest or the open forest on plains and fans. The forest is found on scroll arches of meandering rivers throughout PNG.

The swamp forest vegetation types comprises of mixed swamp forests of dense under storey of sago palms, to dense even canopy of predominant *Campnosperma* species with an open irregular uneven canopy of *Maleleuca leucadendron*, and dense, occasionally open, even to slightly uneven or undulating medium to large, woolly light-tone crowns of *Terminalia brasii* predominant in the canopy or co-dominant with *Campnosperma*. The crown height is 20-30 m. Other species likely to be found in the vegetation type include *Syzygium* and *Myristica*.

Swamp Grassland and Herbland (11,006 ha)

The swamp grassland is found on low altitude plains, in permanent to intermittently dry swamps, the community is dominated by *Phragmites karka*, *Saccharum robustum* and *Coix lachrymal-jobi*. In permanent swamps the main species are *Leersia hexandrndra*, *Oryza* spp. and *Hymenachne acutighuma*.

The herbaceous swamp is generally a darker tone of grey than the grass swamp and may have a mottled appearance.

Low Altitude Forest on Plains and Fans (45,132 ha)

This forest zone is found in the 500 m altitude but generally below 1000 m altitude, and comprises *Large to medium crown forest (Pl), Open forest (Po) and Small crowned forest (Ps)*. The two dominant types found in the area were *Large to medium crown forest and Open forest*.

Large to medium crowned forest (Pl)

A tall forest with an average canopy height of 30-35m Emergent trees often attain, and sometimes exceed, 50 m. The canopy is irregularly open and the profile is irregularly uneven. This forest type is similar to the open forest type as both are low altitude forest types occurring on plains and fans below 1000 m. However, the main difference is the species composition and dominancy resulting in different average crown heights and sizes, which are useful in carbon stock change accounting purposes.

The Medium to Large Crowned forests are floristically of very mixed species compositions. In the more luxuriant forest types three tree layers can be easily observed. Taller trees forming the canopy include *Alstonia scholaris, Campnosperma, Canarium, Celtis, Dysoxullum, Chisocheton, Endospermum, Garuga,* etc. In the sub-canopy layer common taxa include *Osmoxylon, Dillenia, Buchanania, Garcinia, Pimeliodendron amboinicum, Dysoxyllum, Chisocheton, Diospyros*, etc. The lower stratum includes

species like Barringtonia, Maniltoa, Euodia, Aglaia, Clerodendrum, and various species of Rubiaeae, Euphorbiaceae, Monimiaceae, Myrsinaceae, etc.

The species composition of the canopy is mixed and almost invariably includes *Pometia pinnata, Octomeles sumatrana, Ficus spp., Alstonia scholaris* and *Terminalia spp*. Other commonly occurring genera include *Pterocarpus, Artocarpus, Planchonella, Canarium, Elaeocarpus, Crytocarya, Celtis, Dracontomelum, Dysoxylum, Syzygium, Vitex, Spondias* and *Intsia.*

This forest type occurs on well to imperfectly drained alluvial plains and gently sloping un-dissected fans. Flooding rarely occurs and is of short duration being found on the foot slopes of volcanoes.

Open forest (Po)

The canopy of this forest can reach 30m in height with large crown emergent trees reaching up to 40 m. It is found mostly in swampy areas, which often dry up during the dry season. The irregular profile canopy is composed of mainly medium and some small crowns. The open canopy has many, often large, gaps revealing a lower tree stratum. The large crown emergent trees often include strangling figs, and *Octomeles sumatrana* and occur in frequently flooded areas. It occupies a total of 37,298 ha of the FMA area.

The floristic composition is very similar to the large to medium crowned forest with *Planchonia, Bischofia, Cananga, Intsia, Teysmanni, odendron, Nauclea* and *Vitex* being the more commonly occurring genera. Deciduous trees are more common due to the marked dry season.

The forest occurs on the lower and middle courses of the larger rivers, on low levees, scrolls and plains subject to short duration flooding, on back plains subject to prolonged wet-season inundation and on fans where impeded drainage occurs. The water table remains at, or near, the surface for most of the year. The forest is of mixed species composition.

Low Altitude Forest on Uplands (297,260 ha)

This forest zone is found at 700 m but generally below 1000 m. The common forest types found in the area were *Medium crowned forest (Hm) and Medium crown forest with Araucaria (HmAr)*.

Medium crowned forest (Hm)

This is the predominant forest type in the FMA and occupies nearly 43% of the total FMA. The canopy height of this forest is 25-30 m, the height is generally even and the canopy is typically 60-80% closed. Broadleaf emergent trees rarely exceed 40 m in height.

This forest type is found on a wide range of landforms, slopes, soil, rock types, climates up to an altitude of 1000 m. While there is no perceptible break in the air photo pattern over this range in altitude, there is a gradual change in floristic composition with increasing altitude. Below approximately 500m altitude, the species present are similar to those found in the forests of the low altitude plains and fans. Frequently occurring genera are *Pometia, Canarium*, *Anisoptera*, *Cryptocarya, Terminalia, Syzygium, Ficus, Celtis, Dysoxylum and Buchanania*. Some trees, such as *Koompassia, Dillenia* and *Eucalyptopsis* and the dipterocarps *Hopea and Vatica* are common to abundant in certain regions but are absent from others. *Homalium* is frequently occurring, but may be rare to occasional elsewhere.

Above 500m altitude, the species composition is similar to the lower montane forests, with *Elmerrillia, Flindersia, Castanopsis, Lithocarpus, Syzygium, Cryptocarya, Litsea, Cinnamomum, Gallulimima, Dryadodaphne, Garcinia, Neuburgia, Planchonella, Sterculia, Elaeocarpus* and *Sloanea* mixing with the elements of the low altitude forest on uplands. Broadleaf emergents are rare, but scattered trees and small stands of *Araucaria species* may reach 70 m in height. On steep and unstable slopes the canopy is more open, more uneven and has smaller crowns.

Medium crowned forest with Araucaria common (HmAr)

This forest has a canopy 25-30 m high. The canopy is slightly uneven and has a 60-80% closure. Araucaria emergent's rise above the canopy to a height of up to 70 m

Stands of this forest type occur sporadically throughout the country, and are generally above 500 m altitude, on a variety of landform, soils and rock types. Canopy species are mixed and are similar to those found in the upper zone of the low altitude forests on uplands.

Araucaria species, particularly *Agathis* (Kauri pine) is an important valuable species found in spotted areas comprising 22% of the total productive forest area of the FMA.

These spotted areas of Kauri have been the subject of conservation and hence are mostly proliferant in the Hunstein Range Wildlife Management Area.

Lower Montane Forest (9,279 ha)

This forest type within the FMA comprised mainly *Small-crowned forest (L)* above 1000 m altitude.

This forest has an even to slightly undulating canopy 20-30 m in height. Canopy closure varies from dense to almost closed canopy. Emergents are rare, but scattered Araucaria may be present and can reach a height of 40 m.

The forest occurs throughout the mountain ranges on a wide range of parent material. The species composition is mixed, with oaks well represented at lower altitudes with beech and conifers more frequent at higher altitudes. Frequently occurring canopy trees are *Lithocarpus, Castanopsis, alphitonia, Astronia, Caldcluvi, Casearia, Cinnamomum, Cryptocarya, Litsea, Dryadodaphne, Elaeocarpus,d Sloanea, Elmerrillia, Calbulimima, Garcinia, Gordonia, Neuburgia, Platea, Planchonella, Schizomeria, Mischocarpus, Syzygium,* and the conifer *Podocarpus.*

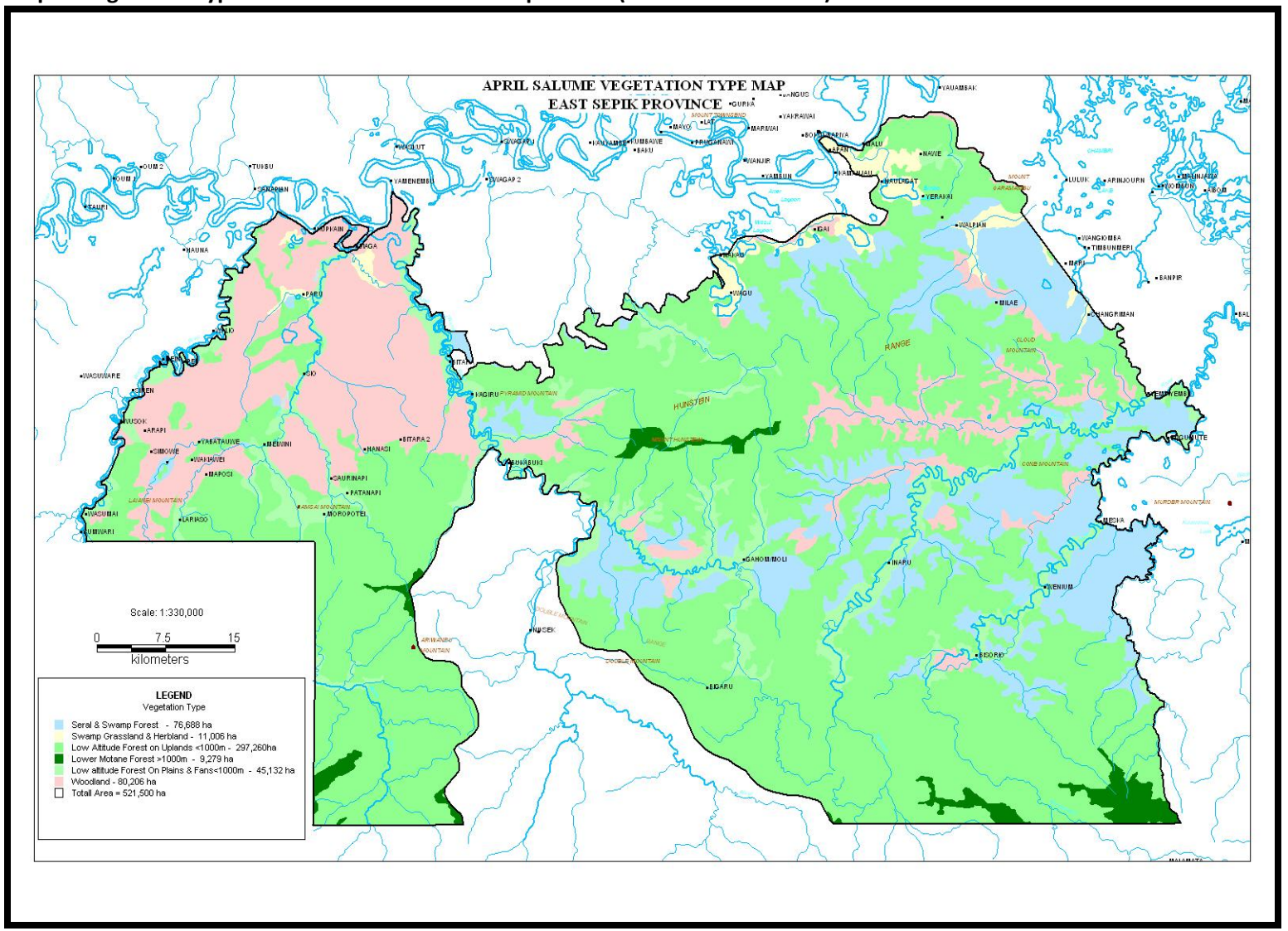
With increasing altitude the height of the canopy becomes lower, the crowns become smaller and the floristic composition gradually changes to include *Asacarina, Claoxylon, Euodia, Halfordia, Ilex, Nothofagus, Pygeium, Quintinia, Timonius, Weinmannia, Xanthomyrtus, Zanthozylum,* and the conifers *Podocarpus, Dacrycarpus, Phyllocadus* and *Libocedrus.*

Woodland (80,206 ha)

The tree layer is low and open with the ground layer usually dense which may include shrubs, herbs or grasses, or any combination of these.

Woodland occurs on permanently dry to periodically inundated terrain, mainly in seasonally dry coastal areas. It is largely an impoverished form of low altitude forest on uplands, dry evergreen forest or littoral forest, and species composition reflects this relationship. On periodically inundated sites *Carallia*, *Nauclea*, *Melaleuca* and *Acacia* may be present. Beach woodland may include the species *Calophyllum inophyllum*, *Barringtonia asiatica*, *Terminalia catapa* and *Pandanus tectoris*.

Map 4: Vegetation types identified in the Salumei April FMA (Source PNGRS 2007)



G1.3 Boundaries of the project area and the project zone

Project Area.

The project area is the original area described in the Forestry Management Agreement. This is a total area of 521,000ha.

We have continued with the pre existing boundary as this is the area represented by the Landowner Company Hunstein Range Holdings Limited (HRH).
There are significant cultural ties between the tribes that have formed the landowner companies and ultimately HRH.

The project boundary is the same as the boundary defined by the original Forestry Management Area boundary. See Map 5 and the description on page 24 taken directly from the Forest Management Agreement.

There are four main cultural groups within the project area that have formed Landowner Companies to represent themselves. They are;

1. Salumei Investments Ltd consisting of 37 Incorporated Land Groups
2. Sio Walio Investments Ltd consisting of 54 Incorporated Land Groups
3. Nom Investments Ltd consisting of 28 Incorporated Land Groups
4. Niksek Samsai Resources Ltd consisting of 44 Incorporated Land Groups

They represent ILGs from the Gawi, Ambunti, Ama/May and Hunstein Tunap LLG areas.

The 163 Incorporated Land Groups and the 4 Landowner Companies have an umbrella landowner company, Hunstein Range Holdings Limited representing all landowners within the Forestry Management Area.

Tack Realty (2004) stated that 30 ILG groups from the April River LLG refused to give their consent during the structuring of the FMA. Those thirty ILGs have now signed an agreement as individual ILG's consenting to the landowner company Niksek Samsai Resources Limited acting on their behalf with respect to the project.

We believe it is very important to acknowledge the cultural and family ties between the groups keeping the project boundary consistent with these traditional boundaries.

The April Salumei region is located in the Ambunti District of East Sepik Province, located between the Sepik River and the border or Enga – East Sepik and Southern Highlands.

River access is from Pagwi or Ambunti traversing the main Sepik River and turning south into the river ways, the main ones being April River at Kubkain and the Chambri Lake.

There are no reliable roads which provide access to the area. River Barges deliver goods on a charter basis from Madang district.

Description of the FMA and the Project Boundary

The northern most boundary of the FMA area is the Sepik River, whilst the western boundary is bounded by the Wario River. The south western boundary crosses an unknown boundary from the southern tip of Wario River thence going southerly until it again reaches the Wario River, thence, going further south, thence, eastward, thence, northward again, thence, north eastward until it reaches Yosua, thence, zigzagging south eastward again until it gets to the Salumei River and continues eastward crossing Korosarneri River to a high altitude Forest Area.

The boundary then zigzags northwards through Gigantok, Watanatavi, Meska, Wimat Mission, thence, northwest, all the way to Ambunti the sub-district headquarters. From Ambunti the boundary zigzags south east, thence, south west through Wasui Lagoon, crossing the hills of the Hunstein Wildlife Management Area to the end of the north eastern boundary of the said Hunstein Conservation Area.

The boundary follows an inundated area (April River) north-west again through Bitara until it reaches the mighty Sepik River going westward to the starting point which is the Wario River confluence with the Sepik River.

Project Zone

The April Salumei project zone provides for a buffer of 5 km away from the project area (See Map 5). As stated earlier in the section, the semi nomadic lifestyle allow for members of the community to travel long distances to forage for wild meat and sago. Hence, it is common to find people beyond the 5 km zone. Tomware village, in the south west of the project zone has a large population (403) and acts as a transit area where people stop over when travelling to Niksek and Gahom, within the upper reaches of the April – Salumei rivers. The buffering of 5 kms is also practiced for mine planning at the Ok Tedi mine as it affects the distribution of benefits. Similarly, this practice is applied elsewhere with the agriculture, forestry and marine sectors.

This definition takes into consideration the semi nomadic communities that reside in the vicinity of the FMA as they search and forage for protein, sago and other material within the wetlands and forest areas.[20]

The family groups are also closely linked through marriage and clan kinships. Relationships go as far back as those at Gahom linking the Yambun, Malu or Wagu communities. With these relationships also comes communal rights to resources such as fish and the staple food – sago, hence their willingness to travel longer distances within the FMA and surrounding areas. Those further up at the April River, Ouna and those at

[20] Saulei & Kaluwin 2009

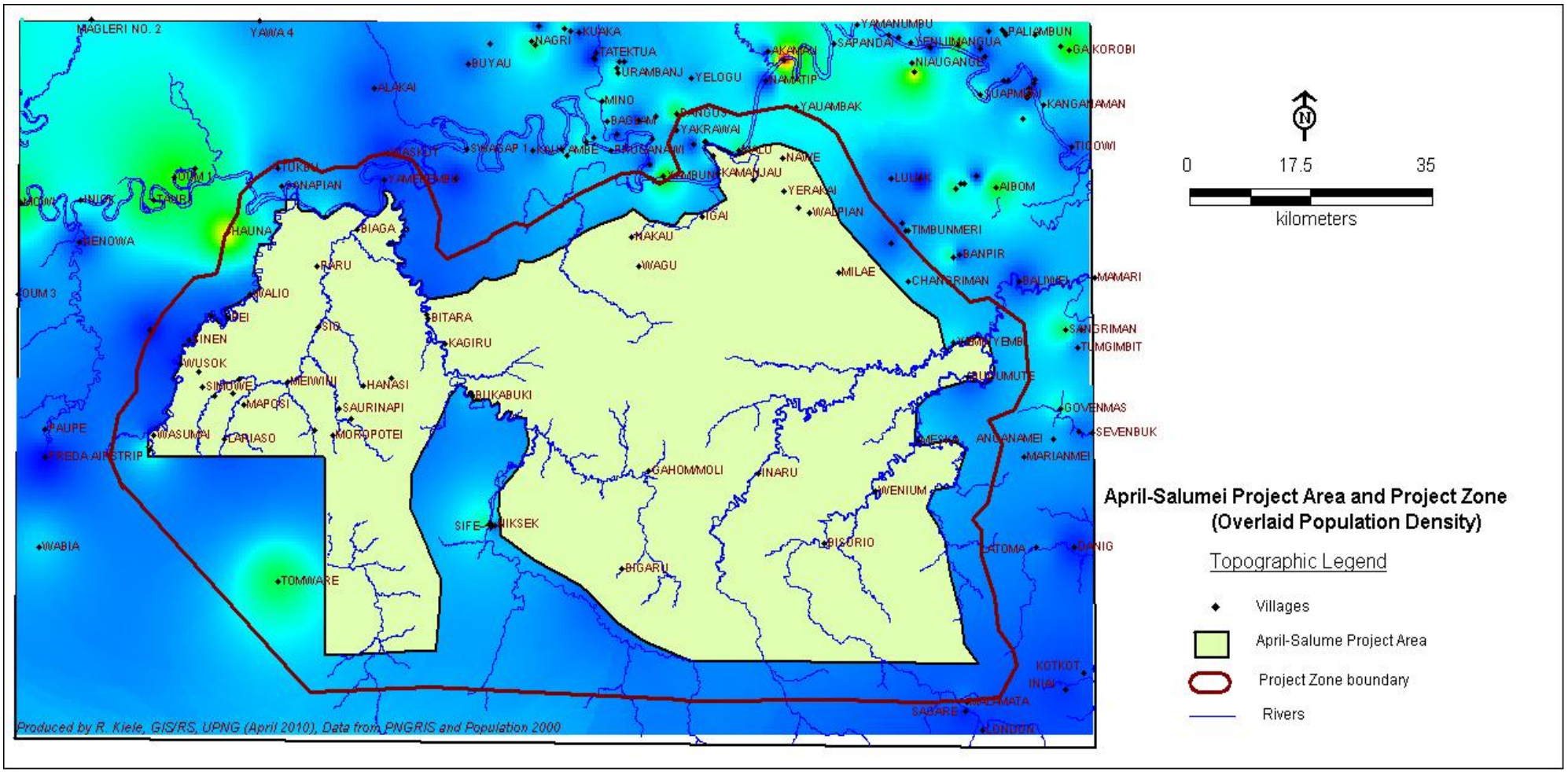
Hotmin or Frieda strip may be distant relatives but still have an affinity with the Telefomin, Oksapmin and upper Ok Tedi communities.[21]

The CCBA (2008) defines the 'project area' as the land within the carbon project boundary and under the control of the project proponent. All Incorporated Land groups from within the project boundary have freely consented to the projects development (see G5.3). As discussed further in G5 Legal Status the property rights of the Incorporated Land Groups are the legally recognised and traditional owners of the land.

In addition, the 'project zone' is defined as the project area and the land within the boundaries of the adjacent communities potentially affected by the project (ibid). Noting these definition, the zone of impact is estimated to be 15, 520 km^2. This figure is based on GIS calculations during the production and updating of the maps at UPNG.

[21] 2010, Duguman, pers comm., 8 April 2010

Map 5 : Project Area and Project Zone



Description taken from the April Salumei FMA documentation

BOUNDARY DESCRIPTION OF REVISED APRIL SALUMEI FMA

An area of approximately 521,500 hectares known as April Salumei Forest Management Area situated in the milinches of Wogamush and Walawsi and Ambunti and Double and Chambri and Kuvenmas in the Fourmils of Mianmin and Ambunti all in the Ambunti subdistrict of East Sepik Province commencing at the levee bank along the Sepik River opposite Ambunti Station bouncing southeasterly and northeasterly downstream Sepik River for 9,000 meters thence bounces generally easterly following the 40 meter contour along the foot hills for 9,000 meters thence bounces southerly and southeasterly for 6,000 meters thence bounces generally southeasterly along the foot hills along the edge of the swamp partly around Mount Garamambu for 11,000 meters to the left bank of an un-named river tributary to Chambri Lake southeast of the said Mount Geramambu thence bounces southeasterly on an un-surveyed line bearing of 145 degrees for 16,000 meters to Mensuat Village thence follows the lowest elevation where the swamp ends and rain forest begins generally southeasterly to Yambi Yambi Village for 11,000 meters thence bounces generally northeasterly and southeasterly downstream Salumei River for 8,000 meters to the confluence with Korosameri river west of Wimat Mission station thence bounces generally southerly and southwesterly and southerly upstream the said Korosameri river for 41,000 to the confluence with Weisas river at Meska Village thence continues upstream the said Weisas river for 40,000 meters to the confluence with an un-named tributary 2000 meters southeast of Gigantok village thence continues upstream the said Weisas river to its source and over the un-named ridge to the confluence of two un-named tributaries of Korosameri river for 14,000 meters thence bounces westerly on an un-surveyed line bearing of 270 degrees for 40,000 meters to the top of an un-named mountain north northeast of Bikaru village thence bounces generally northwesterly along the dividing range parallel April river crossing Double Mountain Range for 50,000 meters to the confluence of April river with Shumagon creek thence bounces generally northerly downstream the said April river for 8,000 meters to the confluence with Sitipa river thence continues downstream the said April river for 25,000 meters to the confluence with Miegi river at Nago village thence bounces generally southeasterly upstream the said Miegi river for 18,000 meters to the top of Camel Back mountain thence bounces generally southerly and southeasterly and south southeasterly and generally southwesterly and southeasterly all along the dividing range for 37,000 meters thence bounces westerly on an unsurveyed line bearing of 270 degrees for 27,000 meters to the Provincial Administrative boundary with West Sepik Province thence follows the said boundary northerly and westerly for 55,000 meters to the intersection with Leonard Schultze river thence follows the said Leonard Schultze river downstream for 95,000 meters to the confluence with Sepik river thence bounces generally easterly downstream the said Sepik river for 20,000 meters to the confluence with April river thence bounces generally southerly upstream April river for 45,000 meters 2000 meters downstream from Kagiru village thence bounces generally northeasterly along the foot hills of Pyramid Mountain and Hunstein Range generally following the 40 meter contours for 70,000 meters to the top left edge of Wagu Lake thence bounces generally easterly downstream an un-named river South of Wasiu Lagoon passing Yigei village for 17,000 meters to the confluence with a barat or canoe passage

G1.4. Carbon Stocks within the Project Area

To determine the carbon stocks in the project area we have used the methodology described in the 2006 Intergovernmental Panel on Climate Change Guidelines for Agriculture Forestry and Other Land Use.

We have agreed to determine the carbon stocks in the project area based on Tier 1 default values. A review of available data (see G2.3) determined there are a number of credible reports that determine conflicting values. In the absence of consistent country specific data and to be conservative and provide a reliable and acceptable estimation of carbon stocks for the project area we have utilised the IPCC default values.

Please note as the pilot project for PNG the April Salumei project will be used to assist with the determination of country specific carbon values. As these values are developed the project has a commitment to increasing the assessment levels to Tier 2 and then progressing to Tier 3.

PNG is currently developing a monitoring, verification and reporting policy that will assist with development to higher tiers. As the capacity is developed in both this project and through Government and Provincial sectors it will be coordinated to achieve PNG's REDD objectives. For further information please refer to Papua New Guinea Vision 2050 and Office Climate Change and Development and Papua New Guinea Forest Authority policies.

Firstly we determined the Carbon Pools to be included. These were above-ground biomass, below-ground. For the sake of being conservative and given we are estimating the carbon values to a Tier 1 level we have excluded dead organic matter and Soil Carbon.

Assumptions
Sector: Agriculture, Forestry and Other Land Use.
Category: Forest Land Remaining Forest Land
Climate Domain: Tropical
Ecological Zone: Tropical Rainforest
Continent: Asia (insular)

Source of data.
Tier 1 estimated above-ground biomass (Table 4.7) 350 tonnes d.m. /ha[22]
Ratio below-ground biomass to above-ground biomass (Table 4.4) 0.37
Carbon Fraction default value (Table 4.3) 0.47

In determining the current carbon stocks (see Table 1 on the following page) we have omitted grassland strata from the calculations. This is to be conservative and although according to FAO PNG fits the ecological zone of tropical rainforest we have determined the grasslands would not have the same carbon value.

The area currently holds 114,612,751 tonnes of Carbon.

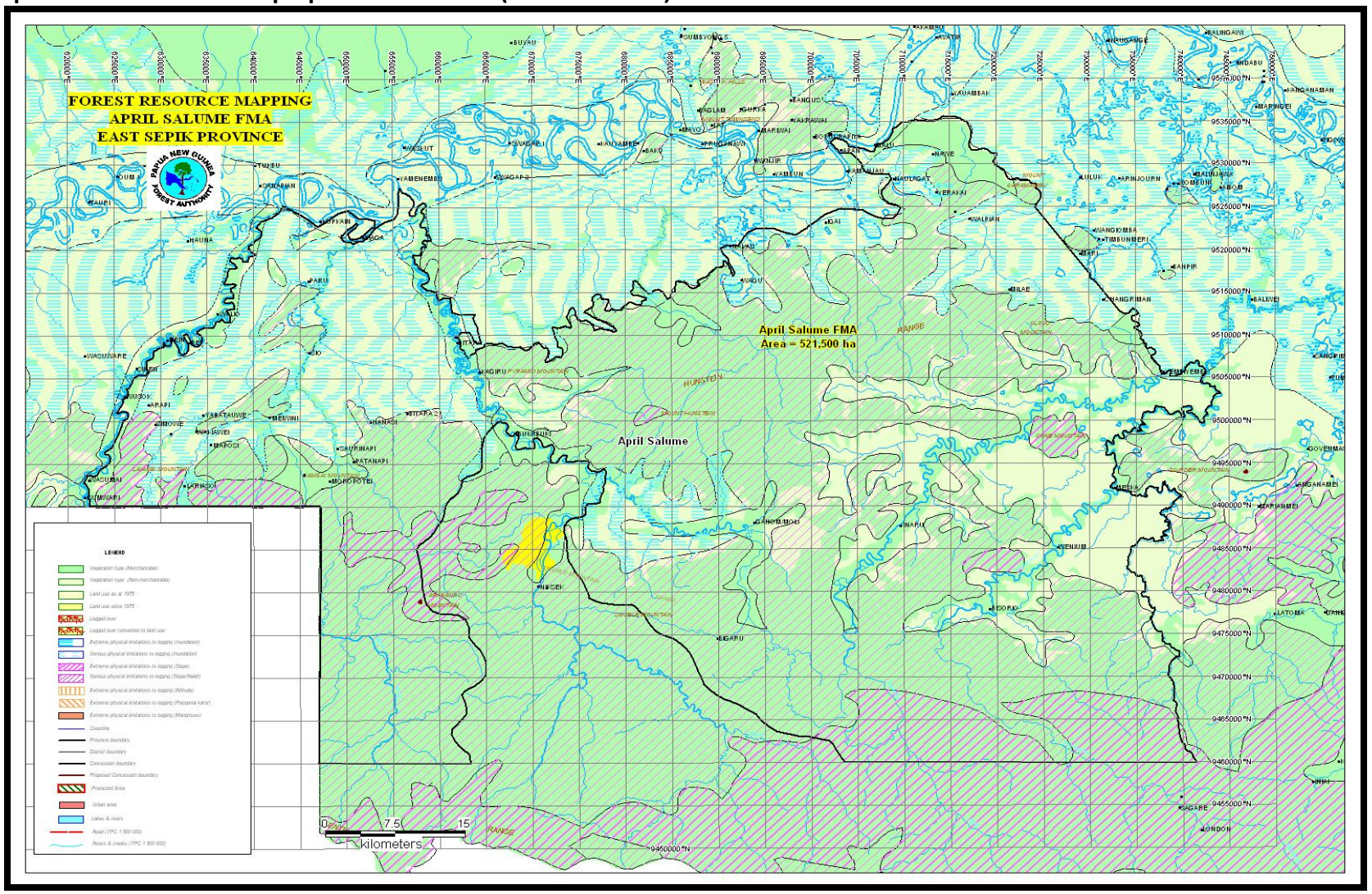
[22] We have used the default value in table 4.7 of 350 tonnes d.m. ha of Tropical rainforest, Asia (insular) as we can determine the ecological zone and continent.

Please refer to Table 1, for the calculations of carbon stock estimations.
Supporting documents include Map 6, the “Forest Resource Map” which shows the vegetation types as defined by the Papua New Guinea Forest Authority. Please refer to section G2.3 for further discussion on the calculations.

Table 1 : Estimate of Carbon Stocks in April Salumei Project Area.

IPCC LU/LC classes	FAO Ecological Zone	Land type	Description	Hectares	Above ground biomass content tonnes dm /ha	Below ground biomass content tonnes dm /ha	Total biomass tonnes dm/ha	Total carbon (C)	Project Area Total tC
Forest land	Tropical rainforest	Seral (Succession) & Swamp Forest	Not accessible for logging	76,688	350.00	129.50	479.50	225.37	17,282,791
Grass land	Tropical rainforest	Swamp Forest	Not Forest	Excluded		0.00	0.00	0.00	Excluded
Forest land	Tropical rainforest	Low altitude forest on uplands	Forest	297,260	350.00	129.50	479.50	225.37	66,992,000
Forest land	Tropical rainforest	Lower Montane Forest	Forest	9,279	350.00	129.50	479.50	225.37	2,091,162
Forest land	Tropical rainforest	Low altitude forests on plains & fans	Forest	45,132	350.00	129.50	479.50	225.37	10,171,173
Forest land	Tropical rainforest	Woodland	also meets definition of forest	80,206	350.00	129.50	479.50	225.37	18,075,625
									0
		TOTAL		508,565					114,612,751

Map 6: Forest Resource Map April Salumei FMA (Source PNGFA)



G1.5. Communities Located in the Project Zone

Population

The Population within the April – Salumei FMA area is a total of 7,696.[23] Most of the population reside in the villages located along the major tributaries of the Sepik River. Gender is equally represented in the population.

Map 9 shows the population distribution within the FMA and surrounding areas. Land in the upper reaches of the April – Salumei Rivers is sparsely inhabited with population densities of 4 persons per km^2 and moderate to high densities (242 – 480 & 718 – 956 persons per km^2) centered around the main villages of Akamau, Yerakai, Tomware and Hauna to the west of the FMA adjacent to the main Sepik river. These figures reflect the villager's preference to be in the proximity of transportation and possible business opportunities (ibid).

As discussed in G1.3 there are four main cultural groups within the project area and they have formed the following Landowner Companies to represent themselves:
Salumei Investments Ltd consisting of 37 Incorporated Land Groups
Sio Walio Investments Ltd consisting of 54 Incorporated Land Groups
Nom Investments Ltd consisting of 28 Incorporated Land Groups
Niksek Samsai Resources Ltd consisting of 44 Incorporated Land Groups

They represent ILGs from the Gawi, Ambunti, Ama/May and Hunstein Tunap LLG areas.

The 163 Incorporated Land Groups that make up the Landowner Group Companies have an umbrella Landowner Company, Hunstein Range Holdings Ltd representing their interests in the project.

Services

Access to services is reflective of transport capability. The communities at the southern edge of the April – Salumei such as Gahom close to the April river are able to travel by air to Ambunti or Wewak in 15 or 45 minutes respectively. An outboard motor journey takes up to 8 hours down to Ambunti. Access to market is a major impediment for most local commercial activities.

Income

Income generation is also restricted for those at the southern Wosera Gaui districts who have very low incomes ranging from PNG K20 – K40 per person per year, while those closer to Ambunti such as Malu may have moderate to high incomes (PNGK100 – 200

[23] Census 2000

per person per year). The higher incomes are derived from the sale of fish, sago and alluvial gold. There is also other sales potential from agarwood/*gaharu*, crocodile skins and meat although these would be sporadic at times. This income could be higher than the figures estimated by Hanson et al (2001).

Education

The levels of education within the FMA is minimal with fifteen listed community schools in the 2000 Census. The support to these schools is minimal and often teachers struggle with very basic and poor teaching materials to give to students. The students continue their education at Ambunti after grade 8. There is a higher percentage of student dropping out after grade 8 when school fees are not met.

Health

The level of health services is minimal and villagers walk long distances for up to eight hours to seek medical attention (Hanson et al 2001). Ambunti has improved levels of health care while Hauna is an American Missionary run health centre that has the best health care in the area. Individual communities within the FMA have little or no health centre or aid post in their communities.

Language

Almost a third of the 800 languages of Papua New Guinea are found in the Sepik region. Language is important here as it not only is a means of communication, but also is a signifier of group identity and place. Each local language reveals land boundaries and geneology[24]. The Sepik Community Landcare project in the 1990s noted within its project area about 150 villages and 30 language groups. From those, the project worked with three language groups from Wagu, Yegai and Gahom communities. Language groups were of the Bahinemo and Yerekai groups together with Wutmid, Kotamb and Andept, as well as Pidgin and English[25].

Communities associate fiercely with their language or "tokples". The language group is the largest unit of political organisation in the Sepik and the most important unifying principle. Within this unti, communities are further divided by village, clan and residence. This is also the basis for the formation of the Integrated Land Groups.

Within the East Sepik province, the people in the April – Salumei area are among the most disadvantaged with low income potential, poor access to health and educational services and continue to live in low potential environments. In addition, they have limited opportunities to improve themselves (ibid).Previous conservation and community development initiatives by the WWF from 1998 – 2003 did improve some of these opportunities but that improvement was not sustainable after the project ceased (Duguman 2004).

[24] Extracts from Sepik Community Land Care project from http://www.pngbd.com.forum: Accessed 20 6 10.
[25] Kalit,K,2002,Lessons from the field: the Sepik Community Landcare Project, Development Bull. 58, Accessed from http://www.anu.edu.au.

Map 7: Population Distribution and Density in the FMA.

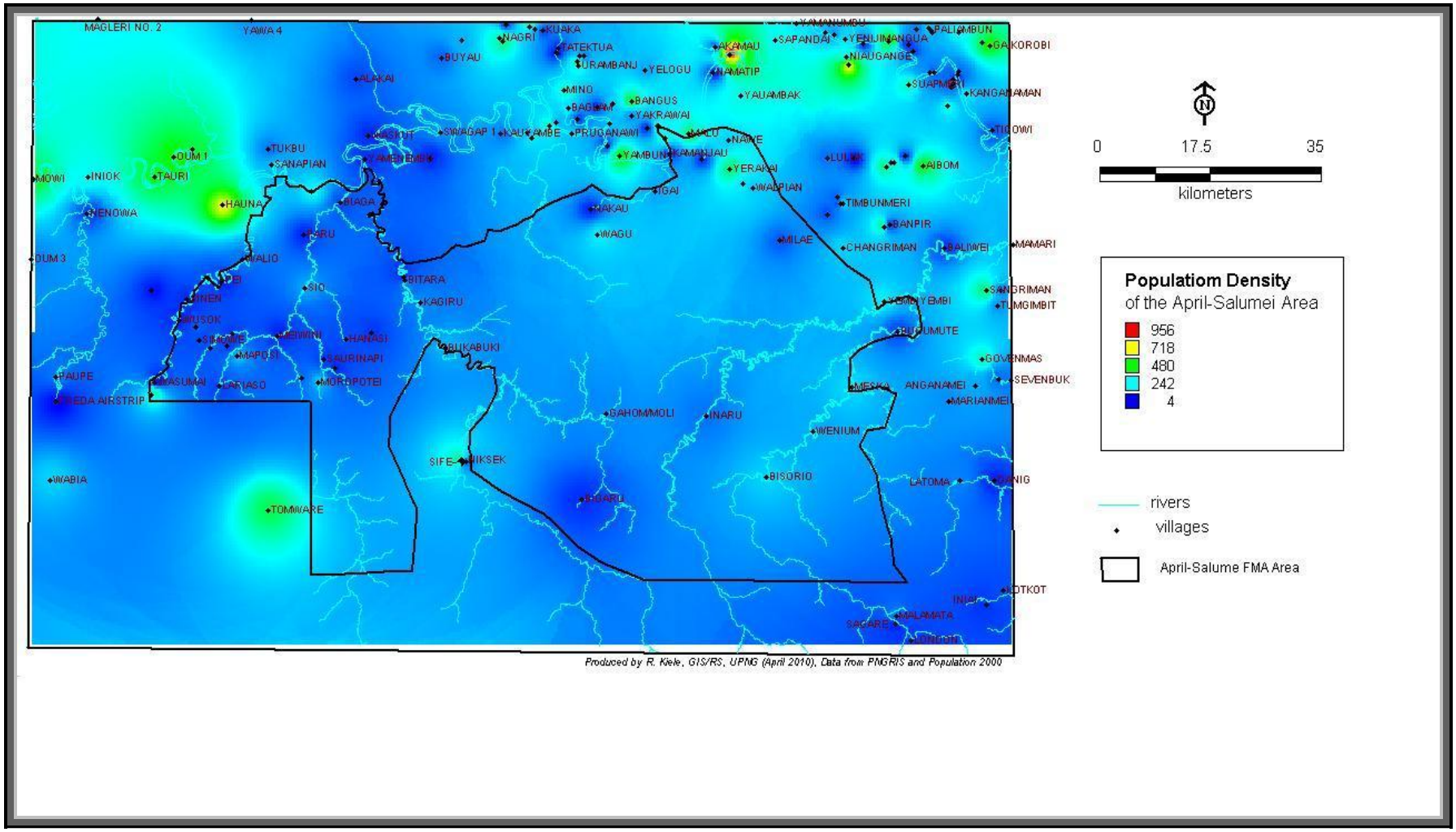


Table3: Selected villages of the April Salumei REDD project area with information provided from census data, services availability, Mission in terms of social impact, communication means and airstrips with their users. [Source: FCES 2009]

Village	Population	Services	Mission	Communication Means	Airstrip & Users
BUKABUKI	254	ESl Aid Post Airstrip	New Tribe Mission	Mission VHF Radio	MAF New Tribe Mission
KAGURI	238	ES	New Tribe Mission	Mission VHF Radio	
BITARA	350	ES PTU SHC	New Tribes Mission	Mission VHF Radio	
NIKSECK SAMSAI	691	E/School TUP 4&7 SHC	New Tribes Mission	Mission VHF Radio	MAF
GAHOM	260	ES	New Tribes Mission	CRMF VHF Radio	
YERAKAI	900?	ES PTU 4 & 7 Aid Post	New Tribes Mission	B Mobile reached from Ambunti	
CHANGRIMAN	208	Aid Post CS	Catholic		
YEMBIYEMBI	233	Aid Post ES			
MESKA	211				
MUGUMOTE					
BISORIO	203				
MALU	378				
NAWEI	202	ES	SA Revival		
WALFIAN		ES	Catholic SSEC		
BANAKOL		ES	Catholic SSEC		

E/School = Elementary School; PTU = Primary Top Up; SHC = Sub Health Centre and CRMF =, SA = Salvation Army; SDA = Seventh Day Adventist;

G1.6. Current Land Use and Land Tenure in the Project Zone

Land ownership in PNG is based on traditional and customary ownership of the land by tribal groups and clans. The ownership of the land gave automatic rights to the ownership of the forest. This is evidenced by the process used in establishing Forestry Management Agreements.

At present around 97% of the total land area in Papua New Guinea is owned and controlled by indigenous communities[26]. Further to this over 80% of PNGs' population is directly dependent on the local environment for their subsistence livelihoods[27].

Along with ownership of the land comes ownership of the biodiversity on the said land. The Incorporated Land Group (ILG) or clans are legally in control of and responsible for the management of their land[28] and this right is secured through the PNG Constitution.

Following independence and the development of the PNG Constitution (1975) the traditional system of land ownership evolved to the creation of Incorporated Land Groups (ILG's) recognized under the Lands Group Incorporation Act (1974)

Incorporated Land Groups (ILGs) from the April Salumei FMA area are registered at the Lands Department and have been formerly Gazetted formalising their landowner groups, by issuing a public notice which is held open for three months to allow for any objections to the proposed ILG registration to be recorded. If there are no objections then the ILGs are official recorded and an ILG identity registration number is issued.

Further evidence of the customary ownership system is the state solicitors in 2004 where they confirmed that the enormity of the land would make it impractical to demarcate individual land ownership through a comprehensive land survey. They also confirmed that PNG law recognizes customary ownership even without written proof.[29]

As industries such as mining, forestry and petroleum developed so did the registration of Incorporated Land Groups in their respective areas.[30] ILGs are now used throughout the country to prove and secure title to land. Projects can be implemented by formally gaining the consent of the ILGs to distribute royalties and compensation.

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[26] 2008, R-PIN

[27] 2000 NSO Census Data

[28] 2008, R-PIN

[29] Tack Realty (2004) Report. Further, each land group signing the FMA agreement, confirmed on page 13 that (a) its members are customary owners of the land areas identified as their land in Schedule 2 item 3;

[30] Landowners in the April Salumei Project have been registered for the purposes of the proposed logging project.

Joint ventures, lease schemes and other joint equity arrangements are among the business models that are now being used to enable local people to benefit from incoming investment. A key feature from some of these arrangements is secure resource tenure, giving local people an asset with which to negotiate in dealings with government or the private sector, and providing the basis for business models that provide local benefits.

Forest Management Agreement Area

In Papua New Guinea, the government owns less than 3% of the land[31]. As discussed traditional or customary landowners have formed Incorporated Land Groups (ILGs) and Landowner Companies registered through PNG's Investment Promotion Authority, in order to form a joint representative body to negotiate with the government or with third party players. In the case of the April Salumei FMA, the Hunstein Range Holdings was formed to be the legal representative body for the 4 landowner companies.

On 20th December 1996 the landowners (Hunstein Range Holdings) and the Government (PNG Forest Authority) entered into a Forestry Management Agreement. Before the parties could enter into this agreement the PNGFA had to undertake an extensive awareness and consent program.

This includes a Development Option Study (DOS) after the customary landowners indicate their interest to the PNGFA to explore the possibility of developing their forest resources. PNGFA or their agents then conduct the DOS to ascertain the potential of the area (see copy of the DOS attached with Tack Realty report).

In order to sign a legally valid Forest Management Agreement (FMA), the landowners must also reach an agreement with the PNGFA concerning the forestry inventory. The forest inventory outlines the amount of extractable timber, protected areas, population areas and transportation possibilities. This has also been completed as evidenced by the inventory survey included in the FMA.

For the FMA to be legally binding all ILG's must sign the agreement. This is evidenced by the individual ILG signatures in the FMA.

This process of establishing a FMA is of course legislated (See Forestry Act 1991) and has not been challenged when followed correctly. It also ensures free prior and informed consent has been obtained by the PNGFA.

Once the FMA has been executed the PNGFA have the rights to award the concession to a developer that extends for 50 years. It is important to note section 16.1 (a) of the FMA allows the agreement to be terminated "by agreement at any time by all parties". This is the clause that will be used to terminate the agreement on the validaton of the project.

[31] SLM Final Report (2000)

Although negotiations were held over the concession it was never awarded to a third party.

Wildlife Management Area

On 13 September 1997, the PNG government intervened and stopped further development on the logging concession by declaring the a Wildlife Management Area (See Map 9), an overlapping boundary to the FMA, supposedly accordance with the Fauna (and Flora) Act 1978.

These government declarations was announced without any formal consultation with the Land owners, yet neither was there any attempt revoke nor cancel the FMA.

This deprived the landowners, who had the legal right to the FMA area, of a considerable source of income in the form of concession payments the very motivation for them seeking the establishment of the FMA in the first instance.

These concession payments were estimated to have a total timber value of "$188,749,700 USD (present value discounted at 6% annual rate based on US$50/$m^3$ export price.) (K23 per m3 of extracted timber this rate was a timber royalty which was not included in the above calculation". Tack Realty 2004 report (Page 9).

The ILG's sued the national government for compensation for the lost revenue. Finally on 5 August 2008, the landowners won the court case confirming their full land use rights and this supports their dedication and rights to go ahead with FMA.

Note that this compensation payment of K 58,317,000 awarded to the landowners is not linked to any relinquishment of the logging rights of the landowners. The landowners have continued to seek settlement of the payment of K 58,317,000 from the PNG government.

This decision further evidences that customary landowners have the right over the biodiversity including the extractable timber on 'their' land.

April Salumei REDD Project

As the landowners became optimistic that the developing carbon market could provide a more sustainable option to logging their land they commenced discussions with the Office Climate Change and Sustainability. Starting in 2008, these negotiations were held between the OCCES, HRHL and the landowner groups concerning the potential of the April Salumei FMA area being recognised as a pilot REDD project for Papua New Guinea.

The parties subsequently agreed to the April Salumei FMA area becoming the pilot REDD project for Papua New Guinea as evidenced by the letter from the Prime Minister,

letters from the Office Climate Change and letters from the Forestry Minister as further discussed in G5.2.

Following this identification and confirmation of the April Salumei area becoming Papua New Guineas pilot project a comprehensive awareness program was commenced by the project developer.

All documents references above are available for inspection by the validator.

There are no other known disputes in the project area. Every one of the 163 ILG's have signed an agreement acknowledging HRH has entered into an agreement with the project developer to have the area converted from an FMA to the countries pilot REDD project.

Please refer to section G3.2 which further describes current land use and demonstrates with land use maps (1975 and 1996) that subsistence agriculture is the only major land use in the area, allowing the project area to support significant amounts of natural rainforest.

G1.7. Current Biodiversity within the Project Zone

Biodiversity Assessment

New Guinea is one of the four remaining major tropical wilderness areas on the planet, and it is one of the world's centres of biological diversity. This is probably attributed to its great environmental variety, ranging from sea level to over 4,000 m altitude. PNG holds about 5-7% of the world's biodiversity in less than 1% of the land area (Sekharan and Millller 1995). This conservatively equates to some 700,000 species as data on certain environments (e.g. marine) and organisms (invertebrates, plants, etc.) remain very limited.

Flagships species of the area includes the Birds of Paradise, and various endemic species of birds, mammals, reptiles and invertebrates. Also within the area are unique stands of *Agathis* species, etc. There are many suitable candidates, e.g. species listed in CITES or IUCN

More detailed information for the FMA area is scarce. NGOs groups working in this area are contributing to improving understanding by working with communities to conserve their resources and cultural sites. The WWF (South Pacific Program) is doing its best to devise, monitor and manage PNG's natural heritage through various conservation programs like the IRBM, WMA, SWMI, and SCLCP. On-the-ground NGOs also support and/or promote such important activities in partnership with the WWF. This is apart from the National Government initiative of TCEM through the DEC Office.

The following tables summaries a local biodiversity study which was conducted by Forest Carbon Environmental Services (FCES) consultancy in 2009.

Table 4: Generic names of higher floral species sighted in Yembi Yembi and Yerakai along River corridors and surrounding forests (FCES, 2009)

Genus	Local/Common Names	Uses	Status/Focal Species (according to HCVF Toolkit)
Macaranga spp.	Macaranga	Housing/Firewood	**common re-growth species**
Saccharum spontaneum	Tiktik	Fishing	Common
Dysoxyllum spp.	Dysox	House	Common
Litsea spp.	Litsea	House	Common
Sygyzium spp.	Laulau	Fruit	Common
Pittosporum sp.		Housing	Few spp., widespread
Ficus spp.	Pikus	Fruits, housing	Common
Lamarkia cadamba	Labula	Housing	Common in advance regrowth
Hibiscus spp.	Hibiscus	Housing	Rare
Neonauclea spp.	Yellow hardwood	Housing	Common
Sterculia spp.	Sterculia	Housing, canoes	Common
Euodia spp.	Euodia	housing	Common
Trema orientalis		Housing	Common re-growth species
Terminalia spp.	Terminalia or Talis	Food plants, housing	Common
Pandanus spp.	Pandanus	Food plants,	Common
Artocarpus altilis	Kapiak	Canoes, food plant	Common
Octomeles sumtrana	Erima or Kanu	Canoes	Common in alluvial forests
Endospermum spp.	Basswood	housing	Common in advance re-growth
Caryota rumphiana	Limbung	Housing	Common and widespread
Pometia pinnata	Taun	Medicine/Housing/Fruits	Common and widespread
Maniltoa spp.	Maniltoa	Housing (posts etc.)	Common
Vitex cofassus	Garamut	Housing – Posts, Garamut, Kundu drums, etc.	Common and widespread
Instia bijuga	Kwila	Housing – Posts/Bearers	Common and widespread
Paraserianthes falcataria	Albizia	Housing, canoes	Common
Adenanthera pavonina			Common
Glochidion spp.		Housing (posts)	Common understorey trees
Pouteria spp.	Pencil cedar	Housing, canoes	Common with many species
Pterocarpus indicus	*Rosewood*	Housing (posts etc.)	Widespread
Horsefieldia spp.	Nutmeg		DATA DEFICIENCY
Melanolepsis		Garden fencing/housing/Medicine	Widespread
Areca calyptrocalyx	Kavivi	Buai (substitute)	Widespread

Genus	Local/Common Names	Uses	Status/Focal Species (according to HCVF Toolkit)
Cocos nucifera	Coconas	Food	Widespread, cultivated
Metroxylon sagu	Saksak	Food	Common
Calamus spp.	Ratan	Housing	Common
Cebera spp.		Medicine	Rare
Harpulia spp.			Rare
Chisocheton spp.	Kiso	Housing	Common with many species
Musa spp.	Banana	Food/Household needs	Widespread
Homalium foetidum	Malas	House (posts etc.)	Common and widespread
Myristica spp.	Nutmeg	Medicine	Common under storey trees, many species
Planchonia papuana		Housing	Widespread
Calophyllum spp.	Kalapulim	Housing	Common with many species
Bischofia javanica	**Javanese cedar**	Housing	Widespread

Table 5 : Checklist of Bird species recorded in Yembiyembi and Yerakai. (FCES, 2009)

Family	Genus	Species	Common Name	Status/Focal Species
Apodidae	*Collocalia*	*caudacuta*	Spine-tailed Swift	
Hemiprocnidae	*Hemiproncne*	*mystacea*	Moustached Tree Swift	
Ahningidae	*Ahninga*	*melanogaster*	Darter	
Alcedinidae	*Alcedo*	*azurea*	Azure Kingfisher	
	Bacelo	*leachii*	Blue Winged Kookaburra	
	Ceyx	*lepidus*	Dwarf Kingfisher	
	Dacelo	*gaudichaudi*	Rufous-bellied Kookaburra	
	Halcyon	*macleayii*	Forest Kingfisher	
	Halcyon	*negrocyanea*	Blue Black Kingfisher	
	Tanysiptera	*danae*	Brown Headed Kingfisher	
	Tanysiptera	*galatea*	Common Paradise Kingfisher	

Family	Genus	Species	Common Name	Status/Focal Species
	Tanysiptera	*hydrocharis*	Little Paradise Kingfisher	
Cuculidae	*Centropus*	*bernsteini*	Lesser Coucal	
	Centropus	*phasianinusi*	Pheasant Coucal	
Accipitridae	*Accipiter*	*meyerianus*	Meyer's Goshawk	CITES II (all Falconiformes)
	Accipiter	*solensis*	Chinese Goshawk	CITES II (all Falconiformes)
	Haliastur	*indus*	Brahminy Kite	CITES II (all Falconiformes)
Megapodiidae	*Megapodius*	*reinwadt*	Common Scrub fowl	
	Talegalla	*jobiensis*	Brown-collared Brush-Turkey	
Dicaeidae	*Paramythia*	*montium*	Crested Berrypecker	
Dicruridae	*Chaetorhynchus*	*papuensis*	Mountain Drongo	New Guinea Endemic
	Dicrurus	*hottentottus*	Spangled Drongo	
Meliphagidae	*Toxorhamphus*	*noboguineae*	Yellow-bellied Longbill	
Myiagridae	*Arses*	*telescopthalmus*	Frilled Monarch	New Guinea Endemic
	Myiagra	*cyanoleuca*	Santin Flycatcher	
Cracticidae	*Peltops*	*blainvillii*	Lowland Peltops	
	Peltops	*montanus*	Mountain Peltops	
Rhipiduridae	*Rhipidura*	*atra*	Black Fantail	
	Rhipidura	*leucothorax*	White-bellied Thick Fantail	
Pachycephalidae	*Pachycephala*	*aurea*	Golden-backed Whistler	
	Pitohui	*ferruginous*	Rusty Pitohui	

Family	Genus	Species	Common Name	Status/Focal Species
Paradisaeidae	*Cicinnurus*	*regius*	King Bird of Paradise	CITES II (all Paradisaeidae)
	Paradisaea	*raggiana*	Raggiana Bird of Paradise	CITES II (all Paradisaeidae)
Covidae	*Gymnocorvus*	*tristis*	Grey Crow	New Guinea Endemic
Psittacidae	*Charmosyna*	*rubronotata*	Red Fronted Lorikeet	
	Charmosyna	*papou*	Papuan Lorikeet	
	Electus	*roratus*	Electus Parrot	
	Micropsitta	*bruijnii*	Red Breasted Pygmy Parrot	
	Oreopsittacus	*arfaki*	Plum Faced Lorikeet	
Cacatuidae	*Cacatua*	*opthalmica*	Blue eyed cockatoo	
	Probosciger	*aterrinus*	Palm Cockatoo	CITES I, near Threatened
Casuariidae	*Casuarius*	*unappendiculatus*	Northern Cassowary	
Sturnidae	*Mino*	*dumontii*	Yellow Faced Myna	
Bucerotidae	*Rhyniceros*	*plicatus*	Blyth's Hornbill	
Rallidae	*Porphyrio*	*porphyrio*	Purple swamphen	
Eopsaltriidae	*Poecilodryas*	*brachyura*	Black-chinned Robin	
	Poecilodryas	*plicatus*	Banned Yellow Robin	
Pelecanidae	*Zonerodius*	*heliosylus*	Forest Bittern	
Ardeidae	*Egretta*	*intemedia*	Cattle Egret	
	Egretta	*picata*	White-necked heron	
	Nycticorax	*caledonicus*	Rufous night heron	
Anatidae	*Anas*	*superciliosa*	Pacific Black	

Family	Genus	Species	Common Name	Status/Focal Species
			Duck	
Scolopacidae	*Calidris*	*Acuminata*	Sharp-tailed sandpiper	
Meropidae	*Merops*	*ornatus*	Rainbow Bee Eater	
Podargidae	*Podargus*	*papuensis*	Papuan Frogmouth	
Strigidae	*Uroglayx*	*dimorpha*	Papuan Hawk Owl	
Aegothelidae	*Aegotheles*	*insignis*	Feline Owlet Nightjar	
Estrildidae	*Lonchura*	*tristissima*	Streak Headed Maumkin	
Collumpidae	*Ducula*	*pinon*	Pinon imperial	
	Reinwardtoena	*reinwardtii*	Great cuckoo-dove	
	Henicophaps	*albifrons*	New Guinea bronzewing	
	Otidiphaps	*nobilis*	Pheasant pigeon	
	Goura	*scheepmakeri*	Southern crown pigeon	CITES II (all Goura spp.)
Procellariidae	*Tachybaptus*	*novaehollandiae*	Australasian Grebe	
Phalacrocoracidae	*Phalacrocorax*	*sulcirostris*	Little black cormorants	
Laridae	*Chlidonias*	*hybridus*	Whiskered tern	
	Anous	*stolidus*	Brown noddy	

The area clearly qualifies as a High Conservation Value Forest (HCVF), characterized by its high biodiversity and endemism, and also by the fact that it is home to a number of species of fauna and flora that are listed in either the IUCN Red List or in the CITES Appendices (I, II & III).

Fauna species are classified in nine groups by the IUCN, set through criteria such as rate of decline, population size, area of geographic distribution and the degree of population and distribution fragmentation. The avifauna and birds are listed in Red List which further groups them into Threatened, Vulnerable and Least Concern.

When discussing the IUCN Red List, the official term "threatened" is a grouping of three categories: critically Endangered, Endangered and Vulnerable where endangered refers to a specific category imperilment rather than as a general term so endangered species is between critically endangered and vulnerable. Threatened species covers vulnerable, endangered and critically endangered species.
None of the 67 bird species (Table 1a) are on the IUCN Red List because no detailed studies have been carried out within the area (see G 1.7), although 725 species are known on the island of New Guinea which covers the Papuan province of Indonesia. Out of these, 387 species have been found in the Sepik area indicating their endemicity (Shearman et al 1999).

However seven species are on the Convention for the International Trading of Endangered Species (CITES) listing. One species – Palm Cockatoo (Probosciger aterrinus) is on the most threatened list (I) while six are on the CITES II and two have insufficient datafor their classification. The species classification are based on the different levels or types of protection from over-exploitation where Apendix I or CITES I lists species that are the most endangered among CITES- listed animals and plants. They are threatened with extinction and CITES prohibits international trade in specimens of these species except where the purpose of the import is not commercial, for instance for scientific research. Appendix II lists species that are not necessarily now threatened with extinction but may become so unless trade is closely controlled[32]. The remaining 58 species have not been determined by CITES and these are not traded commercially nor are by IUCN classification.

The Palm Cockatoo (Probosciger aterrinus) is near threatened as it is hunted for its feathers while the three hawks are threatened where there is increased trading between the communities. This includes the two birds of Paradise species and the Southern Crow Pigeon (Goura scheepmakeri). These birds are also endemic in the Sepik area, besides being listed as threatened in the IUCN classification (Sekran & Miller 1995). The IUCN Red List continues to be updated annually to reflect the status of the bird species in the wild.

Appendix III is a list of species included at the request of a party that already regulates trade in the species and that needs the cooperation of other countries to prevent unsustainable or illegal exploitation. Species may be added to or removed from Appendix I and II, or moved between them, only by the Conference of the Parties, either at its regular meetings or through postal procedures (CITES 2010).

For plants, all the Orchidaceae species are listed in Appendix II, while the genus Paphiopedilum are listed in Appendix I. One of the most spectacular New Guinea orchids is the Sepik Blue (*Dendrobium lasianthera*), though not endemic it is quite common along the Sepik River.

Another economically important plant present in the area, which was recently listed in CITES Appendix II, is the Eaglewood or Agarwood producing tree *Gyrinops ledermanii*. From about the mid 1990s PNG joined other Asian countries as a significant producer and exporter of Eaglewood, with most of the wood initially coming from the two Sepik Provinces. The Hunstein Range was initially one of the main Eaglewood producing areas.

[32] It also include so called "look-alike species", ie species of which the specimens in trade look like those of species listed for conservation reasons. International trade in specimens of Appendix II species may be authorised by the granting of an export permit or re-export certificate.

Identified threats to biodiversity

The key identified threats to biodiversity in the FMA area include the following: i) subsistence and community land use agriculture, ii) community logging for housing and infrastructure development, iii) climate variability (flooding, El Niño, and strong winds), iv) bushfires, v) introduction of invasive species, vi) potential mining operations.

Population

Increasing the human population with its demand on finite natural resources is a real threat to biodiversity in PNG. The overall PNG growth rate is estimated at 3.2% and if this trend continues will promote unsustainable development (Mowbray and Numbasa, 2006). The situation is worsened when coupled with a low mortality rate and longer life expectancy. Population increase in the East Sepik Province, however, is not a concern. The population projection is less than 1% for the April Salumei project area. The impact due to current resource use is negligible when one applies the 'IPAT' equation (Impact, Population, Affluence and Technology).

Invasive Species

Threats from introduced invasive species are often under-estimated in PNG. The Sepik flood-plain wetlands is quite a vulnerable ecosystem, where introduced flora and fauna can thrive and cause serious ecological problems as well as possible health problems to its people. Not too long ago the area experienced a biological invasion by *Salvinia molesta*, a free-floating aquatic plant (fern) from South America. The species more or less clogged up the Sepik River, impacting on the native species as well as the river transport systems. Fortunately, the problem was contained through biological control. There are several invasive plant species with similar ecological preferences to *Salvinia molesta* (e.g. water Hyacinth (*Eichornia crassipes*), *Mimosa pigra* etc.), all these pose a real possible threat to this eco-region.

Logging

Logging machinery has been linked to the introduction of many invasive plant species, and should logging take place in the area, introduction of new invasive species to the area are a very likely possibility. Furthermore, should any development take place in the area the influx of people is likely to result in the introduction of invasive species to the area, unless strict controls are established.

The key threats appear to be the destruction and degradation of tropical forest prompted by government policies which encourage logging. The April Salumei tropical rainforest resource is poised for commercial logging at this point in time. It is a declared FMA comprising a total area of 521, 500 ha and has an extractable timber volume of

5,831,705 m^3. With its imposing estimated timber value of US$278.11 million, the area is potentially lucrative for current timber markets.

Regular Burning

Regular burning also occurs which besides a hunting technique also improves soil fertility for fresh pasture for fauna, however continuous burning will increase the growth of nuisance grass, most likely kunai (*Imperia cylindrica*) and other grass species such as *Thermada australias together with* minor shrubs (Sherman et al 1999).

Mining

Open Cut Mines are also responsible for deforestation and the Frieda Copper Mine was a huge ecological disaster whose effects are still perceptible in the environment. Another threat to the biodiversity is the Mining and Petroleum Tenements which facilitate the issuing of ELs (Exploration Licenses) and PPLs (Petroleum Prospecting Licenses). A petroleum prospecting license (PPL) has been issued to Scotia Petroleum (a Canadian proponent). Designated as 'PPL 245', the license covers the East Sepik coast and as well as the Sepik River basin as far as the foothills of adjacent mountains to the Hunstein range. It is generally accepted, however, that the threat to biodiversity from PPLs are minimal compared to the type associated with that of ELs.

These activities are resulting in the over harvesting of timber and consequently serious pollution problems. These problems are aside from soil erosion and siltation in river systems. Also, to be seriously considered is the loss of habitat from this deforestation.

G1.8 Project Site High Conservation Area

"The High Conservation Value Forest Toolkit" (Pro Forest, 2003) states that 'all forests contain environmental and social values'. Where these values are considered to be of outstanding significance or critical importance, the forest can be defined as a High Conservation Value Forest (HCVF)'.

Using the Forest Stewardship Council (FSC) definition of HCVs and the 'working checklist of the methods chosen for defining each HCV or element in a given national process' it was obvious that the assumed HCVF definition for the April Salumei project site complies with: HCV1 - globally, regionally or nationally significant concentrations of biodiversity values and HCV6 - Forest areas critical to local communities' traditional cultural identity (areas of cultural, ecological or religious significance identified in cooperation with such local communities).

The area certainly qualifies as a "HCVF", which, aside from its general high biodiversity, is home to a number of species of fauna and flora that are listed in either the IUCN Red List or in the CITES Appendices I, II & III. The IUCN or CITES listed species in the tables above are indicated. The listing of these species certainly elevates the area as an important biodiversity conservation area.

As far as plant biodiversity is concerned, the northern part of New Guinea (from Memberamo in West Papua to Morobe in PNG) is known to have the highest concentration of endemic plant species (van Welzen 1997). This is attributed to its geological history as well the general instability of the area, i.e. continuously creating new niches for species to evolve and occupy them. Also, from my experience (cite as Gideon pers. Comm.) the upper Sepik tributaries (April, May, Frieda, etc.) are well known for high floristic diversity and endemism (e.g. *Begoni*, *Freycineti,* etc.). From a single collection trip to Hunstein Range in 1989, six new species of *Freycinetia* were described.[33] Takeuchi and Golman (2001) rightly pointed out that this area holds the key to New Guinea botany, because the original specimens (Type specimens) for many New Guinea (and Sepik) endemic species were collected there in the early 20th Century by German botanists, most of these were destroyed when Berlin was bombed during the Second World War.

Some recent studies of plant diversity along an altitudinal gradient in PNG indicate that the regions plant species richness peaks between 600/800 m or slightly higher on the New Guinea mainland. This is generally the transition zone of the mixing of lowland and montane species. The mountain areas of the April – Salumei and the lower slopes of the central New Guinea Cordillera to the south are no doubt some of New Guinea's important centres of species diversity and endemism.

The April Salumei FMA Area is to be considered a high conservation value forest (HCVF) for its global significance as a carbon sequestration site, numerous cultural or sacred sites, presence of rare, threatened and/or endangered species. According to the report produced by the Forest Carbon and Environmental Services (FCES) consultancy, sixty-one taboo or sacred sites are recorded within the April Salumei FMA area which is an important feature of the HCVF assessment. There are potentially more cultural and

[33] Takeuchi, W. and M. Golman. (2001). Floristic documentation imperatives: some conclusions from contemporary surveys in Papua New Guinea. Sida 19(3): 445 – 468

social sites in the area than communicated by the communities but the exact locations will be documented and protected when the project is implemented. See proposed monitoring plan. There are also area for sago harvesting which is dominant among the sago swamp forests which are found along sections of the main river and tributaries. Some of these are identified in Map 10. In addition are areas for crocodile and wild duck hatcheries. These provide an abundance source of food for the local communities and will be documented in the monitoring plan.

Nevertheless the WWF, the ESCOW and ADLEF co-sponsored a submission in 1997 which confirms the existence and/or defining of a HCVF for Hunstein Range under a WMA (Wild Life Management Area) with a total forest area of 220,000 ha (WWF et al 1997). See map 9. Although the courts have later ruled the WMA was established without the consent of the landowners the establishment of the WMA acknowledges and supports the HCV of the area.

Map 9: Hunstein Range Wild life Management Area

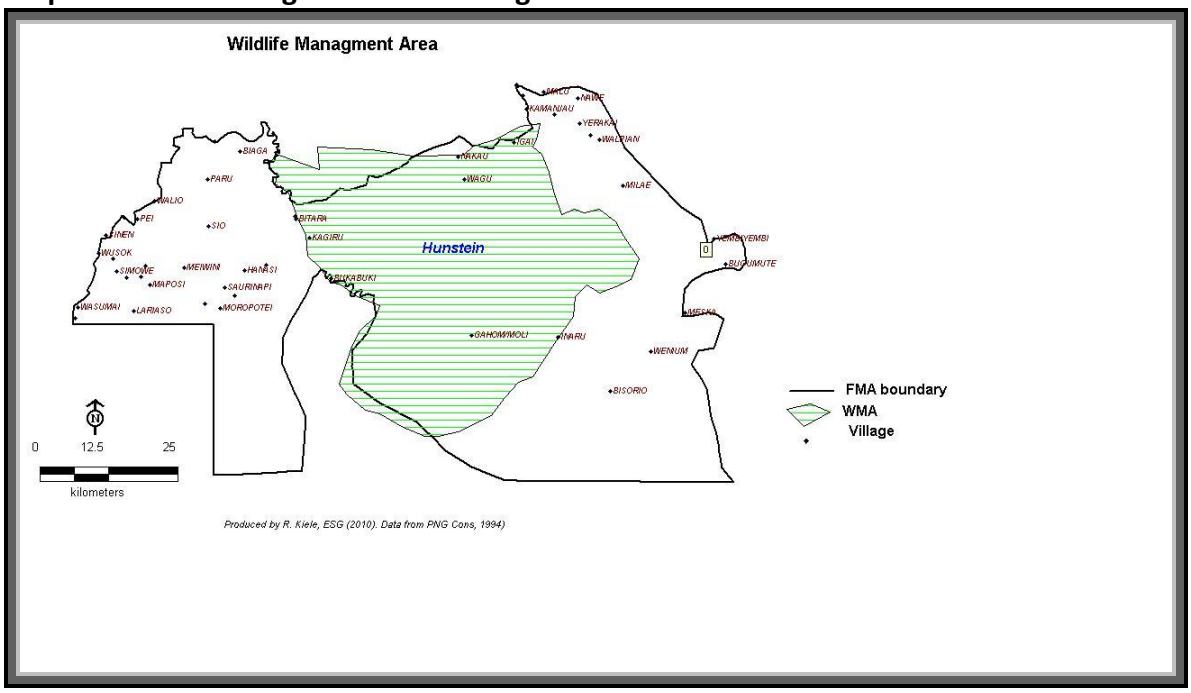


Table 6: Culturally, religiously, and biologically significant sites in the April Salumei REDD project area. (FCES, 2009)

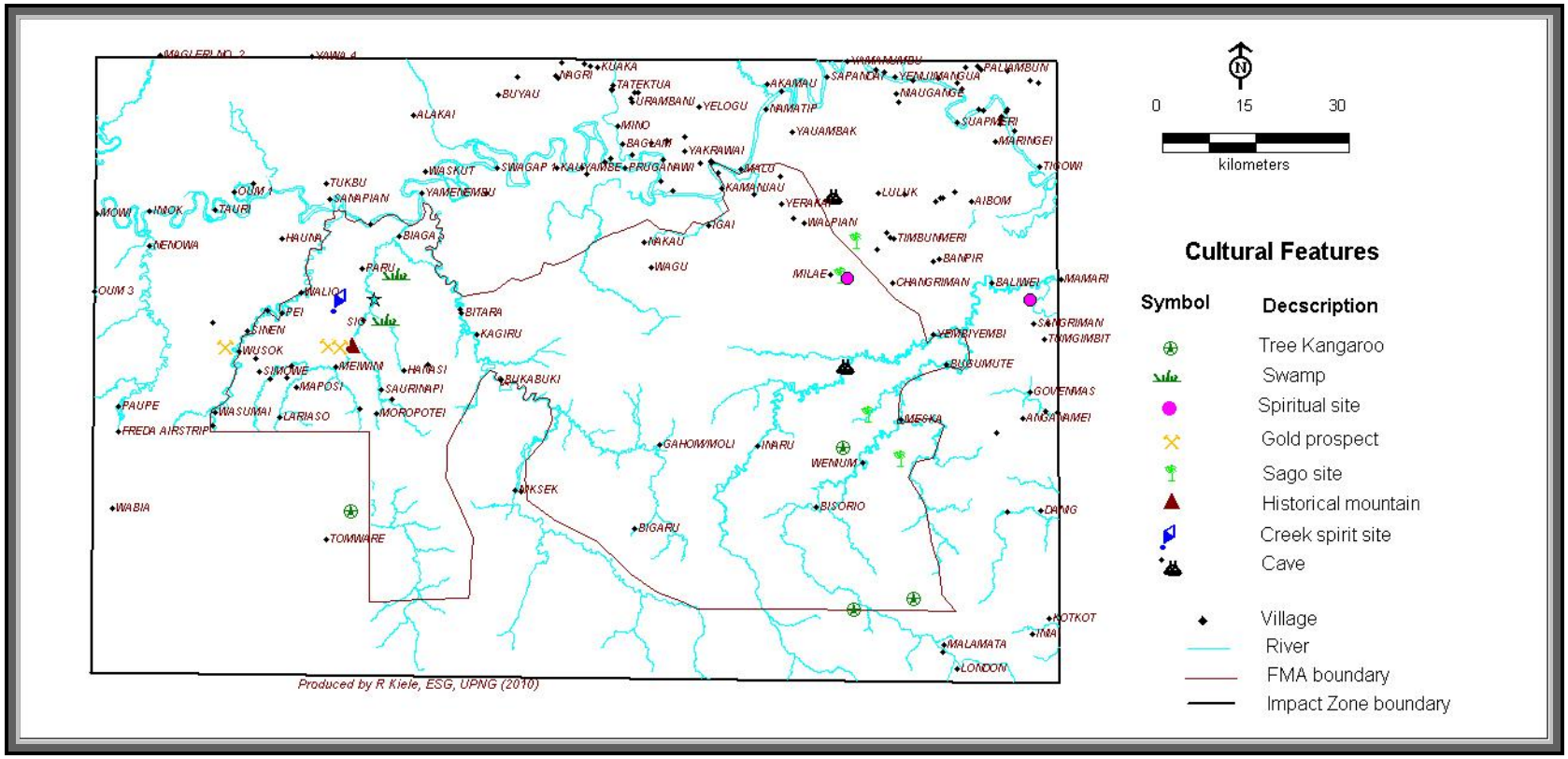
VILLAGE NAME	NO.	NAME OF MASALAI OR SACRED/TABOO SITE	DEFINITION OF THE MASALAI OR SACRED/TABOO SITE	LOCATION OF THE MASALAI OR SACRED/TABOO SITE	HISTORY OF THE MASALAI OR SACRED/TABOO SITE

VILLAGE NAME	NO.	NAME OF MASALAI OR SACRED/TABOO SITE	DEFINITION OF THE MASALAI OR SACRED/TABOO SITE	LOCATION OF THE MASALAI OR SACRED/TABOO SITE	HISTORY OF THE MASALAI OR SACRED/TABOO SITE
Yembiyembi	1	Genikal	Human like figure	Lopabale - a creek	The human figure changes into a dog or pig and chases anyone that enters its habitat or disturbs it
Yembiyembi	2	Gombu - Duwonobof	Two big rocks	Lopabale - a creek	The rocks move up and down the creek every day. They are friendly to the locals
Yembiyembi	3	Saganal	Human like figure	Medatuwe - lake	Kills and eat humans. It killed and ate a mother and child long ago
Yembiyembi	4	Naigemalil & Naagepas	Humanlike figures - Husband & Wife	where Salumei and Korosimeri Rivers meet	they are friendly to the locals as their habitat has been respected
Yembiyembi	5	Bakwayopol	Humanlike figure	Basebale - swamp	changes into a pig or snake if people trespass its habitat
Yembiyembi	6	Sugeyak	Womanlike figure	Balemedak - creek	changes into a cassowary if it sees men within its habitat
Yembiyembi	7	Maulapak - Hubak	A rock	Waksadok - creek	touching this stone by foot or hands will cause a thunder storm
Changriman	8	Suombea	hot spring	Suombea - creek	a small hot spring
Changriman	9	Kamalalil	site full of spirit	Kamalalil	the spirits changes into stone when locals are around
Changriman	10	Sikintua	spirit	Takabale - creek	a spirit that is found in a river. It is friendly to the locals
Changriman	11	Satabal	spirit	Satobok	Locals do not go close to the site. If they do then they will have visual difficulties
Changriman	12	Nomboba Kandaba	lake	Wanglatok	People have to wash once a day and not twice as they could get skin disease
Changriman	13	Bangamalil	spirit	Bamasok	friendly and heals sicknesses
Changriman	14	Bale Wanas	flying fox	Baglap Ontoul	believed to be killing human if they go near its habitat
Changriman	15	Houl	crocodile	No permanent site	breaks canoes, kill and eats humans
Changriman	16	Kakiambegil	crocodile	No permanent site	breaks canoes, kill and eats humans
Changriman	17	Wongomalil	snake	No permanent site	kills and feed on humans
Changriman	18		Garamut (*Vitex coffassus*)	Yanobaul	A giant Garamut (*Vitex coffassus)* tree locals are afraid to go near
Changriman	19	Yaubegil	dog	No permanent site	chases humans
Changriman	20	Nambayohoi	spirit	Komobol	kills humans
Changriman	21	Kimbiyopon	spirit	Kimbil	causes thunder storms when anyone intrudes its habitat
Changriman	22	Nimeyomoof	Rock	Nimes	changes into spirit but not harmful to the locals
Changriman	23	Maulapak	Rock	Komombol	the rock cracks if someone dies in the village
Changriman	24	Huwabau & Kalabau	Two waterfalls	Duguemalis	the two waterfalls are termed as two brothers and it heals sickness if bathing with aromatic leaves and vines
Changriman	25	Monglayelekal	spirit - fire	Dugutok	Spirit in the form of fire. A local intending to kill another must get a twig and throw it into the fire for the killing to take place smoothly without any suspicion. But has to

VILLAGE NAME	NO.	NAME OF MASALAI OR SACRED/TABOO SITE	DEFINITION OF THE MASALAI OR SACRED/TABOO SITE	LOCATION OF THE MASALAI OR SACRED/TABOO SITE	HISTORY OF THE MASALAI OR SACRED/TABOO SITE
					catch the spirit before committing.
Changriman	26	Keblegis	Garamut (*Vitex coffassus*)	Nongomakel	this tree grows in the mountain. Where it grows is a hole going underground to a river called 'men'. The site where the tree grows has been respected
Garamumbu	27	Gilkawat	Bird	Komombo	its shouting indicates someone dying or about to die
Garamumbu	28	Migiysamad	Rock	Budaung	this rock has been respected by the ancestors and is still today
Garamumbu	29	Senginam and Awiaboni	Rock	Dengilman	the two rocks represents two clans 1. Mael, 2. Sinmalel
Garamumbu	30	Awebonid	Rock	Kekyemud	digging up this causes lightning
Garamumbu	31	Wanda & Baban	Rock	Imbanakuan	the two rocks were spies during ancestoral conflicts
Garamumbu	32	Kolowi & Imbanam	two crocodiles	Bamugup	whenever the crocodiles appear, it indicates someone is dead or dying
Yerakai	33	Colbis	Womanlike figure	Agibam - water hole	the woman lives in a water hole in Agibam and if a stone is thrown into the water hole it will cause a thunderstorm
Yerakai	34	Mandakobur	Man-like figure	Nailawas lagoon	helped grandfathers during tribal conflicts in the past
Yerakai	35	Mai-gainambol	Sanguma' site	Bamblung	a site where 'sungumas' practice
Yerakai	36	Kibomud	a hill	Mt Buluwai	the mountain was made by the forefathers' from fire ashes taken out from the haus tumbuna (men's haus) continuously. A place for traditional dancing ceremonies. Currently being respected
Yerakai	37	Kuatabus	Rock	Mt Buluwai	the rock has a hole that the forefathers put their head into. It had some powers
Yerakai	38	Komte	spirit	Watwas	fierce sprits that do not want to be disturbed
Yerakai	39	Wambon	spirit	Yerakai	appears as a man and then vanished
Yerakai	40	Mantukobur	Ancestoral site	Yerakai	a Garamut (Vitex) that had a vine on it was about to be chopped and when the vine broke, the men responsible died and turned into stone.
Walifian	41	Isi kaiwalop	water pool	Walfian	a man bathing in the water will change into a woman. The same applies for a woman. Site is still being respected
Walifian	42	Wahayewur	spirit	Walifian	The spirit took down a mans haus. The men's haus was the best in the area.
Walifian	43	Bilendumud	Human like figure	Walifian	a human like figure spirit that interacted with the ancestors. Due to changes to the environment, it had fled and hid in the bush of Walifian

VILLAGE NAME	NO.	NAME OF MASALAI OR SACRED/TABOO SITE	DEFINITION OF THE MASALAI OR SACRED/TABOO SITE	LOCATION OF THE MASALAI OR SACRED/TABOO SITE	HISTORY OF THE MASALAI OR SACRED/TABOO SITE
Walifian	44	Moiyehei kambud	Rock	Walifian	the rock lives in the mountain. Any visitor to its site wishing for luck or gift has to give him a present and talk to the stone.
Banakot	45	Bamugup	spirit	Banakot	the spirit once pulled down a canoe together with the paddlers sometime ago. Whenever the canoe is seen surfacing and then disappearing, its indicating that someone will die or a conflict will arise
Nawei	46	Luweibor	man-like figure/spirit	Nawei	sometime becomes like a real man
Nawei	47	Nimger	human spirit	Nawei	Found in sago swamps. The spirit normally meets women who are on their way to make sago.
Nawei	48	Ambagalai	snake	Ambang	sometimes changes into a fish if locals go near its habitat
Nawei	49	Bibinid	Totoise	Nembeleng	sometimes changes into a fish if locals go near its habitat
Nawei	50	Yamkalei	site full of spirit	Yamkalei	any visit to this site will result in heavy thunder storm
Nawei	51	Dafnamed	site full of spirit	Dafnamed	no noise around this area. If there are then demons will be seen roaming
Nawei	52	Singep	snake	Ambaung Dukop	touching the snake will cause it to have spines on its back similar to the sago fronges
Nawei	53	Bangawam	Ancestoral site	Lukayamaied	ancestral ritual site
Nalom	54	Wainguandir	water pool	Nalom	stone thrown into the pool will result in thunderstorm
Nalom	55	Kulam	Rock	Mt Dafnamed	rocks are not supposed to be thrown anywhere on this mountain during gold panning
Nalom	56	Maindau	lightning	Mt Dafnamed	name given to the lightning that occurs when stones or rocks are thrown during gold panning
Nalom	57	Nogonbo	pig	Mt Dafnamed	a pig that lives in the area that locals fear
Nalom	58	Ambanganden	Womanlike spirit	Ambang creek	Here lives a woman like figure/spirit. No one roams around the site
Nalom	59	Malunepel	Waterfall	Dafnamed point	Woman spirit found around the waterfall. Under the waterfall are artefacts
Nalom	60	Bolofei	Manlike spirit	Dafnamed point	Here lives a man like figure/spirit. No one roams around the site
Nalom	61	Litapwahanap	snake	Nalom	a sago stand has this particular snake that the locals are afraid of going into

Map 10: Cultural, Social and Spiritual Sites identified and mapped in Project Area



Please note: When meeting with the stakeholders from the project area not all culturally significant sites were able to be identified on a map. The landowners have agreed to show us where the sites are and there will be mapped with a GPS when we are mapping the boundaries of the ILG's.

Section G 2. Baseline Projections

G2.1.Baseline Land Use

The Project Area is currently subject to a Forestry Management Agreement (FMA). Without the proposed REDD project the area 150,620ha of the project area would be harvested. Following logging the increased accessibility created will normally support secondary land use. This secondary use will continue the degradation of the forest resource.

Over the last 30 years the drivers of deforestation in Papua New Guinea were industrial logging, and substance related agriculture with minor contributions from forest fires, industrial agriculture and mining[34].

The PNG R PIN (2009) goes further to determine the specific percentage of each driver,
Plantations 1%
Forest fires – 4.4%
Agriculture – 45.6%
Logging – 48.2%
Mining 0.6%

Additionally threats for deforestation can include the following;

1. *Anthropogenic sources*

- Shifting cultivation
- Commercial Logging
- Large-scale commercial agriculture
- Forest Fires
- Mining and petroleum exploration and development
- Infrastructure development
- Settlements and urbanisation

2. *Natural sources*

- Earth quakes
- Volcanic eruptions
- Tectonic movements
- Landslips
- Flooding
- Climate Variability

[34]Bryan, J., et al., Estimating rainforest biomass stocks and carbon loss from deforestation and degradation..., Journal of Environmental Management (2010), doi:10.1016/j.jenvman.2009.12.006

Maps 12 and 13 indicate little change in land use from traditional land usage or subsistence agriculture in the project area between 1975 and 1996. The Landsat image (Map 14) also indicates little or no changes to the project area as a result of subsistence agriculture.

There is no indication of scaring from forest fires or anecdotal evidence of forest fires and there are currently no large scale mining currently in the project area.

It is therefore most likely only the existing FMA threatens the existing forests and ecosystems of the project area. As we are avoiding the potential logging or deforestation the whole project is classified as Forest Land remaining Forest Land.

Papua New Guinea's forest industry is predominantly focused on the harvesting of natural forest areas for round log exports. The sector is dominated by Malaysian-owned interests and their primary markets for raw logs are China, Japan and Korea. Very few wood products are manufactured in PNG itself [35]

Under the Papua New Guinea Forest Development Plan there are in total 14 FMA's and only 10 of them are regarded as government impact projects. April Salumei (see maps 1 reproduced below) is one of the ten because of its magnitude. Under the FMA, timber permits/logging licenses are issued to the Landowner Groups who contract out by way of concessions to a commercial timber company that meets all the requirements and processes of logging according to the Forest Act to carry out logging activities in the area.

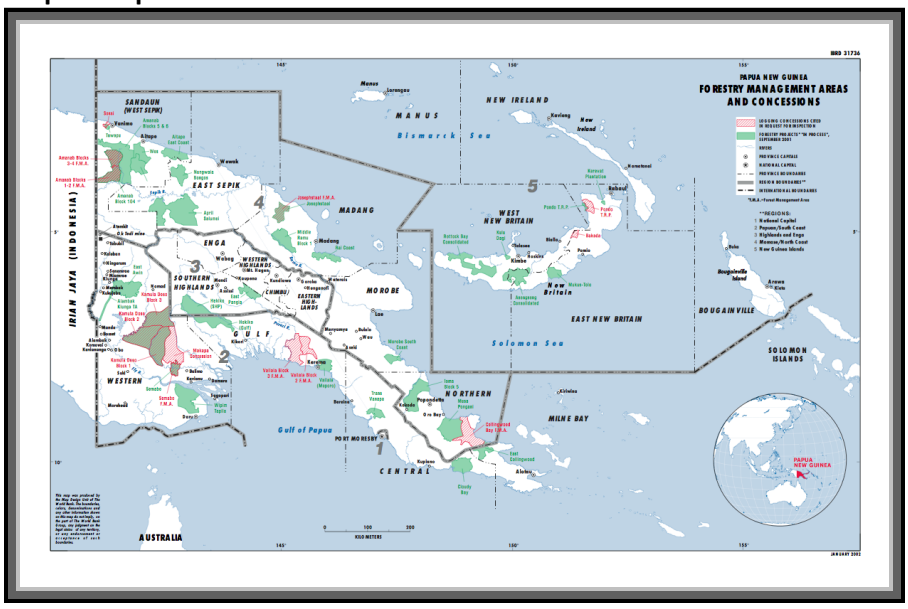
To assess baseline emissions, a reference area (Vanimo FMA, West Sepik or Sandaun province) was selected with similar ecological characteristics which are also a Forest Management Area, where selective logging was and is still taking place.[36]

Please see Map 10 and Map 1 for location of project area and references projects discussed above.

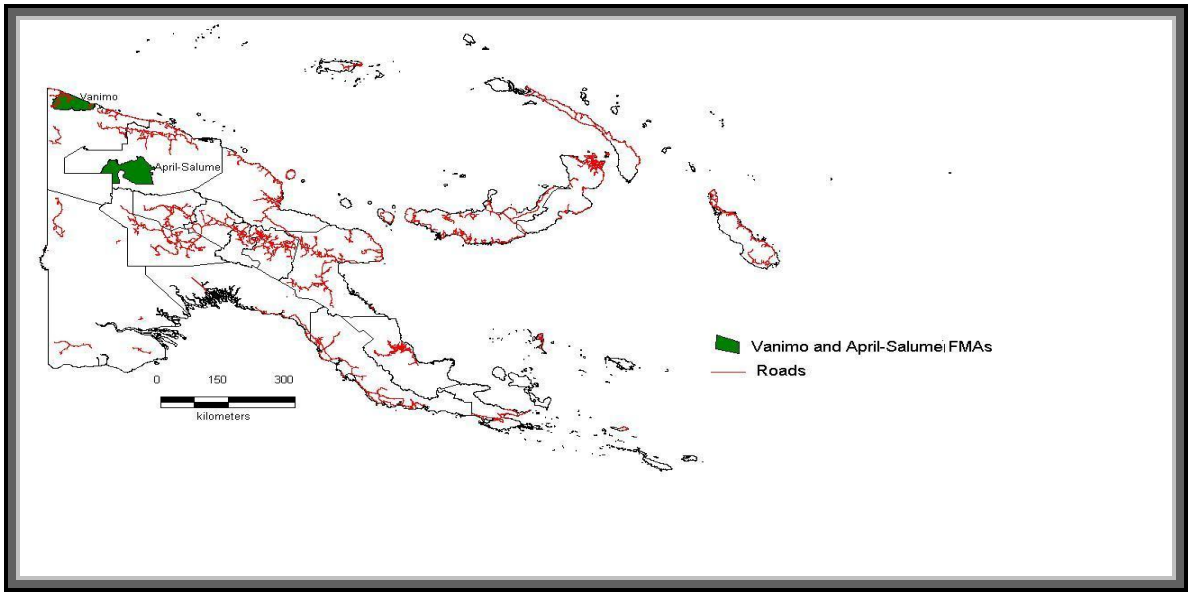
[35] Logging, Legality and Livelihoods in PNG: Synthesis of Official Assessments of the Large-Scale Logging Industry, Volume I © 2006 Forest Trends

[36] Logging conditions are similar to those in the project FMA as raw logs and sawn timber are exported. The original logging permit was issued in 2001 and runs until 2011. Ecological similarity is shown by the fact that the areas lies geographical close to East Sepik FMA, has similar geomorphologic conditions and climatic conditions, and the main land usage and drivers to deforestation are similar (for the last point see Shearman at al 2008).

Map 1 - Reproduced



Map 11: Location and Project Boundaries of April Salumei and the Vanimo FMA



G2.2 Project benefits in the absence of the project and Additionality

Without the validation of this project the FMA will be awarded to a developer to harvest the area as this was the motivation behind the creation of the FMA in the first instance. Landowners were hoping to receive royalties from the aforementioned harvesting.

Forest Trends (2006) analyzed the logging practices of the companies of 14 selected FMA's around Papua New Guinea. The conclusions indicated what would happen to the April Salumei FMA area if it is logged.

The review demonstrates that operators are not achieving compliance in key areas that define a "lawful" logging operation from an unlawful one, and that current commercial forest management is ecologically and economically unsustainable and illegal. Logging is also not serving the long-term interests of landowners or the State.

Selective logging was also unsustainable, leading to permanent forest degradation or deforestation and partial conversion to grassland. This non-obedience to the specification of the Forest Management Plans was usually the result of poor policing and corruption[37].

It can be concluded that the Forest Management Agreement, which are government approved, show a "best case" scenario with regard to carbon stock development and sustainable development and in practice are typically not respected. It is therefore a conservative estimation to assume that if the planned logging activities according to the FMA are implemented then more often than not these established limits will be well exceeded.

The April Salumei FMA has an estimated volume per hectare of 55.312 m3/ha and a net volume per hectare of 38.718 m3/ha (in terms of commercially interesting wood species). The April Salumei FMA project area has an estimated total volume of 5,831 700 m3 of extractable timber with an average density of 38.72 m3/ha.

These assessments have been compiled for the sole purpose of harvesting the 150,620ha within the project area comprising a total of 521,000 hectares.
In accordance with 2006 IPCC GL AFLOU this area is classified into the Land use category of "Forest Land" (see Table 1, Carbon Stock Estimations G1.4 and Table 13 G2.3). This area has been surveyed by the PNGFA and designated as "merchantable" or approved for harvesting.

The benefits the Landowners will receive from the April Salumei Rainforest Preservation Project are additional.

[37] State of the forests in PNG (2007)

If you look at the land use intensity, Maps 12 Land Use Intensity 1975 and Map 13 Land Use Intensity 2006 (See G2.3 Carbon stock change) you will see little change to the area from traditional land use. See also Map 15 Landsat image.

Therefore it would be fair to assume if the logging project went ahead there would be large scale destruction of habitats and loss of valuable ecosystems that house HCV flora and fauna that would be directly attributable to logging.

Without the April Salumei Rainforest Preservation Project the most likely scenario is the logging would go ahead. The area has been legally designated as a timber concession.

Evidence from other logging concessions in PNG suggest the landowners would receive little or no positive impact on living standards, continuation of miniscule incomes that barely affect living standards and unsustainable management of forest resources[38].

As tabled in the Forest Trends (2006) report the commercial logging of similar areas of primary rain forest in Papua New Guinea has resulted in:

1. Lack of delivery of long term benefits to landowners
2. Generation of local incomes that are too small to impact on living standards
3. Unsustainable management of forest resources.

Proposed benefits to the area following commercial harvesting, as outlined in the Forestry Management Agreement, was to be 450 ha of proposed Oil Palm plantations, 200 ha of coffee and 180 ha of cocoa plantations, however in the same paragraph it states the agricultural land development would mainly take place outside the project area (based on other projects one would assume if they were to be implemented clear felling of the affected land would occur.)

It is difficult to determine if any potential developer of the FMA actually had any intention to develop the area past logging. There are numerous examples of current logging concessions where the promise of infrastructure and agriculture programs has not materialized. Examples such as East Arawe in West New Britain, Vailala Block 3 in Gulf Province and East Awin in Western Province to name but a few.

G 2.3 Carbon stock change

Based on the “without” project scenario, that is the logging project going ahead would create significant reductions in the carbon stocks of the area.

[38] Logging, Legality and Livelihoods in PNG: Synthesis of Official Assessments of the Large-Scale Logging Industry, Volume I © 2006 Forest Trends

To determine the extent of the change in carbon stocks in the project area we must determine the total carbon value of the project area (see G 1.4) and estimate the residual carbon in the project area following commercial logging. We must also consider other factors that influence levels of carbon stocks in the project area.

We have determined the boundary of the project area is the same boundary as that of the proposed FMA and from G1.4 we have established there is 114 million tonnes of CO2 in the project area. It is important to maintain this original boundary so we can identify the different cultural groups that have been traditionally represented in the area. However, under the Forestry Management Agreement the area to be harvested was determined to be 177,200 ha (gross area less areas for slopes, waterlogged areas, river systems etc. in accordance with the PNG Logging Code of Practice) and in accordance with the agreement a 15% discount is to be applied reducing the area to 150,620 ha. Please refer to Map 6, Map 15 and Map 16.

We have also assumed the Forestry Management Agreement conditions are followed and no illegal activities are undertaken by the harvesting contractor.

Phil Shearman (2008) used Brown and Gibbs (2007a and 2007b) and IPCC (2006) forest biomass carbon stock estimates for equatorial forest of 164 tCO_2 ha^{-1} (44.7 tC/ha) and 180 up to 225 tCO_2 ha^{-1} respectively to estimate carbon stocks in PNG. Fox et al (2009) cited average estimations of 120 tC/ha by Edwards and Grubb (1979) and 148 to 669 tC/ha by Chavel et al. (2001) for tropical rainforests based on terrestrial measurements.

Consistent with section G1.4 we have used the 2006 Intergovernmental Panel on Climate Change, Chapter 4, Forest Land, Volume 4, Agriculture, Forestry and Other Land Use methodologies and values.

Assumptions
Sector: Agriculture, Forestry and Other Land Use.
Category: Forest Land Remaining Forest Land
Climate Domain: Tropical
Ecological Zone: Tropical Rainforest
Continent: Asia (insular)

Carbon Pools
Firstly we determined the Carbon Pools to be included. These were Above-ground Biomass and below-ground biomass. For the sake of being conservative and given we are estimating the carbon values to a Tier 1 level we have included Dead Organic Matter (Dead Wood and Litter) but excluded Soil Carbon.

Source of data
Tier 1 estimated above-ground biomass (Table 4.7) 350 tonnes d.m. /ha[39]
Ration below-ground biomass to above-ground biomass (Table 4.4) 0.37
Carbon Fraction default value (table 4.3) 0.47

Carbon Accounting Area
As discussed the April Salumei FMA is a total area of 521,000 ha, with a gross forest area of 177,200 ha. This area of 177,200ha has been determined by PNG Forest Authority as 'merchantable' and therefore is the area we are avoiding the deforestation.

Furthermore, in accordance with the Forestry Management Guidelines 15% buffer zone has been applied to determine a net production area of 150,620 ha.[40]

We are therefore avoiding the deforestation of the 150,620 ha (See Map 16) that would have been harvested as evidenced by Map 16 that delineates the harvestable area as determined by the PNG Forest Authority.

There is no claim for avoided emissions for the remaining 344,000 hectares, although this is part of the project area as determined in G1.3.

In accordance with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 4: Agriculture, Forestry and Other Land Use, (4.2.1.4 CALCULATION STEPS FOR TIER 1) we have completed the following methodology.

Step 1.
Classify Forest Land Remaining Forest Land into forest types of different climatic or ecological zones, as adopted by the country. As a point of reference, Annex 3A.1 of GPG-LULUCF (IPCC, 2003) provides national-level data of forest area and annual change in forest area by region and by country as a means of comparison. Alternatively FAO also periodically provides area data;
Step 2: *Estimate the annual biomass gain in Forest Land Remaining Forest Land (ΔCG) using estimates of area and biomass growth, for each forest type and climatic zone in the country available using Equations 2.9 and 2.10 in Chapter 2;*
Step 3: *Estimate the annual carbon loss due to wood removals (Lwood-removals) using Equation 2.12 in Chapter 2;*
Step 4: *Estimate annual carbon loss due to fuelwood removal (Lfuelwood) using Equation 2.13 in Chapter 2;*
Step 5: Estimate annual carbon loss due to disturbance (Ldisturbance) using Equation 2.14 in Chapter 2, avoid double counting of losses already covered in wood removals and fuelwood removals;
Step 6: From the estimated losses in Steps 3 to 5, estimate the annual decrease in carbon stocks due to biomass losses (ΔCL) using Equation 2.11 in Chapter 2;

[39] We have used the value given in table 4.7 of 350 tonnes d.m. ha of Tropical rainforest, Asia (insular).
[40] Tack Reality Report (2004) Determination of value of harvestable timber.

Step 7: Estimate the annual change in carbon stocks in biomass (ΔCB) using Equation 2.7 in Chapter 2.

See Table 1 "Carbon stock estimates for each forest type" (G 1.4) for the classification into ecological zones and Table 13 to determine the classification of the forest stock in the carbon accounting area. (Source: UPNG GIS)

Above and below ground biomass

To determine the above ground biomass we have selected the default value. Tropical Rainforest – Asia (insular) (Table 4.7 - Tier 1) of 350 tonnes d.m. /ha. Table 4.12 lists Tropical Rainforest at 300 tonnes d.m./ha, and Bryan et al. (2010) has reported the biomass of unlogged forests to be 358 tonnes d.m./ha. We have used Table 4.7 value of 350 tonnes d.m./ha.

To determine the below ground biomass we multiply the above ground biomass value (350 tonnes d.m./ha) by 1.37 (the ration given in table 4.4) to determine the combined above-ground and below-ground biomass is 479.5 tonnes d.m./ha.

We have then applied a carbon factor of 0.47 (table 4.3) to determine 225.365 tonnes Carbon per hectare.

The area of deforestation being avoided is 150,620 ha so we can conclude there is 33,944,476 tonnes of Carbon contained in the above ground and below ground biomass for the area.

Annual Increase in Carbon Stocks

Having used the worksheets (3B1a) provided in the IPCC Guidelines we have determined the annual growth of carbon in the area is 328,389 tonnes.

Given the project life of 20 years we can determine there will be a total increase on 6,657,780 tonnes of carbon over the project lifetime.

Dead Organic Matter (DOM)

USAID-CIFOR-ICRAF Project Report (2009), Topic 4, Section B (Carbon Accounting – Quick steps) indicated that dead wood (standing and lying) can be estimated conservatively up to about 15% of the above-ground biomass (AGB).

Cox et al. (2010) based on field observations estimated coarse wood debris (CWD), which constitutes standing and fallen dead trees to be 25% of the AGB for selective harvested (logged-over forests) and 10% for undisturbed forests in PNG.

To be conservative we use the lower figure of 10% for undisturbed forests to 350 tonnes d.m. ha^{-1} default value which gives give 35 tonnes d.m. ha^{-1}. This then gives an estimation of 5,271,700 tonnes of d.m. for Carbon contained in the litter.

Soil Carbon
The project will not be claiming from the soil carbon pool. This may change as national values and baselines are established that will allow the project to move to a higher tier for assessment. The developer expects to build this capacity over the next five years.

Round log removals
There will be no round log removals from the carbon accounting area. This will be managed and reported by local Climate Stewards see G4.1 and G4.3.

Fuel wood removals
The FAO "Asia Pacific Forestry Sector Outlook Study – The South Pacific" Table 15 determines fuel wood removals to be 1.38m3 per capita.

The population of the project area was 7696 in 2000 (G 1.5, Census data) so we have increased the number to 10,000 (in excess of PNG's population growth rate of 2.7%[41]) to account for population growth.

We can determine the Fuel wood removals from the total project area to be 13,800m3 per annum.

Using a biomass conversion factor of 1.05 (table 4.5) we can determine wood removals to be 9,330 tonnes of carbon per year for the project area.

Although the population distribution map shows the population is not evenly distributed and the carbon accounting area to be least populated we have assumed an even distribution to be conservative.

The carbon accounting area (177,000ha) represents 33.9% of the project area so we will conclude 35% of the firewood removals or 3,265.5 tonnes of carbon annually would come from the carbon accounting area or 65,310 tonnes of carbon over the project life of 20 years.

Disturbance
Given the carbon accounting area is remote and sparsely populated any measurable disturbance will be as a direct result of the logging of the area.

In the absence of national data the project will not be claiming for avoided emissions from soil disturbance.

[41] 2008, PNG R-PIN

Fuelwood removals have been calculated and there will be no Round log removals from the carbon accounting area.

Residual Carbon stocks post logging

To determine the carbon pool remaining following the area being logged we have used work from Fox et al. (2006) using PNGFRI permanent sampling plots from East Sepik Province recorded an average of 59 tC/ha for logged over forest areas.

Applying the average value of 59 tC/ha to the total harvestable area of 150,620 gives a total of 8,886,580 tonnes of d.m.

CARBON SOURCES	CARBON CONTENTS (tonnes carbon)
AGB	33,944,476
BGB	6,657,780
Deadwood and Litter	5,271,700
Carbon Growth	783,244
Soil Carbon	0 (N/A)
Total Carbon Content	46,657,200
CARBON EMISSION SOURCES	
Firewood Removals	65,310
Round Log Removals	0 (N/A)
Disturbance	0 (N/A)
Residuals	8,886,580
Net Carbon Content	37,705,290
Less 10%	33,934,761

Summary

To determine the total emissions to be avoided we have calculated the following;
(AGB + BGB + Annual growth + dead organic matter) – (Fuel wood removals + Round log removals + disturbance + residual carbon) = emissions avoided by the project.

(33,944,476 + 6,657,780 + 783,224 + 5,271,700) – (65,310 + 0 + 0 + 8,886,580) = 37,705,290 tonnes of Carbon emissions to be avoided by the project.

To be conservative and to allow for any unforeseen factors we have discounted this value by 10% to 33,934,761 tonnes of Carbon.

The worksheets from the 2006 IPCC Guidelines are available for inspection by the validator.

The developer wishes to note they reserve their right to revise this estimate as a more robust data and increased capacity is established to allow the assessment of this project to move to a "Tier 3" level.

We believe the 10% buffer to be conservative and will mitigate any unforeseen emissions from the project area.

Consistent with IPCC Guidelines the project is avoiding the emissions of 33,934,761 tonnes of Carbon and when calculation of the CO2 equivalent emissions are estimated using the global warming potential for CO2 (3.667), 124,438,796 tonnes of CO2e are avoided by the project.

The carbon pools selected are listed in the following table.

Table 7: Carbon Pools included or excluded within the boundary of the proposed REDD *project activity*

Carbon Pools	Selected (answer with yes or no)	Justification / Explanation
Above-ground	Yes	Major carbon pool subjected to the project activity
Below-ground	Yes	Major carbon pool subjected to the project activity
Dead wood	Yes	Selected
Litter	Yes	Selected
Soil organic carbon	No	Conservative

The table below represents our findings in relation to determining the non-CO2 GHG emissions for the project.

Table 9: Sources and GHG`s included or excluded within the boundary of the proposed April Salumei REDD project

Sources	GHG	Included/Excluded	Comment/Justification
Biomass burning	CO_2	Excluded	Counted as carbon stock change
	CH_4	Excluded	Assumed negligible
	N_2O	Excluded	Assumed negligible
Combustion of fossil fuels by vehicles	CO_2	Excluded	Assumed negligible in the project case. This is conservative.
	CH_4	Excluded	Not a significant source
	N_2O	Excluded	Not a significant source
Use of fertilizer	CO_2	Excluded	Not a significant source

	CH_4	Excluded	Not a significant source
	N_2O	Excluded	No significant fertilizer use in this project
Livestock emissions	CO_2	Excluded	Not a significant source
	CH_4	Excluded	No significant livestock use in the project case. This is conservative.
	N_2O	Excluded	No significant livestock use in the project case. This is conservative.

We believe emissions from non-CO2 gasses and will not account for more than 5% of the projects overall GHG avoided emissions.

Whilst a major infrastructure project of building the Ambunti – Drekiker road will occur outside of the project area it is nevertheless a project activity and as such needs to be considered in terms of it potential carbon emissions.

Please refer to our project funding policy and guidelines to determine how the project will deal with this.

Should we identify any changes to our estimations in our monitoring of the project it will be documented and addressed immediately.

Drivers of Deforestation

Over the last 30 years, as discussed in G 2.1 the drivers of deforestation in Papua New Guinea are[42];

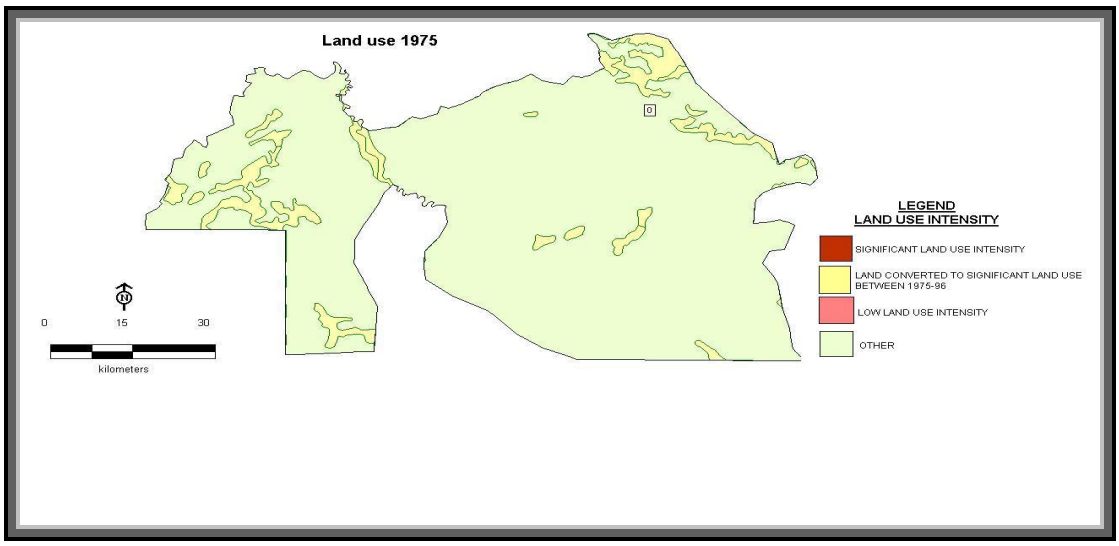
Plantations 1%
Forest fires – 4.4%
Substance Agriculture – 45.6%
Logging – 48.2%
Mining .6%

As identified in Map 12 and 13 comparing the land use change 1975 to 1996 changes to land use in the project area due to subsistence agriculture have been minimal. The sporadic distribution and low density of the population within the FMA suggests that although there was no considerable changes to the land use regime, there were definitely smaller changes occurring resulting from traditional subsistence agriculture (slash and burn) and the annual flooding of the river following heavy rains. (See Map 10 and 11 Land Use Change below)

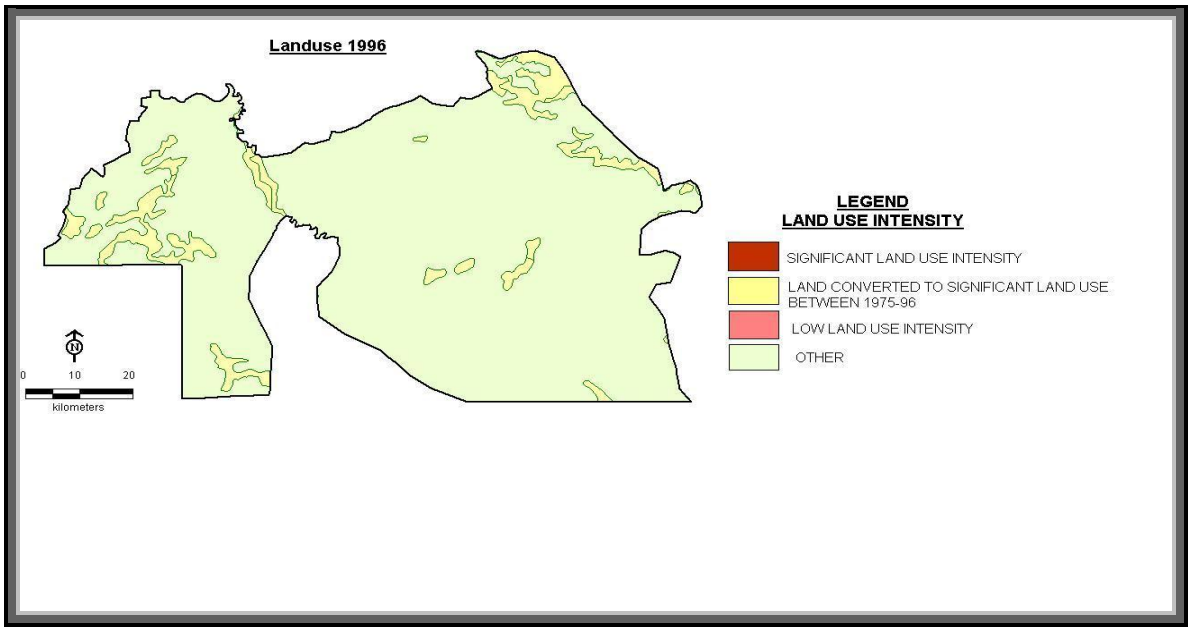
Agricultural activity is subsistence based only with small localized gardens.

[42] PNG - Department of Environment and Conservation (R-PIN)

Map 12: Land use in the FMA with land use change indications from 1975



Map 13: Land use intensity in the FMA from 1975 to 1996



Planned Forest Degradation and Deforestation in the Region

Forest degradation continues to occur in the country and regions due to timber harvesting activities. Within the West Sepik Provinces adjacent to April Salumei FMA, Amanab FMA and Vanimo TRP, there is much degradation.

Tables 3a and 3b below show the current forest degradation rates as a result of timber harvesting from the two nearby FMA's Amanab and Vanimo. These harvesting

concessions are in the same ecological zone and IPCC classification as the April Salumei FMA. Both have also been demarcated by the PNGFA as logging concessions so therefore the developer feels they are representative of the April Salumei area.

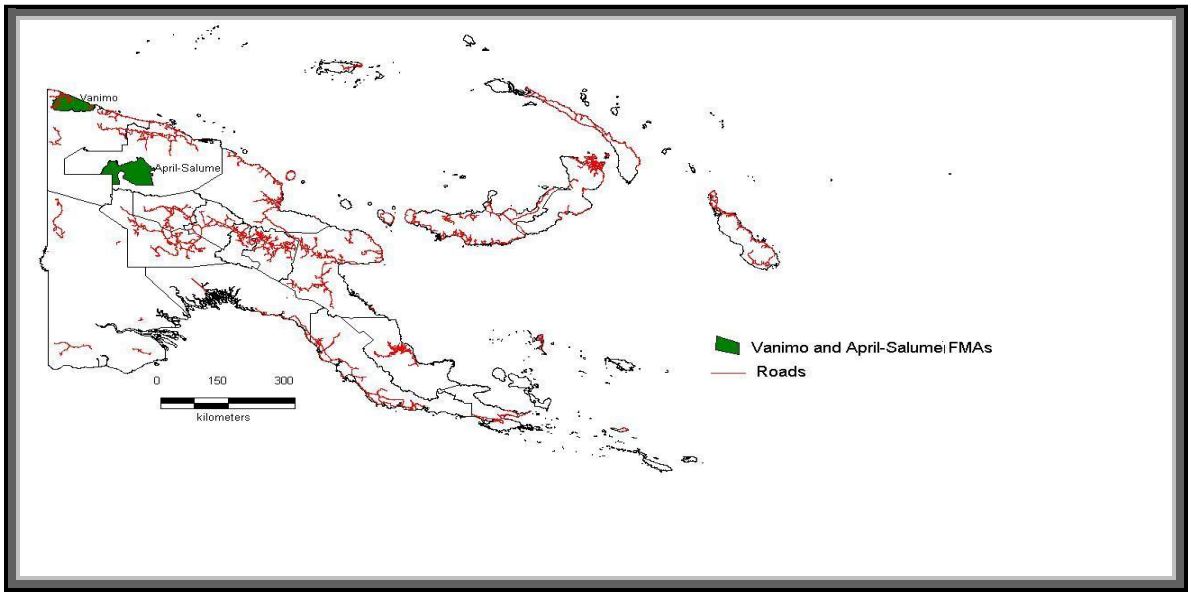
Table 10 AMANAB FMA (BLOCKS 1-6): Total Area – 403,131 ha

Year	Annual Allowable Harvestable Area (ha)	Actual Harvested Area (ha)	% harvested of the annual allowable	% harvested from the total area
2005	3,133.3	Nil	Nil	
2006	3,133.3	Nil	Nil	
2007	3,133.3	5,800	61.7	1.44
2008	3,133.3	4,868	72.3	1.21
2009	3,133.3	Yet to be produced		
2010	3,133.3			
		10,668		1.33

Table 11 VANIMO TRP (BLOCKS 1-6): TOTAL AREA – 287,428 ha

Year	Annual Allowable Harvest (ha)	Actual Annual Harvest Area (ha)	% of annual allowable harvest	% of total harvestable area
1991	12,423	11,196	90	3.9
1992	12,423	10,248	83	3.6
1993	12,423	10,000	81	3.5
1994	12,423	9,375	75	3.3
1995	12,423	9,375	75	3.3
1996	12,423	13,667	110	4.8
1997	12,423	15,712	126	5.5
1998	12,423	8,095	65	2.8
1999	12,423	17,510	141	6.1
2000	12,423	13,740	111	4.8
2001	12,423	17,740	111	4.8
2002	12,423	19,026	153	6.6
2003	17,391	12,262	71	4.3
2004	17,391	1,676	9.6	0.6
2005	17,391	10,531	61	3.7
2006	17,391	26,500	152	9.2
2007	17,391	16,200	93	5.6
2008	17,391	10,074	58	3.5
2009	17,391	Yet to produce		
2010		**232,927**		**4.4**

Map 14: Location and Project Boundaries of April Salumei and the Vanimo FMA areas.



Amanab FMA was recently developed therefore the timber harvesting has not been intensively undertaken thus showing an average degradation rate of 1.3% annually. In comparison Vanimo TRP (see map 14 above) has been intensively harvested at the rate of 4.4% annually. The degradation rate of Vanimo TRP would be the more realistic measure to make an assumption with regard to April Salumei FMA. The great difference between these two projects in the annual allowable harvestable areas is mainly due the management agreements. The TRP's allowable cut was mainly determined by the projected revenue whereas under the FMA the allowable cuts are determined by the rotation periods.

However, considering land use changes for the province, then at least there is some existing available data. For instance, using the work of Sanders (1993) on agricultural land use in PNG, we can use the provincial land-use and land-use change data which indicated that the East Sepik Province experienced a 37% change to its land use regime whereas the West Sepik Province experienced a 26% change, mostly extremely low (<10%) to low intensity (20-50%) land use for food production by a moderate to low and dispersed population in these provinces.

Furthermore, McAlpine and Quigley (1998) noted that between 1975-1996 the areas converted to other land use for East Sepik Province was 3.51% of the total provincial forest area, while that of the West Sepik Province was 7.79%. Much of these land use changes in the province of East Sepik were the result of logging and traditional shifting agriculture together with some small to medium scale agriculture projects, especially rubber, cocoa and coconut plantations.

In reviewing the deforestation rates of similar Forest Management Areas (not TRP's as they are different styles of concessions) deforestation rates of up to 26,500ha per annum have been documented (Table 11, Ref 2006). This FMA is located relatively close to the April Salumei project and has similar access where the current operators have documented an average deforestation rate of 12,940 ha harvested annually.
This data establishes the total area of 150,000ha would be deforested within the 20 year project life that has been established.

Planned Forest Degradation and Deforestation – Nationally

Before gaining independence in 1976, PNG boasted some 33 million hectares of natural forests. It was understood by the then Department of Forests that the sustainable allowable cut for the country was 3 million m^3 / year.

However, since independence, the total forested area has been reduced to about 29 million hectares. Moreover, three million hectares is considered degraded forest, which leaves the country with some 26 million hectares of intact forests. These 26 million hectares are under continuous threat from being deforested and / or degraded through logging, commercial agriculture, shifting cultivation, mining and petroleum activities. The PNG government recognizes that economic growth will be largely driven by the exploitation of natural resources. This brings a risk of increasingly unsustainable activities to satisfy the medium term development goal of the country. Thus, although these activities are economically important for PNG, they pose a direct threat to the existence of natural forests and its associated biodiversity.

It has been estimated in 2002 that 1.41% of Papua New Guinea's tropical forests were being deforested or degraded annually. Furthermore, primary forests accessible to mechanized logging were being degraded or cleared at the rate of 2.6% annually and if current trends continue it is estimated 83% of the commercially accessible forest areas will have been degraded or cleared by 2021.[43]

[43] Shearman, P.L., Bryan, J.E., Ash, J., Hunnam, P., Mackey, B. And Lokes, B., The State of the Forests of Papua New Guinea. Mapping the extent and conditions of forest cover and measuring the drivers of forest change in the period 1972-2002. University of Papua New Guinea, 2008

Table 12: Change in Forest Cover in Papua New Guinea (ibid)

TOTAL FOREST COVER			PRIMARY FOREST COVER		
	Ha	%		Ha	%
Forest 1990	31,523,000		Primary 1990	29,210,000	
Forest 2000	30,132,000		Primary 2000	26,462,000	
Forest 2005	29,437,000		Primary 2005	25,211,000	
Annual change 1990-2000	(139,100)	0.44%	Annual change 1990-2000	(274,800)	0.94%
Annual change 2000-2005	(139,000)	0.46%	Annual change 2000-2005	(250,200)	0.95%
Total change 1990-2005	(2,086,000)	6.62%	Total change 1990-2005	(3,999,000)	13.69%
Change in rate		4.54%	Change in rate	0.50%	
OTHER WOODED LAND			PLANTATIONS		
	Ha	%		Ha	%
Other 1990	31,523,000		Other 1990	63,000	
Other 2000	30,132,000		Other 2000	82,000	
Other 2005	29,437,000		Other 2005	92,000	
Annual change	-	-	Annual change	1,900	3.02%

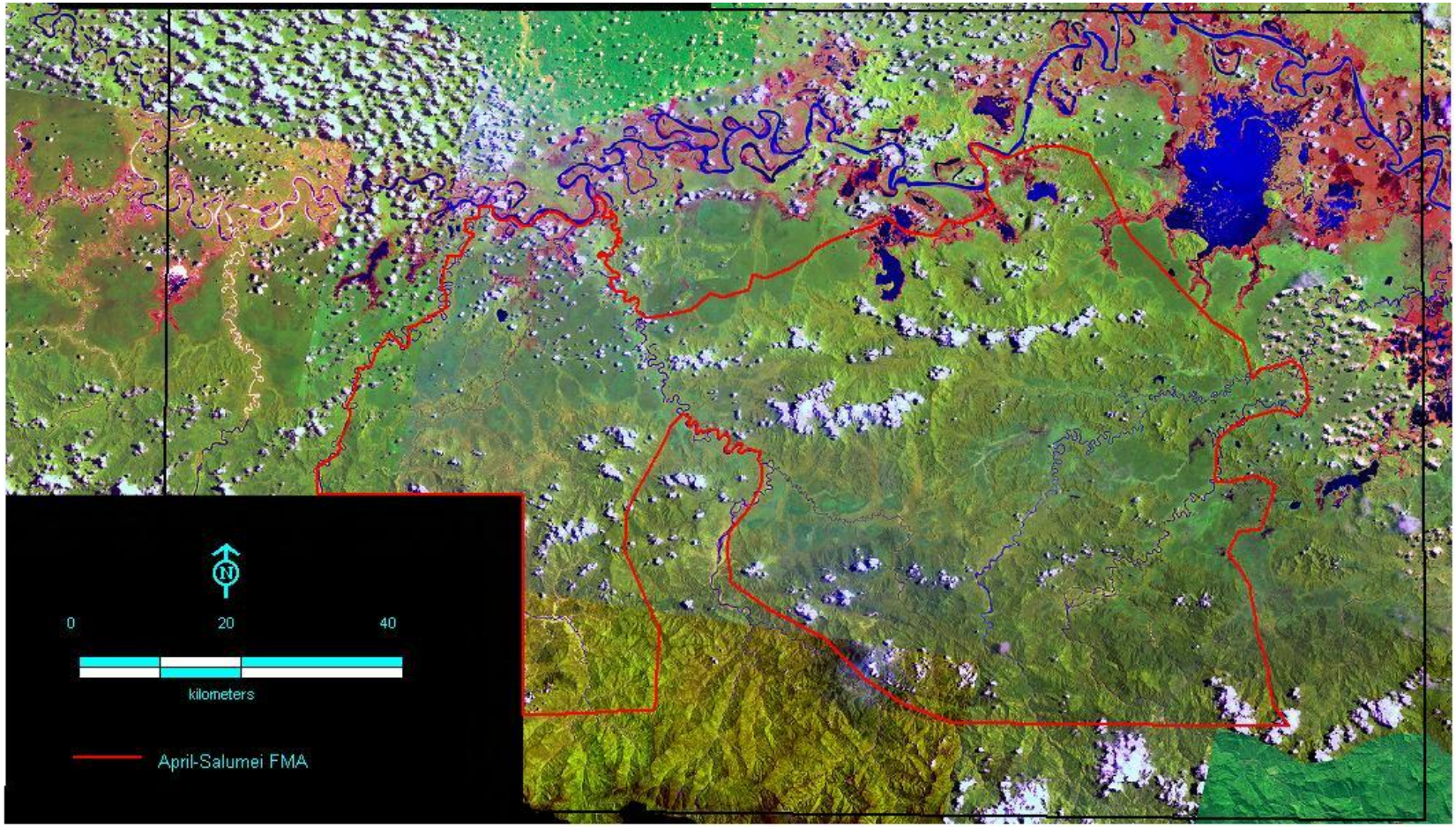
1990-2000			1990-2000		
Annual change 2000-2005	-	-	Annual change 2000-2005	2,000	2.44%
Total change 1990-2005	-	-	Total change 1990-2005	29,000	46.03%
Change in rate	-	-	Change in rate	0.50%	

TOTAL DEGRADATION/CONSERVATION (=Forest area + Wooded Area- Plantations)		
	Ha	%
Forest 1990	35,934,000	
Forest 2000	34,524,000	
Forest 2005	33,819,000	
Annual Change 1990-2000	(141,000)	-0.39
Annual change 2000-2005	(141,000)	-0.41%
Total change 1990-2005	(2,115,000)	-5.89%
Change in rate		4.08%

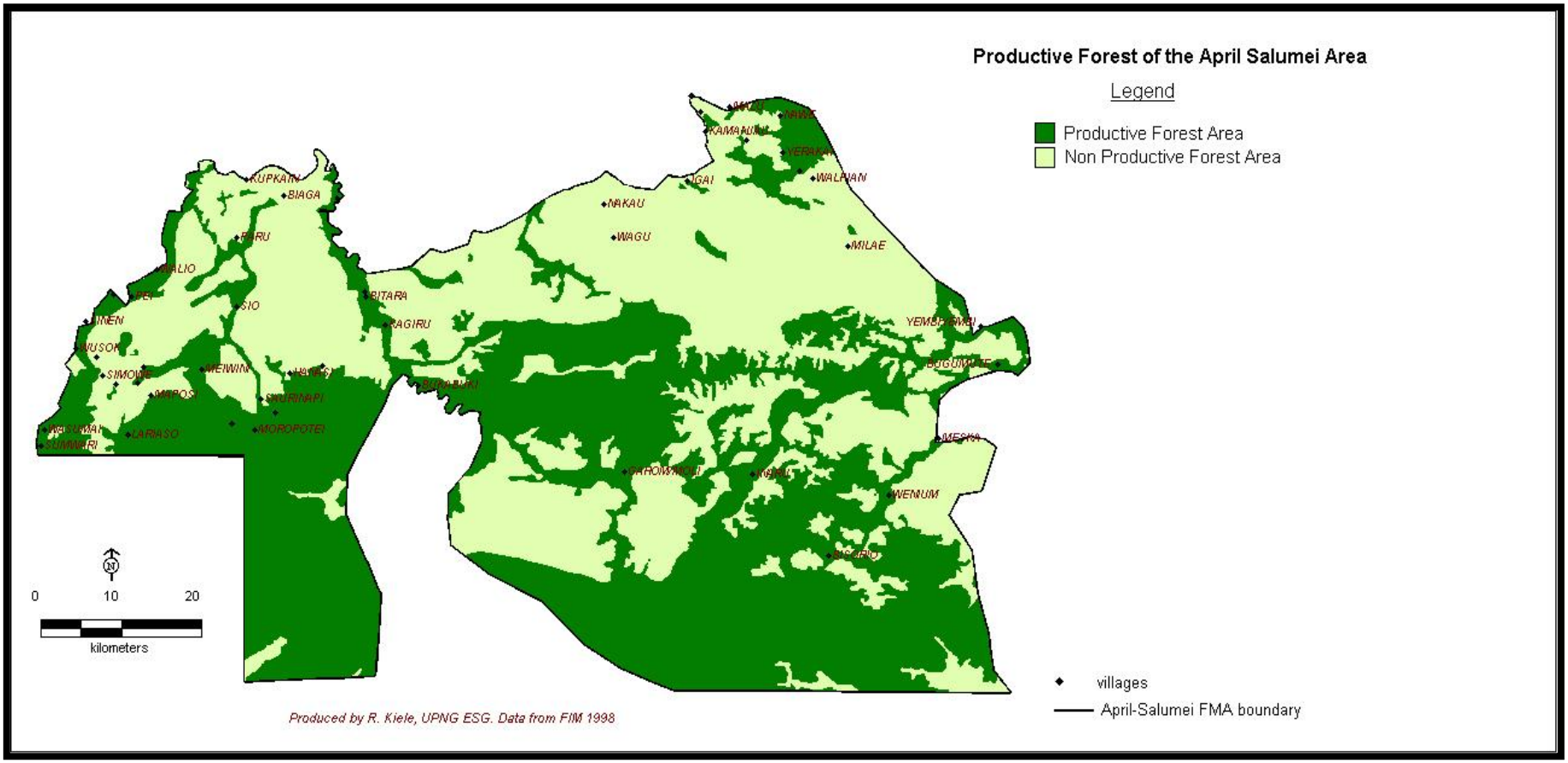
Table 13: Gross tonnes of CO2 Avoided by the development of the April Salumei Rainforest Preservation Project

IPCC LU/LC classes	FAO Ecological Zone	Land type	Description	Hectares	Area Logged in Forestry Management Agreement
Forest land	Tropical rainforest	Seral (Succession) & Swamp Forest	Not accessible for logging	76,688	Area not Logged
Grass land	Tropical rainforest	Swamp Forest	Not Forest	11,006	Area Not logged
Forest land	Tropical rainforest	Low altitude forest on uplands	Forest	297,260	103,865
Forest land	Tropical rainforest	Lower Montane Forest	Forest	9,279	3,223
Forest land	Tropical rainforest	Low altitude forests on plains & fans	Forest	45,132	15,675
Forest land	Tropical rainforest	Woodland	also meets definition of forest	80,206	27,857
		TOTAL		519,571	150,620

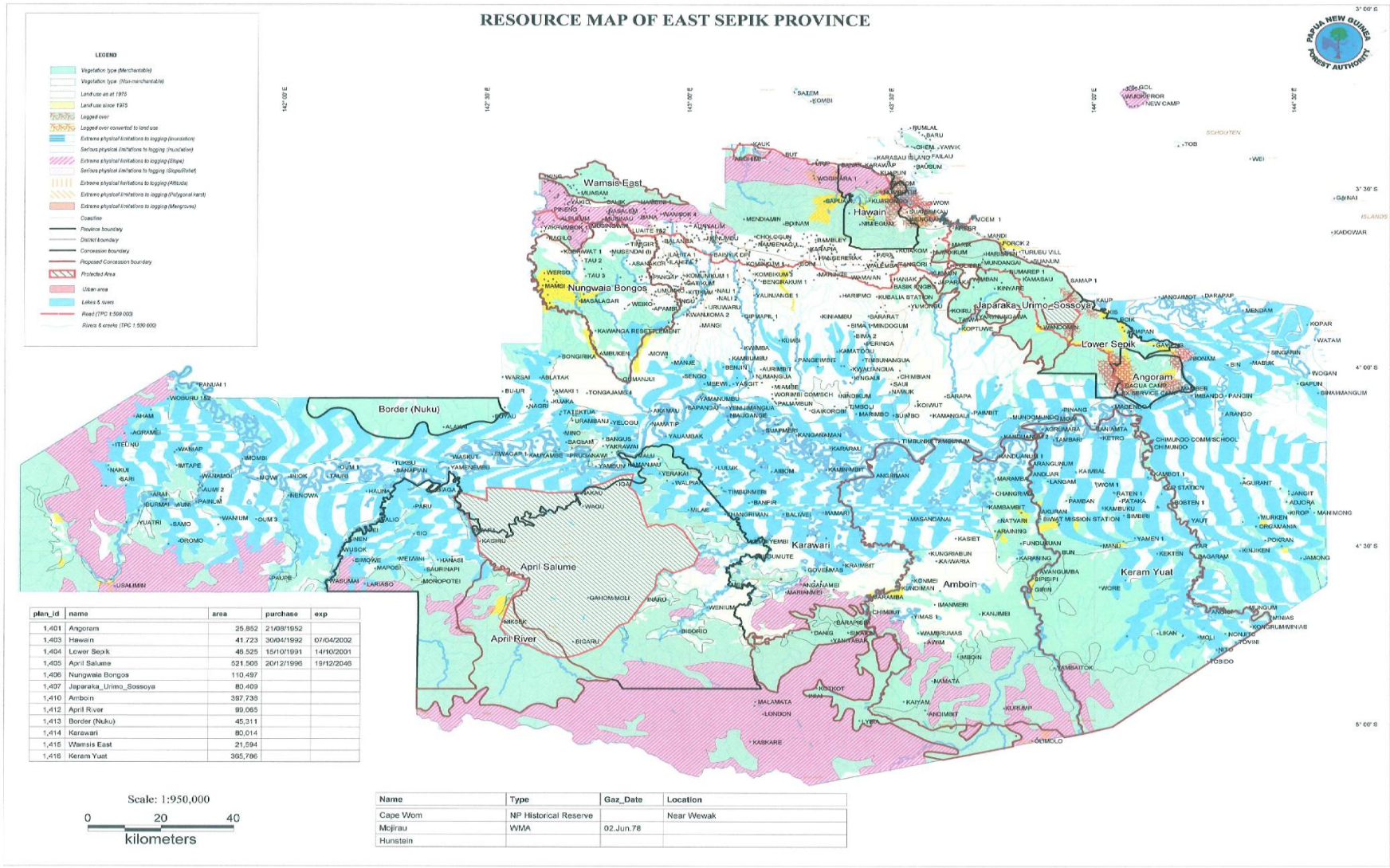
MAP 15: Landsat Map showing Project Boundary (Source PNGRIS 2009)



Map 16: April Salumei FMA Productive Forest Areas Vs Non-Productive Forest areas (Source PNGRIS 2007)



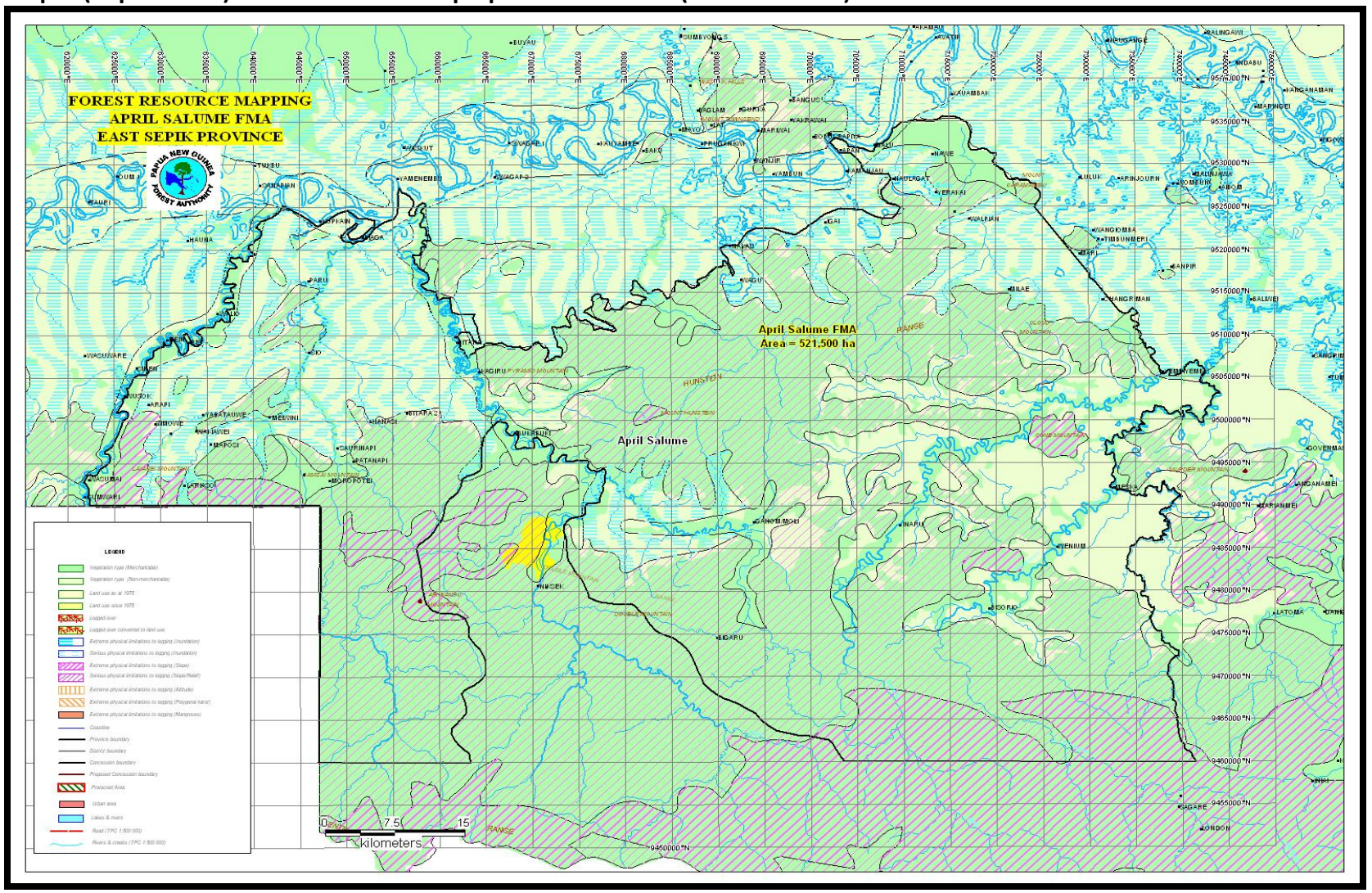
Map 17 : Forestry Resource Map East Sepik Province (Source PNGFA)



plan_id	name	area	purchase	exp
1,401	Angoram	25,852	21/08/1952	
1,403	Hawain	41,723	30/04/1992	07/04/2002
1,404	Lower Sepik	48,525	15/10/1991	14/10/2001
1,405	April Salume	521,503	20/12/1996	19/12/2046
1,406	Nungwaia Bongos	110,497		
1,407	Japaraka_Urimo_Sossoya	80,409		
1,410	Amboin	397,739		
1,412	April River	99,065		
1,413	Border (Nuku)	45,311		
1,414	Karawari	80,014		
1,415	Wamsis East	21,594		
1,416	Keram Yuat	365,786		

Name	Type	Gaz_Date	Location
Cape Wom	NP Historical Reserve		Near Wewak
Mojirau	WMA	02.Jun.78	
Hunstein			

Map 6: (Reproduced) Forest Resource Map April Salumei FMA (Source PNGFA)



G2.4 Baseline community

If REDD does not become the preferred developmental option for the area, thus the baseline scenario, the area will most likely follow the path taken by most forest resource owners, i.e. down the logging route. The area will witness major forest habitat destruction and fragmentation, posing immediate threat to the viability of many species in the area. The loss of forest cover implies a loss of habitat, biodiversity and the environmental services that the forest provides. Massive degradation of forest cover will affect the conservation of the soils and also disturbs the ecological processes on a larger scale. The impacts on the communities within the area will also be massive, as it has been a rather isolated, close-knit community.

It is generally understood that the key benefit to landowners from logging , that of direct royalties or premium payments, has done little to improve the quality of life for people in rural PNG as the funds are usually wasted or misused[44]. Unfortunately, the more indirect benefits of infrastructure development on rural life have been little studied, especially quantitatively.

An additional evaluation of the Independent Review Team assessments of the large-scale logging industry found that fulfilment of infrastructure obligations was generally poor[45]. Examples of failures in infrastructure obligations include:

- Roads constructed only to a standard to support logging and not the correct standard for long term vehicle usage i.e. permanent bridges or culverts;
- Substandard construction of buildings, such as health clinics and school class rooms;
- Water supplies not provided.

It was also concluded that some infrastructure has been developed, but it is generally only planned around logging requirements and is not maintained after logging ceases. Lasting infrastructure that does accrue is off-set by the social and environmental cost borne primarily at the local level. This supports our assumptions that the Landowners would likely to have received little or no positive benefits from the logging project.

Additionally, the Wildlife Management Area (WMA) has shown little or no benefits to the Landowners. The commercial sale of the carbon credits will allow for infrastructure to be built that will allow for the development of sustainable projects within the project zone. This has seen the landowners mount a legal challenge to the WMA recently with a view to reconsider logging in a desperate attempt to provide income.

[44] Forest Trends (2006)
[45] Greenpeace Preserving Paradise (2008)

G2.5 Baseline biodiversity

Net Positive Biodiversity Impacts

Should the logging project go ahead, the impact on biodiversity in the area would be devastating.

Papua New Guinea is clearly one of the last biological frontiers, and PNG is privileged to have much of its natural ecosystems still in very pristine condition. As such, we have excellent opportunities to preserve some of the planets remaining natural habitats and the biological diversity that they harbour.

The April-Salumei area is a perfect choice for conservation for the reasons outlined below:

(i) It is isolated and the area is generally sparsely populated.

(ii) It comprises a broad range of habitats, from the wetland areas of the Sepik flood-plains to the montane forests on the lower slopes of the New Guinea Central Cordillera.

(iii) The various ecological zones within the area are generally still intact, but under threat from various activities in the nearby areas and also from other competing land uses, e.g. logging.

(iv) The area lies within one of New Guinea's important centres of biological diversity and endemism, as shown by plants (van Welzen 1997), freshwater fish (Heads 2002) and other groups of fauna. The Sepik, Ramu and Markham rivers form a large basin, more or less separating the coastal Mountain Ranges to the North and the Central Mountain Cordillera in the south, all three represent important areas of endemism of New Guinea's biodiversity.

(v) Conserving the April-Salumei area is conserving a significant portion of PNG's biological diversity.

The establishment of this and other potential REDD projects will save a significant portion of PNG's biological wealth from loss through logging and other follow-up land developments, e.g. agriculture (especially Palm Oil). This development option for the April-Salumei Area has clear and compelling biodiversity benefits, compared to other options.

The area qualifies as a High Conservation Value Forest (HCVF), characterized by its high biodiversity and endemism, and also by the fact that it is home to a number of species of fauna and flora that are listed in either the IUCN Red List or in the CITES Appendices (I, II & III).

As discussed in G 1.7, of the species listed in Table 6, six species of birds are listed in Appendix II of CITES and one species in Appendix I (Palm Cockatoo: *Proposciger aterrinus*). For plants, all the Orchidaceae species are listed in Appendix II, while the genus *Paphiopedilum* are listed in Appendix I. One of the most spectacular New Guinea orchids is the Sepik Blue (*Dendrobium lasianthera*), though not endemic it is quite common along the Sepik River.

Another economically important plant present in the area, which was recently listed in CITES Appendix II, is the Eaglewood or Agarwood producing tree *Gyrinops ledermanii*. From about the mid 1990s PNG joined other Asian countries as a significant producer and exporter of Eaglewood, with most of the wood initially coming from the two Sepik Provinces. The Hunstein Range was initially one of the main Eaglewood producing areas. The listing of the above species of flora and fauna certainly elevates the area as a high conservation priority, thus adding to the net positive biodiversity impacts of the proposed project. Further justifications for priority conservation of this area are discussed in G 1.7 – Current Biodiversity within the Project Zone.

The baseline scenario "without project" is not difficult to imagine, as the evidence of logging impacts can be seen throughout the country. In some Provinces e.g. West New Britain, West Sepik, Morobe, Gulf, Western where large areas of forests have been logged with promises of improved living standards and infrastructural developments, the reality is that all that is left after the timber has been extracted is misery, poorer living standards (very often worse than pre-logging days), degraded environment and loss of biodiversity. For comparison, we don't need to look far, just over the border to the West Sepik Province where large areas of pristine forest were trashed by logging with part of this being converted to Palm Oil plantations. The Bewani Mountains were known for high species diversity and endemism of certain groups of flora and fauna, currently that is now mostly lost owing to habitat loss or fragmentation. In fact for Palms (Family Arecaceae), the Bewani and surrounding lowland areas were well known as New Guinea's centre of palm diversity and endemism, we have now lost the opportunity to identify and scientifically name them, together with the ability to discover their potential uses to mankind and the environment.

Logging and mining activities have been known to be responsible for the greater percentage of accidental introduction of foreign invasive species. Unfortunately, the threat from introduced invasive species is unfortunately often over-looked or under-estimated in PNG. The Sepik flood-plain wetlands is quite a vulnerable ecosystem, and any introduction of invasive species can easily and quickly destabilize the wetland ecosystems, as recently experienced with the free-floating fern *Salvinia molesta*. Fortunately, the problem was contained through the use of biological control. Logging machinery has been responsible for introducing many invasive plant species, and should logging become the preferred option for the area, introduction of new invasive species to the area are a sure possibility. Furthermore, the influx of people into the area could

also lead to introduction of invasive species, unless strict controls are established from the outset.

The current trend of “Integrated Rural Development Projects”, where land is acquired for agricultural projects such as Oil Palm, with the timber being removed and exported by clear-felling and the planting of crops do not provide real success stories to showcase this scheme. Some actually planted the crops, but abandoned the area soon after, while some never planted any agricultural crops at all. It is so obvious that all they wanted was the timber, using agricultural development only as a pretext to create a logging operation.

Developing a successful REDD project in the April-Salumei Area will certainly encourage other landowners to follow this development option for their forest resources, as it is clearly a better and more sustainable development option. The net result is that the landowners and government benefit economically, the forests and biodiversity is conserved, a real win-win situation for all.

G3. Project Design and Goals

G3.1 Major Climate, Community and Biodiversity Objectives

The major goal of the April Salumei Sustainable Forest Management Project is to prevent the commercial logging of the project area and to assist the development of sustainable projects for local communities by the development of infrastructure, accessibility and communications.

Other major objectives that will flow from this are:

Community

- Improved health standards within the area,
- Improved education opportunities and assistance with tertiary studies for students within the project area.
- Development of communications within the project area.
- Development of road and river infrastructure into the project zone to allow the movement of goods and services,
- Creation of employment within the project zone by utilizing the local stewards.
- The creation of long term community support for the conservation of the Forests and wildlife through ongoing educational programs developed for schools.
- Development of mechanisms through consultation to ensure the equitable and transparent distribution of benefits to all stakeholders.

Climate

- Long-term protection and conservation of the April Salumei Primary Rainforest area, leading to (based on current Tier 1 estimates. avoided emissions of 33,934,761 tonnes of CO_2 to the atmosphere over the project life,
- Utilisation of the commercial viability of carbon markets to generate income for landowners.

Biodiversity

- The preservation of the project area to contribute to species conservation in one of the ten most important biodiversity hotspots on earth.
- The Prevention of loss of habitat due to logging and assistance with the preservation of HCV species to maximize biodiversity values
- Development of sustainable projects with the goal of assuring long-term sustainable livelihoods, positive environmental and economic measures for the people in the East Sepik province and neighbouring areas.
- Investment of the proceeds of carbon projects back into alternative livelihood creation for people in the surrounding areas so that pressure on the forest with regard to indiscriminate commercial activity is removed

- Management of the conservation benefits of the project through the identification, training and employment of Climate, Community and Biodiversity Stewards from within the project zone. See Monitoring Plans.

G3.2 Major Project Activities

Following consultation in the villages the landowner company Hunstein Range Holdings has formulated the following priority projects for the FMA.

Below is an extract from their documentation on the projects.

Renovation of "White House" at Ambunti

"The building at Ambunti was earmarked to be used by the Landowner Company as the field operations management and coordination centre for the April Salumei FMA resource area. This will become the community centre for the project controls. The whole building needs urgent renovation to make the place useable and liveable. There is no electrical power generation unit; electrical wiring has been ripped out, no water supply and no telephone wiring or connections.

Once the centre is fully renovated, it will serve as the heart of field operations for the four Landowner Companies. HRHL will provide the daily management and coordination services to the four Landowner Companies. It is therefore critical that the renovation job is completed as soon as possible".

Photo: White House – Ambunti

Resource Center Complex

"The idea of a Resource Centre stems from the need to establish a multipurpose venue where information is disseminated, stored, exchanged, skills and technology are demonstrated ready for adoption and distribution. It will become a communication centre where resource owners interact with the outside world for the enhancement of appropriate skills and technology.

The Resource Centre will comprise a building for meeting and accommodation for guests. At the start this will be of a semi-permanent material but in time will be of a more permanent material of an appropriate design to include a meeting room, storeroom, and an office & communication room. The set up of technologies such as V-sat communication, hydropower, solar power, wind power, model farms & fishing cultures as well as practical training for eco-tourism and landscaping with local fauna and flora are intended to be incorporated. These and many more ideas become the key features of the Resource Center".

Note. Resource centres will be built in all 4 tribal areas so as to provide equal opportunity and recognition to all.

Upgrading of Education Levels – Human Resource Development

"During the field trip and upon talking to the communities, it became obvious that literacy levels at the village had not changed much over the last ten years or so. Many children are wandering about in the villages with little opportunity to continue their education. Quite a large proportion had dropped off after grade 6/ 7 with only a few having had the opportunity to progress to grades 10 or 12.

In an era when the communities of April Salumei Forest Resource have agreed to partake in the new concept of carbon trading, it is of paramount importance that literacy levels at this level are boosted. We would like to achieve minimum education levels of grade 12 for the majority of youths and children in rural villages. With this there is fair chance that the ongoing education relating to GHG, Climate Change mitigation and Carbon Sequestration will be taught to future generations in school. The community will continue to become more informed as they are educated to understand and translate the need to conserve their forest by utilizing eco-friendly technology to sustain their livelihood.

Tertiary scholarships will also be established to ensure our people are trained with the necessary skills and education to lead our area".

Improvement in Health Facilities and Services

"Mortality rates in the resource area is high and is attributed to poor to nil health services.Small children, infants and mothers are the usual victims of poor health services. Services and health facilities to isolated areas are limited or nil due to lack of a health extension program from the government administration. The community must venture to maintain a healthy workforce within the resource area. A review of needs will be

undertaken and a health project plan will be developed. This will be in consultation with the Landowner Companies proposed plans for the area. Cost estimates will include for the setting up of buildings in close proximity to the four resource centres and will be equipped with medical supplies".

Improvement in Access to the project area – River and Land Transport

"Lack of mobility along the Sepik River and its tributaries and within the April Salumei FMA can cause hindrances to project programs and transfer of information. Landowner Company officials and technical specialists must be able to move throughout the project area with ease. It is especially vital at this stage in the process of setting up Resource Centres especially the movement of materials back and forth between work locations.

Each of the four Landowner companies needs equipping with a 23-foot dinghy, an outboard motor of 40 horse power capacity and appropriate road transport. Road transport will allow accessibility between Pagwi and other main centres to pick up supplies or deliver company personnel and resource owners for business commitments. A lot of work can be done more quickly and in a timely manner given this provision for mobility".

Photo: Sepik River Transport

Establishment & Improvement of the Communication Network - V-Sat Technology

"The present communication network using the mobile system provided by B Mobile and Digicel is not effective in the resource area. Network coverage is either erratic or nonexistent in the resource area. Communication is a vital element for relaying information throughout the project area from within or outside. It was suggested by the Board of Directors for the four Landowner Companies that V-Sat communication technology promoted by Telicom PNG will be an ideal setup for the entire resource area. A single set-up has five LAN lines and one internet line``

We believe it is imperative that the landowners determine the rate of change in their own environments. It is not the role of the project developer to impose their ideals on the people from the project area.

The communities within the area must be the drivers of change. Following this philosophy we have developed methodologies and policy to encourage the stakeholders to seek funds for development in their areas.

We have three platforms of investment. Education, Health and Enterprise. The development of education and health projects into the area will be combined with the current government policies and plans.

Enterprise which includes infrastructure will be driven largely from the landowners themselves.

Additional projects identified for consideration by the landowners include:

- Coco production
- Fishery management
- Eco tourism projects
- Sago production
- Community Housing including the upgrading of existing facilities

These projects will be submitted to the board of the project and will be based on predetermined assessment criteria. This will involve the approval from all relevant government departments to ensure consistency with their development plans and support from the community stewards from the project area.

Ambunti-Drekiker Road

A major project to be implemented is the building of the Ambunti-Drekiker road. This is a 161 Km road project that will connect the Sepik Highway to the villages in some of the remotest parts of the Ambunti–Drekiker area of East Sepik Province.

We believe this road will be vital to promote commercial trade opportunities for local producers, assisting them in transporting produce to market. Access to these markets will be a major factor in creating a sustainable environment for local communities.

Development of Curriculums for Schools
The project will also develop a curriculum for local schools in association with the education department. We believe it is important for schools to support traditional learning on biodiversity and climate change. Traditional values and ways of life should be learnt and respected as changes take place in the everyday life of the FMA.

Teaching the children of today about the projects aims and objectives will ensure that when they become the community leaders of tomorrow they will understand its value.

Updating of ILG's and Mapping Boundaries.
As discussed previously traditional landowners register their land through the formation of Incorporated landowner Groups (ILG's). The cost of updating the ILG's is most often too great for the individual ILG to bear (see average yearly incomes). As time passes ILG members change with births and deaths. A major project activity is to constantly update all ILG's and map their boundaries. We believe this will take 3 to 4 years to complete, however, once it is done it will provide what will be possibly the most robust database and understanding of traditional landownership in PNG.

10 Year Plan.
The local member Tony Aimo has developed a 10 year District plan. This is consistent with the PNG National Governments plans. It specifically outlines the requirements for Health and Education. The project foundation will fund the plan.

Project Stewards
A key component of ongoing community involvement with the project involves the identification, training and employment of project Stewards. As outlined in the monitoring plan, Community, Biodiversity and Climate Stewards will be employed. These stewards will be trained in the gathering of essential data to assist the ongoing monitoring of the project at the community level. This data will be collated and fed into the formal ongoing verification process every five years.

On an annual basis suitably qualified people will assist the respective stewards to undertake a complete review and analysis of their respective area.
These stewards will also receive training in conflict resolution and will utilise the Resource Centres that will be established as a work base.

Community Auxiliary Policing
The community auxiliary policing programme has gained momentum in recent years as police and community leaders search for more effective ways to promote public safety and to enhance the quality of life in their neighbourhoods and in PNG.

The Community auxiliary policing encompasses a variety of philosophical and practical approaches and are still evolving rapidly. Community policing strategies vary depending on the needs and responses of the communities involved; however, certain basic principles and considerations are common to all community policing efforts.

The project will trial the development of community auxiliary policing in the project area. More details on this imitative are available for inspection by the validator.

Papua New Guinea Vision 2050
Consistent with Papua New Guineas Vision 2050 the following activities are linked to the performance criteria of the Community Stewards and Project Superintendents.
(The reference numbers following are relative the actual Vision 2050)

1.17.2 Education
1.17.2.1 Free and Universal education for all school-age children from Elementary to Grade 12.
1.17.2.2 100% literacy for the adult population over 15 years of age.
Literacy levels will also be monitored to ensure continuous improvement in the community.
1.17.2.17 Establish public-private partnerships in the delivering of education.
1.17.2.18 Introduce Environmental sustainability and climate change as school subjects into the National Curriculum. (We have already stated an objective of ours is to establish curriculum that represents the cultural and traditional values of the local communities.)Climate Change and Environmental Sustainability curriculum would also be established.

1.17.3 Health
1.17.3.1 Reduce HIV AIDS prevalence from 1.28 percent of the population aged 15-49 to 0.1 percent.
1.17.3.2 Reduce tuberculosis prevalence from 51 per 100,000 to 10 per 100,000 of the population.
1.17.3.2 Reduce malaria deaths from 51 per 100,000 to 10 per 100,000 of the population.
Reduction of specific illness and infection such as these will become key measurements of the health Superintendent.
1.17.3.5 Establish one aid post per ward area.
1.17.3.6 Provide two health workers per ward area
1.17.3.7 Establish one basic health service centre with two doctors and support personnel per district;
These objectives have been integrated into our health outcomes.
1.17.3.8 Improve the terms and conditions of employment of health officers.

1.17.7.3 Infrastructure and Utilities

1.17.7.3.1 Increase the national road network from the current 25,000 km to complete road networks throughout Papua New Guinea.

1.17.7.3.4 Increase the availability of rural electrification from 15% to 100%

1.17.7.3.5 Increase access to clean water from 39% to 100%

1.17.7.3.6 Increase communication access from 10% to 100% of the population.

G3.3 Location of Project Activities

The April Salumei Forest Management area (FMA) is located within the district of Ambunti in the province of East Sepik. The location of the Central Resource Centre and Project Head Office will be the Whitehouse in Ambunti as this is the district centre.

The location of the additional four Resource Centres are planned to be in the villages of Yembi Yembi, Yerakai, Kaigaru and Sio.

Individual projects will be developed by the communities and assessed on a case by case basis. Given the project has not commenced and the applications for landowner projects has not been made available nor have any been assessed so we are unable to determine the location of the specific projects not yet approved at this stage. Mapping and monitoring of all activities will occur to support future verification requirements. Please refer to the District 10 year plan for further details.

G3.4 Time-frame and Project Accounting

Project proponents use a time-frame of 20 years to account for changes in carbon emissions between the baseline and project scenarios.

This time interval permits a reasonable estimation of medium term (20 years) of baseline and carbon accounting, and ensures the longevity of carbon credits for a period of time that is relevant for climate change and atmospheric CO2 levels.

The starting date of the April Salumei Sustainable Forest Management Project is deemed to be the month and year the activities are due to commence, June 2010. This will also be the start date for the project crediting period.

End date for the crediting period: April 2030. This is the end date for the baseline projections used in calculating the carbon stocks and dynamics.

We believe up to 2010 there was extensive awareness and consultation between stakeholder's government and the project developer (see G3.8). However the activities are planned to start following validation scheduled for May 2010.

Throughout the crediting period there will be periodic certifications performed by an accredited CCB Standards certifying organisation. These certifications will verify that the carbon remaining in the Project is consistent with the values expected at the start of the Project. These certifications will be performed after obtaining the initial validation and every five years thereafter.

We have provided the Validator with a Project Activity Timeline that outlines these activities. We have also stated previously it is the intention of the project developer to move to a higher tier of certification as the data and capacity is established with local technical experts.

G3.5 Project Risks and Mitigation Measures

- Changes in Legislation or Government. As the pilot project for Papua New Guinea the project has received approvals from all relevant bodies including, Prime Ministers Department, Forestry Department and Department Environment and Conservation. If there was to be any changes they could not be made retrospective and would take into account the existing project.

- Land ownership – Landowners are now registered through an Incorporated Land Group (ILG) where land boundaries are recognised by the Government of PNG through the Department of Lands and Physical Planning. Through this arrangement, landowners will be provided with compensation or benefits in kind and project risk will be minimal. An updating and mapping of all ILG's in the project area will be undertaken immediately following the projects validation.

- Intrusion of third parties - The area is quite remote and sparsely populated. The proposed Frieda Copper project is undergoing detailed feasibility studies and there is a possibility of villagers migrating to the area. This will be monitored and any intrusions documented and addressed based on their merit.

- Development of commercial mining in the region - Frieda Copper/Gold project is situated in the upper tributaries of the Frieda River and is located 60 kms North West of April River or 110 kms south west of Ambunti. It is on the border of the East and West Sepik provinces and is contained within EL 58. It is undergoing detailed feasibility and project studies where a tailings dam to contain the mine tailings is being envisaged for this project.[46] This will be monitored closely, there has already

[46] http://www.highlandspacific.com/projects. Accessed 3/4/10.

been some dialogue between representatives from the mine and the project developers. All discussions will be recorded and should any issues arise the Environmental Act 2000 can be referenced.

- Traditional hunting groups from other provinces have migrated to the FMA areas but only for short periods (up to 3-6 months). Will be monitored and recorded as part of the Biodiversity Stewards role.

- Conversion of the primary forest to plantations – Landowners will not convert primary forests from the carbon accounting area into land for cultivation. Landowners are committed to conserve the primary forest.

- Population pressure leading to increased land for shifting cultivation. Regular burning also occurs which besides a hunting technique also improves soil fertility for fresh pasture for fauna, however continuous burning will increase the growth of nuisance grass, most likely kunai (*Imperia cylindrica*) and other grass species such as *Thermada australias and* minor shrubs (Shermann et al 1999). The developer considers there is sufficient room for agriculture expansion within the surrounding areas and the carbon accounting area will be preserved.

- Alluvial gold and village based alluvial gold workings in April River, Yerakai, Gahom and Freida River. Very low to no impact expected, however will be monitored and documented.

G3.6 Maintenance of High Conservation Values

As this is a forest conservation project, it is anticipated that there will be no negative impact on the high conservation values but rather a positive impact due to habitat protection. Nevertheless, the HCV will be monitored through the biodiversity impact monitoring plan and any negative impact will be resolved in an appropriate and timely matter.
The project will have 4 dedicated Biodiversity Stewards, each with two assistants, that have the responsibility to monitor the project on a daily basis and will report monthly. Any exceptions or activities that are found to have a negative impact on HCV's are required to be reported immediately.

An annual review will also be undertaken (see monitoring plans) by a suitably qualified expert and post graduate team from UPNG.

Please refer to the companies High Conservation Value Policy for further information.

G3.7 Measures Taken to Enhance Climate, Community, Biodiversity Benefits

As the pilot REDD project for Papua New Guinea special significance will be placed on this project and area.
Climate benefits are immediate in the removal of the threat of logging from the project area. The continued undisturbed growth of this pristine forest and ecosystem will generate essentially a world class preserved ecosystem.

As the landowners will be paid for the carbon sequestration benefits of their land the threat of logging will be removed. This will impact positively to remove the threat and improve biodiversity and communities. They will also be able to afford to continue their traditional lifestyle past the project timeline, further enhancing local sustainability.

Traditional areas of cultural significance and tribal customs will be maintained as the need for people to move from the area to find work and to attend schooling will also be reduced.

Underpinning the project's design is the aim to provide the infrastructure to allow and assist with the development of sustainable enterprise within the project zone. This enterprise coupled with the development of infrastructure will allow movement of goods and services for trade and sale to take place, further assisting the local people to derive an income.

PNG is the most bio-diverse island in the world. The removal of the potential loss of habitat through logging will obviously produce significant benefits to the areas unique biodiversity.

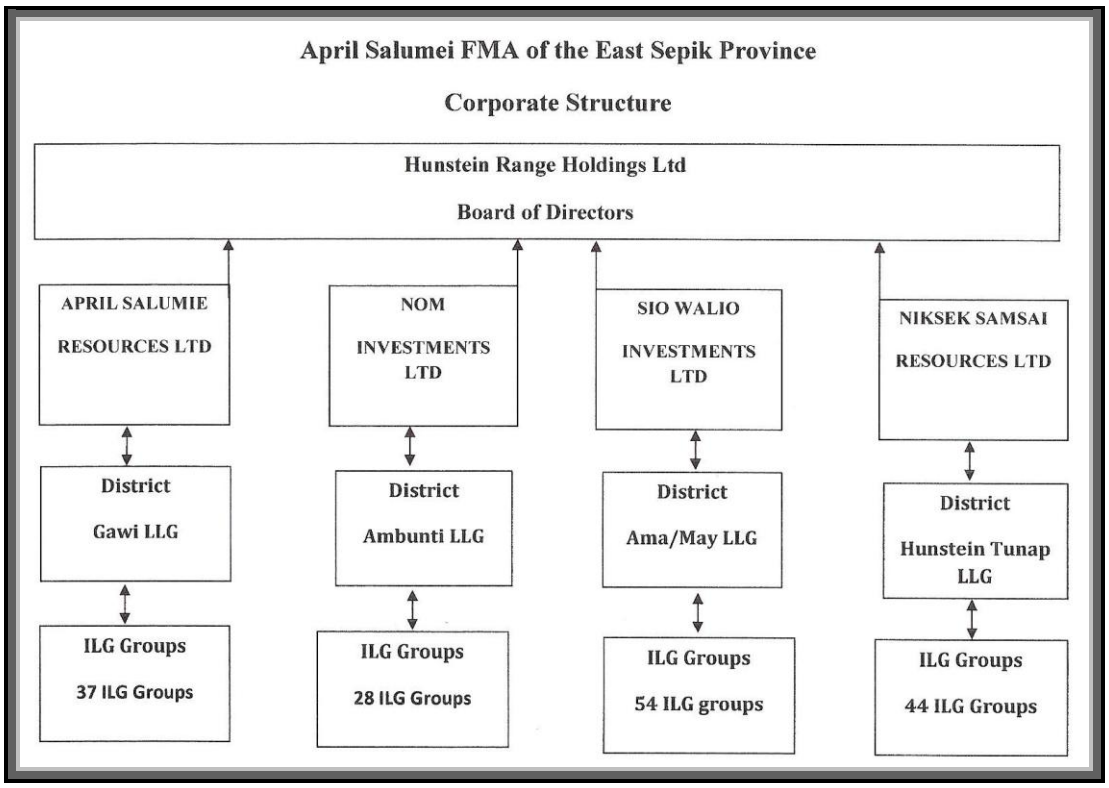
The net climate impact of the project is the net change in carbon stocks plus net change in non-CO2 GHGs where appropriate, minus any other GHG emissions resulting from project activities ,minus any likely project related unmitigated negative offsite climate impacts. The project will contribute net positive climate impact; due to the combination of avoided deforestation on the one hand and an additional timber plantation on the other. The timber plantation will prevent additional leakage and guarantees through sustainable management the supply of the same amount of logs that would have been logged within the project area

The PNG Forest Authority New Forestry and Climate Change Framework 2009-2015 includes important adaptation policies and outputs for two reasons; firstly because of their vulnerability and secondly because of their potential to help reduce the vulnerability of society to climate change. Many socioeconomic sectors (e.g. hydropower or drinking water) are highly vulnerable to climate change and dependent on forest ecosystem services. Thus, an option to help maintain these sectors is the conservation and adaptive management of forests providing relevant ecosystem

services. The new policy framework which embraces adaptation polices will make these important linkages with forestry and adaptation sectors such as water, energy, health and education in terms of research and training and capacity building for communities.

G3.8 Stakeholder Involvement

The April – Salumei FMA area has 163 Incorporated Land Groups (ILG)s that come under an umbrella landowner company, Hunstein Range Holdings Ltd. Under this are four landowner companies; April Salumei Investments Ltd, Sio Walio Investments Ltd, Nom Investments Ltd and Niksek Samsai Resources Ltd. They represent ILGs from the Gawi, Ambunti, Ama/May and Hunstein Tunap LLG areas. Tack Realty (2004) stated that 30 ILG groups from the April River LLG refused to sign during the structuring of the FMA. Those thirty ILG's have now signed the agreement as an individual ILG and have given consent to Niksek Samsai to act on their behalf in respect to the project.



Hunstein Range Holdings Limited operates as the representative holding company with the chairman from each of the four ILG groups sitting on the board of Hunstein Range Holdings Limited. The office of Hunstein Range Holdings is at PO Box 879, Port Moresby 121, National Capital District, Papua New Guinea, its Company Number is: 1-22140.

During the extensive awareness and consultation program a number of activities were implemented to invite comments and input from stakeholders.
These include;

- Initial discussions of potential project by HRH to Office Climate Change (OCC)
- Initial discussions between HRH OCC and prospective developer.
- Public Notice of initial Meeting – April 30 2009
- Public awareness meetings held in Wewak, Yaraki, Wagu and Bugabugi - May 2009
- Community Meetings including, District Administrator, East Sepik Council of Women, Local Level Government officers, HELP Resources a local NGO and various faith based organisations in October 2009,
- Individual signing of consent with 163 individual ILG's in English and Pidgeon.
- Planning meeting with Landowner Company Chairman to identify priority projects and discuss project structure – November 2009 to January 2010.
- Landowner Company and ILG Chairman meetings held in the villages Jan 2010
- HRH Executive meeting in Wewak to finalise priority projects – Jan 2010.
- Further awareness in local villages from project developer to discuss projects and provide additional awareness.
- Per-assessment with SCS - March 2010
- Further Individual awareness by Landowner Company Chairman April 2010.
- Final awareness and compensation agreement to be completed in June 2010. This includes the distribution of a project booklet to all ILG's.

Once the project receives validation each of the 4 landowner companies will have a Community Steward, Biodiversity Steward and Climate Steward (with their assistants) trained and employed by the project to monitor and report the respective project data and activities to their landowner group. This will ensure the continued involvement of the community with regard to the project and a regular (quarterly) meeting in each community will report on the project activities and will be held by these stewards.

Landowners are encouraged to apply for funding to support the development of sustainable enterprises within the project zone. These applications are assessed (please refer to the project assessment policy) and funding made available if the project is approved by the board.

All stakeholders including community groups and individuals are eligible for the enterprise funding opportunity.

Please refer to the Project Flowchart in Section G4 for further information.

The developer believes this representation at a local level and the direct responsibility of the Community Steward to monitor community involvement will ensure the interests and rights of all individuals within the project area and zone will be represented in an ongoing capacity with annual and quarterly reviews.

More qualified Health, Education and Enterprise Superintendents will be employed to link the project with government and provide specialist advice and experience in relation to the delivery of the project objectives.

Governance, decision making and mediation or conflict resolution at the village and community level in Papua New Guinea is greatly influenced by firstly the clan where the cheif will mediate in this matter. If a consensus in not researched, then this will be referred to a village court where there are peace officers and a magistrate to resolve this. Failing that, the ward councillor through the ILG process can arbitrate in this dispute. However, if that is not to the favour of all parties, then the option is to refer the matter to the local and district courts under the Magisterial Services. In most cases, the latter option requires lawyers for all parties and the financial resources to engage lawyers often do not allow the disputing parties to proceed.

G3.9 Publicizing the Public Comment Period

The Project Design Document will be posted on the CCBA website (http://www.climate-standards.org) and it will be open to comments from the public. The document will be also available to the public in hard copy during the public comment period, at our offices and will afford local stakeholders an opportunity to raise and address any issues.
The project management will attempt to solve all reasonable grievances raised, and provide a written response to grievances within 30 days. Grievances and project responses will be documented. Please refer to our Complaint and dispute resolution policy.
A media release was published on the Sunday 20th June. This was follow up by media releases in the national newspapers and public advertisements pleased in the two national papers.
Following this the project was launched on the CCB website and our own web site.
Copies of the PDD were also made available the Provincial offices in Wewak, the district office in Ambunti and the University of PNG Centre for Climate Change and Sustainable Development.
A final awareness trip was conducted in June with a copies of the PDD circulated to all stakeholders for comment.

G3.10 Conflict Resolution Tools

Conflicts identified at a community level will be reported to the community steward.

The community steward will have 14 days to resolve the conflict at the community level, firstly in discussion with the clan structure (see G3.8). If this dispute is not resolved to the satisfaction of the party or parties raising or involved in the dispute the individual

ILG dispute mediation process is to be utilized. If this resolution is not acceptable the matter is referred to the project manager for determination.

All project stewards will be trained in conflict resolution.

For conflicts occurring in the project zone a written complaint must be received by the ASSFMPF. ASSFMPF will endeavour to respond to all reasonable comments raised, and provide a written response to comments within 30 days. Comments and project responses will be documented.

Please refer to our Complaints Handling and Dispute Resolution Policy for further details.

G 3.11 Project Financial Support and Revenue

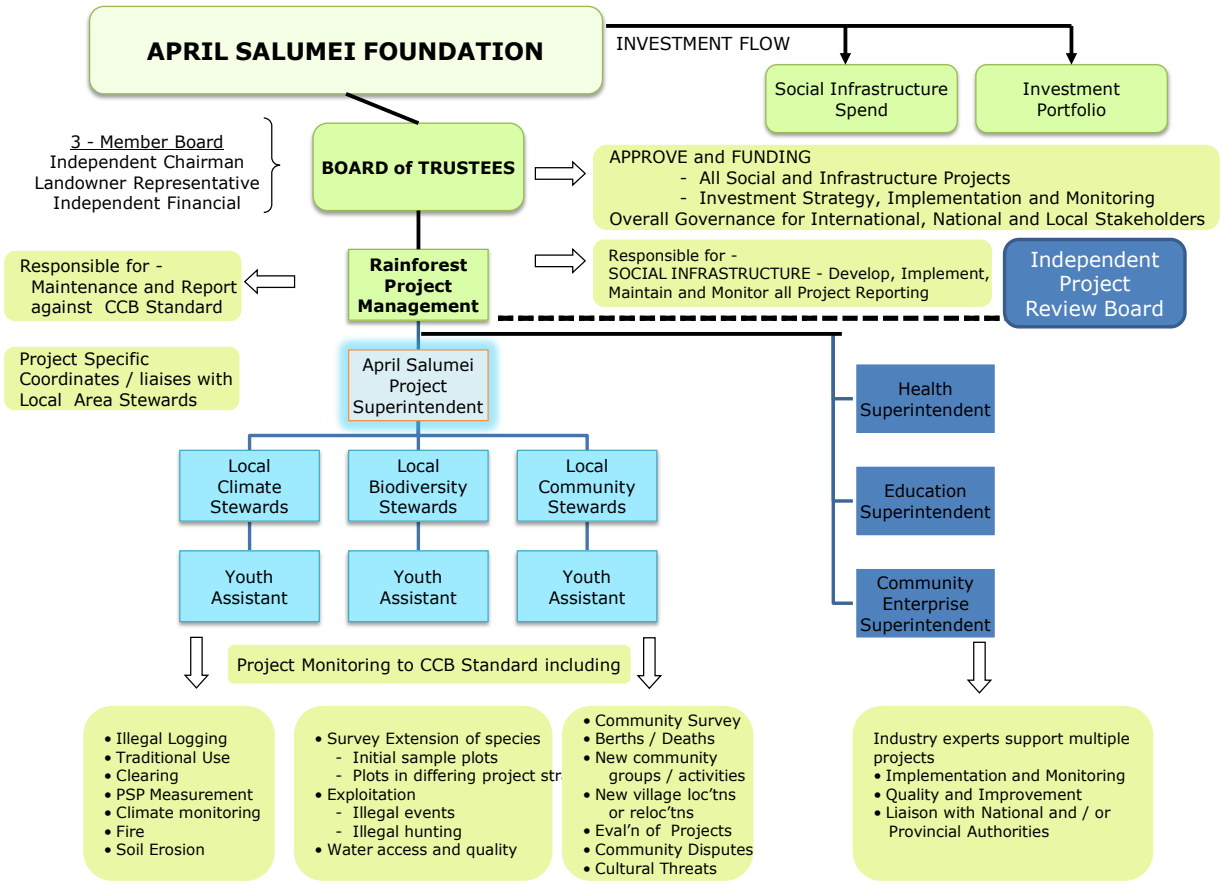
ASSFMPF is responsible for project implementation and performance. They will have the financial resources necessary to implement and manage this project.

Anticipated project costs include sample plot monitoring and data analysis, biodiversity sampling, periodic verification to an appropriate carbon accounting mechanism, and publication of the project. These costs will be covered by funds from the financial returns realised from the sale of carbon credits generated by this project.

More information including revenue and expense forecasts are available for review by the verifier during the site visit.

Section G4. Management Capacity and Best Practices

Project Flowchart



G4.1 Project Proponents

April Salumei Foundation- Board of Trustees

The April Salome Foundation Board of Trustees is responsible for the selection, and funding of projects with the proceeds from carbon credit sales. Landowners will submit project proposals to the foundation for funding. Once approved the foundation will then provide the funds for the project

The Board of Trustees includes a representative from the Landowner Company.

Rainforest Project Management Limited

Rainforest Project Management Limited (RPM) will support the April Salumei Foundation Board of Trustees to fulfil its responsibilities to the project.
RPM has a wide variety of ''on the ground'' relationships established through the ex involvement of its management in avoided deforestation projects in PNG.
RPM will provide a management structure and process to ensure the efficient implementation of the Foundations objectives and the projects approved by the foundation.
RPM will provide a diverse package of skills, through its team of employees, external consultants and external stakeholders including NGOs and Provincial and Federal representatives. The key responsibilities that it can manage on behalf of the April Salumei Foundation can be broken down into the following elements;

Key Roles:

- Provide experienced personnel to maintain and continuously report against CCB Standard for the Project Area
- Provide competent contractors and professionals to develop, implement and monitor the projects' Social Infrastructure Projects.

Project Implementation Support:

- Establish the above noted management structure with sufficient experience, depth and local availability to deliver on all required outcomes.
- Create a reporting process for the foundation that fulfils `Best Practice` objectives.
- Appoint sub teams and establish meeting and reporting processes for:
    - The Human Resource Team which will focus on local stakeholder employment, worker rights, worker safety and workplace issues.
    - The Land Owner / Community Interface Team to focus on the desired projects, project tracking and community issues.
    - The Health , Education and Community Enterprise Teams to act as industry expert liaisons to monitor desired Best Practice initiatives against local community outcomes experienced during the implementation and management of the projects
- Establish an Annual Planning Meeting to schedule and monitor Board, Management Team and Management sub team meetings.
- Develop and maintain a comprehensive set of Policies and Procedures
- Establish a strong culture focused on Social Outcomes, Respect and Empathy and Shared Financial Outcomes as demonstrated in the following table

More information is available at our web site www.rainforestmanagementalliance.org and at the validator's request further commercial and confidential details on our

Governance / Annual Meeting Planner Structure and our Policies and Procedures will be made available.

Landowner Representatives.

A key component of the project is the ongoing input and representation of the landowners. To achieve this following Community Interfaces will be implemented and developed;

Land Owner / Community Interface Team

Appointment of a minimum of 6 staff as each major population centre including Climate Steward, Climate Assistant, Biodiversity Steward, Biodiversity Assistant, Community Steward, Community Assistant

Regular Community meetings will be attended by RPM Superintendents of Health, Education and Community Enterprise

The local Climate, Biodiversity and Community Stewards will be employed to represent individual cultural and language groups. Each steward will also have a member from the community youth group to assist them.

The employment of local people will assist in ensuring local commitment and continuous feedback of the project activities to the community.

The stewards will also serve as representative members of the community along with the Landowner Company Chairman. This will help to ensure there are representative views from the greater community when project decisions are made.

All project applications are to be endorsed by the Stewards to ensure that representative views of the community are reflected in the projects to be developed.

Independent Project Review Board.

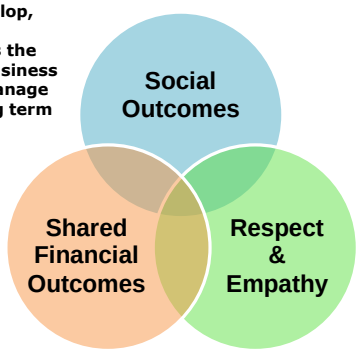
Independent Project Review Board comprising experienced and credible individuals will be established to review funding proposals for landowner projects.

The independent board will also be involved in the dispute handling process (see Complaints Handling and Dispute Resolution Policy).

Please refer to the Independent Review Board's Charter and the Project finding policy for further information.

Rainforest Management's philosophy is focused on three core principals; Social Outcomes, Respect & Empathy and Shared Financial Outcomes.

'...committed to ensuring carbon credit funds are used to develop, install and maintain social infrastructure which includes the development of social and business structures and systems to manage and develop world class, long term local community outcomes'



'...committed to mutual respect, open communication, empathy and strong work ethic to secure the respect and trust of the Traditional Land Owners, the Provincial Governments and the International Community '

'...financial outcomes are shared fairly and in accordance with legal agreements thereby ensuring ethical and sustainable outcomes '

Rainforest Management's sources of competitive advantage

Social Outcomes
- ✓ Established strong relationships with political factions of PNG, NGO's and Traditional Owners to develop a reputation as developer of choice
- ✓ Prepared to invest in the development of people and systems necessary for the delivery of sustainable social outcomes

Respect and Empathy
- ✓ Established strong relationships with political factions of PNG, NGO's and Traditional Owners to develop a reputation as developer of choice
- ✓ Close knit management team with Developing Country experience and success in start up companies

Shared Financial Outcomes
- ✓ Established legal agreements and financial models that clearly delineate shared financial outcomes
- ✓ Established alignment of interest between Land Owners, Political Authorities and Project Manager through the development of an endowment style financial structure

G4.2 Technical and Management Expertise

Rainforest Project Management

Rainforest Project Management Limited (RPM) is responsible for assisting the ASSFMPF with the commercialization of this project and other potential projects in the future in the area of afforestation, reforestation & avoided deforestation and sustainable development projects in many priority areas of the government and communities in Papua New Guinea.

RPM, with endorsement by the Government of Papua New Guinea (OCCES and Prime Minister and NEC Department), supports this REDD project's implementation and related activities including monitoring, verification and reporting of carbon and sustainable development monitoring in the country.

The RPM has coordinated the compiling of the agreements and policies with assistance and input from a number of PNG experts, local communities, private sectors and non government organizations.

We believe that by utilizing the services of the best available institutions, human resources, individuals and seeking advice from local communities, we are able to develop and present a management team that will embrace the skills and knowledge of some of the best people available in PNG in addressing this REDD project. We have specifically utilized PNG people wherever possible as the country is unique and no one knows its climate, environment, cultures, traditions, and languages better than its own people.

It is also important for us to recognize and acknowledge the commitment these people have made to see the April Salumei Rainforest Preservation Project developed as the first pilot project for PNG employing the CCB methodology and supporting techniques.

The following are some of the institutions and individuals who have contributed towards the completion of this April Salumei Rainforest Preservation Project.

Photo: April Salumei Area

Management Team

i)Stephen Hooper, the Chief Executive Officer of RPM, has researched and worked for the last two years in developing an in-depth understanding of the social and business issues that surround an Avoided Deforestation Project in PNG. His previous experience has seen him working in Senior Management roles which have provided him with the experience and insight to lead this diverse and complex project.

ii) Philip Moya, the Operations Officer, has 27 years experience with local and provincial government management and public service in PNG. His experience over the last 4 years as Community Development Officer. Philip holds a Master of Science (MSc) in Education Development Studies from the University of Wolverhampton.

iii) Peter Wood, the Chief Financial Officer, has previous experience in start up companies both in SE Asia and Australia. He brings 30 years of financial and operational experience to RPM as well as extensive experience in risk and mitigation strategies for local and offshore infrastructure projects.

Technical Support Team

It is with great pride we acknowledge the commitment of the following organisations and people who have helped make the April Salome Rainforest Preservation Project the first such project for PNG.

As the pilot project these entities and individuals will continue to work with the project developer to provide technical and policy expertise and together the project will assist in the enhancement and building capacity for Papua New Guinea in realising the country's new plan, The PNG Vision 2050.

As discussed earlier as this capacity is developed the project will apply for validation firstly to a Tier 2 then to a Tier 3 standard. It is expected that the country's technical and human resource capacity will have developed tremendously.

It is the aim of the project developer to utilise PNG experts in all areas possible. There is also discussions taking place with international institutions to assist with building capacity and sharing the learning that will come from this pilot project.

The following are some of the PNG institutions and expertise who have contributed in the technical and policy advice:

University of Papua New Guinea – School of Natural and Physical Sciences

The technical team from the University is lead and coordinated by;

- Professor Chalapan Kaluwin -. Prof Kaluwin has developed extensive experiences and expertise in the areas of science of atmosphere, oceans, terrestrial,

environment and strong management skills. This included climate change, variability, environmental changes and management and policy development. Has been involved with Climate change, Biodiversity, Desertification negotiations and technical advisor for 26 Pacific countries and PNG for 20 years. Advisor to the PNG Government on the development of the PNG Vision 2050 and especially Pillar 5: Climate Change and Environmental Sustainability. He has strong international and regional skills on negotiations on multilateral agreements.

- Dr Oisa Gideon -A forestry expertise who has worked extensively as a researcher in the areas of biology and terrestrial sciences. Long term expert and advisor to the PNG Government on Environment, forestry and biodiversity for more than 20 years and worked in the PNG Forestry Institute. The head of the PNG Centre for Biodiversity and Conservation

- Dr Gae Gowae – A forestry expert to the government and private sector and travelled extensively in forestry and environmental in the region and globally. Special interest in the area of sustainable development and natural resources in the country. Greater network skills with NGOs and international donors.

- Dr John Duguman - Extensive experience in geology, Environment and with management planning expertise. Worked with government and private sector in environment and especially in the Social, EIA/EIS and mining and biodiversity. ,

- Ms Regina Kiele - Worked in Australia and PNG government and especially with the Department of Agriculture and Livestock and specialise in GIS RS and Mapping and monitoring. Continues to develop GIS RS certificates for private and government twice a year. Supervised more than 10 honours students on GIS RS

- Mr Peter Samuel – An experience physical geographer and teacher with high schools. Last 5 years extensive in Disaster and Risking Management and planning for provincial governments.

- Ms Urusula Kolkolo – The coordinator for Centre for Climate Change and Sustainable Development. Extensive experts in the areas of marine and terrestrial management. Advisor to PNG government on fisheries and marine biodiversity. Strong interest in adaptation and risk management on climate change and resilience approaches.

- Mr Jason Alok –Tutor with the Discipline of Environmental Science and Geograpghy. Completed his Honours on Forestry and REDD. Continue to research into social mapping in forestry sectors.

- Mr Freddy Alei - Honours Student on GIS RS-Mining and Forestry. Special interest in mining and watershed management in the country.

- Mr Ravu Geno - Camera Man and Audio Video Specialist. Productions of movies and Videos for environment and livelihoods of the country. Filmed extensively in country and did consultancy for the PNG government.

- Associate Professor - Eric Kwa - Law specialist with the of the School of Law with the University of PNG. Biodiversity and Law specialist and provides legal advise to government and communities on multiletral agreements such UNFCCC, UN Biodiversity and UN Desertification. Legal advisor to the PNG Vision 2050. Has attended to many international environmental agreements.

Papua New Guinea Forest Research Institute

- Professor Simon Saulei – Expert in tropical Forestry and REDD management in the country. The Director of the PNG Forestry Institute and manages 45 staff on all types of forestry and management and policy. Continues to provide advise to the PNG Government on Forestry and REDD. Travel extensively as an advisor on technical matters related to forestry and biological studies. Has produced more than 50 publications.

University of Technology

- Professor Pal Lal – The head of the University of Technology in Lae, Morobe Province and specialised in GISRS and Land Management studies. Worked with Indian Government on the national GISRS for more than 15 years. Advisor to the PNG Government on GISRS application and policy

Prime Minster and NEC Department (Office of Climate Change and Development)

- Mr Noel Mobiha – The PNG Government Satellite and communication specialist and advisor. Expert on space science and communication and information. Has travelled extensively in the country and internationally. Contributed to the PNG Vision 2050 on the ICT policy and its communications.
- Mr Max Yalon - IT specialist and coordinates the PM/NEC Department communication and Data management.
- Mr Joe Pokana – The Director for Mitigation for the Office of Climate Change and Development. A Forestry and REDD specialist who has contributed to the REDD model and policy development. Continues to be involved in UN negotiations and especially on REDD.
- Mr John Mosoro – The Director of Adaptation with the Office of Climate Change and Development. Environment and policy advisor and has worked in the Ministry for Environment and Conservation for more than 20 years. In addition mining and water management expert.

Papua New Guinea Weather Office

- Mr Samuel Maiha – Head of the PNG Weather Office and known as a Meteorologist. Has had wide range of skills with international organisations such World Meterology Organisation, Intergovernmental Panel on Climate Change (WG 1 and 2) and regional institutions. The institution has alot of valuable data with long history.
- Mr Benjamin Malai – Continue to specialise in the area of Climatology and weather forecaster for the country to all clients. Post graduate experiences from India and Australia. Member of the PNG satellite and GISRS work.

Papua New Guinea Forest Authority

The Minister Hon. Belden Namah and his executive team have endorsed the project and assisted with information on the timber resource in the area.

PNG Office of Climate Change and Development

The PNG Government established the Office of Climate Change, Environmental Sustainability and Carbon Trade in January 2007 and later changed its name to Office of Climate Change and Environmental Sustainability (OCCES) in January 2008 and is now known as the office Climate Change and Development. Under the Office mandate it is charged as the Designated National Authority (DNA).

Partners with Melanesia

Partners with Melanesia (PWM) are a national "Not for Profit" (NGO) focused on conservation and community development programmes operating in Papua New Guinea.

Resumes and capability statements for the above mentioned are available to be inspected by the validator from the people listed above.

G4.3 Capacity Building

We believe that building local capacity achieves not only stronger project outcomes but is also a fundamental aspect of the Community acceptance and belief in the overall project.

Our philosophy is not to simply develop a training regime but to ensure that we offer career pathways for our staff. Our education objectives therefore are not simply focused on improvement of skills, but to reduce staff turnover by training staff on a dynamic and continual improvement basis in order that they want to fully contribute, thereby feeling valued which in turn endows a sense of belonging.

In terms of the specific aspects of our training program we propose to assist in the development of individuals based both in Port Moresby and at local communities. Our internal education programs will target skills required for three broad areas of staff engagement:

- Project Superintendent
- Standards – Local Measuring and Monitoring
- Projects – Local management and delivery

We will develop a complete range of courses for each of these areas. Courses will be mandatory for all staff and will vary depending on the staff members job responsibilities.

A broad outline of proposed courses together with the frequency of attendance is noted below.
All staff

- Corporate Induction including ethics and employee conduct (every two years)
- Basic First Aid (every two years)
- Principles of Reporting (every two years)
- Use of Technology (annual)

Project Specific Staff

- Health - Intermediate and Advance First Aid (annual)
- Education – Train the Trainer (annual)
- Community Enterprise - Project and People Management (annual)
- More advanced courses will be selected from local colleges and universities (periodic)

Standard Monitoring Staff

- Climate Monitoring – Technology, data collection and reporting (annual)
- Biodiversity Monitoring – Technology, data collection and reporting (annual)
- Community Monitoring – Technology, data collection and reporting (annual)

Project Superintendent Staff

- Courses to be selected from local colleges and universities (periodic)

We have identified building capacity of local Project Specific skills Courses (Health, Education and Community Enterprise) as the most challenging. The first step in our plan

will be to survey and better understand current local capabilities. This will be achieved through a series of visits by the Health, Education and Community Enterprise Superintendents. Based on the information collected, we will then tailor our training programs to meet the challenge of providing improved services in individual local areas. During this phase we will work closely with the government to ensure training and development options are matched to the government initiatives.

We are very aware of the commonly experienced problem of staff turnover due to younger enthusiastic staff moving on to other opportunities afforded to them with their new found skills packages as a result of improved training and work experience. We believe that the need to keep the students fully focused by involving them in a continuous dynamically based skills enhancement program is paramount and will form a logical base from which individuals may progress to more complex and demanding roles in the Health, Education and Community Enterprise. This will form a major part of our overarching Career Pathways Philosophy noted above.

Please also refer to our policy documentation file and specifically the "Equal Opportunity Policy".

G4.4 Equal Employment Opportunities

The April Salumei project will provide employment opportunities for all members of the community. Please refer to EEO policy.

The Second Goal and Principle of the Papua New Guinea Constitution (1975) called for an equal opportunity to participate in and benefit from any development in the country. Likewise the Timber Permit Conditions in the country called for equal participation and benefit from any forest development project, and that the forest owners should be given equal opportunity to participate in the development of their forest resources through employment and any business spin offs.

People within the project area, East Sepik Province and Papua New Guinea, and externally will be provided equal employment opportunities in any project activities based on the level of skills and qualifications attained.

A specific role of the community steward will be to annually survey all community groups to ensure they have been represented and are aware of the ongoing activities of the project. This will ensure local communities are fully aware of any opportunities for employment.

The Project Developer and Project Superintendent will encourage the Community Steward in each area to be selected from the local "Women's Group" and role specific training will be provided if an employee is identified as having a skill deficiency in a

particular area. It is an aim of the project to ensure all groups are represented with equal opportunity to participate.

G4.5 Employment Laws

Employment within any of the project activities will be governed under the Papua New Employment Act No. 54 of 1998 (Consolidated up to 31 March 2001) and the Employment of Non-Citizens Act 2007 (No. 10 of 2007). These Acts set out employment policies and regulations required for compliance by the Department of Labor and Employment.

A comprehensive Employment Induction Booklet has been completed and this along with the project policy documents is available for inspection by the validator.

G4.6 Employee Safety

Appropriate acts in relation to Workers Health & Safety in PNG are the Industrial Safety and Welfare Act (Chapter 175) 1961, followed by the Industrial Safety and Welfare Regulation (Chapter 175) of 1965.

Please refer to the Employee Induction Booklet and Policy Documents in particular our "Health and Safety" policy for further details.

G4.7 Financial Health of the Implementing Organizations

We believe the resources off the Rainforest Project Management and the Project Foundation is sufficient to fully support the development of the project.

Commercial details of this capability will be provided to the Validator.

Section G5. Legal Status and Property Rights

G5.1 Local Laws and Regulations

As discussed previously the forest resource in Papua New Guinea is owned by the landowners. The resource is however managed by the PNG National Forest Authority.

The fourth goal of the PNG constitution is the cornerstone for forest policies. The constitution states "to ensure that the forest resources of the country are used and replenished for the collective benefit of all Papua New Guinean now and for future generations"[47]

Multilateral Agreements

The Papua New Guinea Government is committed to a number of important multilateral agreements, which include:

A. Conventions.

1. Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar-1971)
2. Convention for the Protection of the World Cultural and Natural Heritage (World Heritage 1972)
3. Convention on International Trade in Endangered Species of Wild Funa and Flora (CITIES 1973)
4. Convention on the Conservation of Migratory Species of Wild Animals (Bonn-1979)
5. Vienna Convention for the protection of the Ozone Layer (1985)
6. Basel Convention on the Control of Trans boundary Movement of Hazardous Waste and their Disposal (1989)
7. Convention on Biological Diversity (1992)
8. United Nations Framework Convention on Climate Change (1992)
9. Kyoto Protocol to the UNFCCC (1992)
10. International Tropical Timber Agreement (1994)
11. United Nations Convention to Combat Desertification (UNDDC)

B. Instruments

12. Stockholm Declaration of the United Nations Conference on Human Environment (1972)
13. Rio Declaration on Environment and Development (1992)

[47] PNGNFA, Forestry and Climate Change Framework for Action 2009-2015. (Nov 2009)

14. Forest Principles- UNCED (1992)
15. Declaration on Barbados (1994)
16. Washington Declaration on Protection of the Marine Environment from Land Based Activities (1995)

C. Regional Environmental Agreement and Instruments

17. Convention on Conservation of Nature in the South Pacific Region (1976)
18. Convention for the Protection of the Natural Resources and Environment of the South Pacific Region and related Protocols (SPREP- 1986)

PNG National Forestry Authority – Forestry Laws

The Papua New Guinea Forest Authority (PNGFA) was established in 1993, replacing the former Department of Forests, and unifying all Provincial Forest Divisions and the Forest Industries Council. The PNGFA mission statement is in harmony with the country's constitution, particularly the 4th Goal which aims to "promote the management and wise utilization of the forest resources of Papua New Guinea as a renewable asset for the well- being of present and future generations".

A new National Forest Policy was formulated in 1990 (the Forestry Act 1991 was passed by Parliament in July 1991, and the Forest Policy was approved in September 1991, paving way for the establishment of PNG NFA in 1993) to remedy the shortcomings of the previous policy of 1979 to place emphasis on sustainable forest management principles in the forestry sector. Some of the notable achievements since implementation of this policy include:

1. A new Forestry Act was enacted by Parliament replacing three previous legislations on forestry matters that came into force in June 1992. Further amendment to the Act has been made to various sections of the Act – 1993, 1996, 2000 and 2005.
2. The 1996 Forestry Regulation which provides the legal status for the implementation of many of the requirements specified under the Forestry Act
3. Establishment and operation of the PNG Forest Authority that came into effect in October 1993
4. Formulation and approval of the National Forest Development Guidelines in 1993
5. Establishment of the National Forest Board
6. Establishment of the Provincial Forest Management Committees
7. Forest Management Agreements for acquiring timber rights from customary owners superseding the previous Timber Rights Purchase and Local Forest Declaration Methods of acquiring timber rights from customary owners (the

April Salumei Rainforest Preservation Project baseline projection is based on such an Agreement)

8. Drafting and finalizing the Manual for the Incorporation of Land Groups to identify legitimate landowners of forest resources
9. Drafting and finalizing the Logging Code of Practice which was supposed to control and monitor harvesting of the forest resource but in practice is not implemented widely
10. Engagement of Society General Surveillance (SGS), a Swiss Surveillance Company to monitor log export operations, thus preventing undervaluing, misidentification of species and pricing and avoidance of customs duties
11. Formulation, approval and implementation of a National Forest Plan. The plan serves as the guiding principle for orderly forest development in PNG

Other legislation to be considered and comply with include;

- Environmental Act (2000)
- Investment Promotion Act (1992)
- Provincial Health Authorities Act (2007)
- Industrial Relations Act (1962)
- Industrial Health Safety and Welfare Act (1962)
- Land Groups Incorporation Act (1974)
- Land Disputes Settlement Act (1975)
- Land Act (1996)
- Flora and Fauna Act (1968)

Further PNG Government development strategies include the recently completed "Papua New Guinea Vision 2050" that has a specific pillar, pillar 5, Environmental Sustainability and Climate Change".

In addition, the PNG Development Strategic Plan 2010-2030 compliments the PNG Vision and assist the all sectors and provincial policies to be aligned with these plans. The roll out is planned every 20 years.

The project complies with all relevant laws and regulations.

Documentation of this is available for inspection by the Validator.

G5.2 Documentation of legal approval

As discussed in G1.6 Hunstein Range Holdings commenced discussions with the then Office Climate Change and Environmental Sustainability. These initial meetings and the decision from the Office of the Prime Minister to establish the April Salumei as the pilot project for Papua New Guinea established a top down approach.

The project is based on a solid legal framework, to which the following letters and undertakings further support the project:

- Consultation letter of the landowners to the OCCES, in which they are asking for the support in the commercialization of the REDD project.
- Letter of OCCES to landowners accepting to support landowners to find ways to commercialize the VERs on the international carbon market.
- Letter of understanding between the project developer and the OCCES to cooperate in the development of this project as a VER project.
- Letter of notification to the Office of the Prime Minister informing it about the involvement of project developer.

The need for landowner consultation and awareness was addressed with comprehensive awareness campaigns (See G3.8) before a contract was signed between the project developer and Hunstein Range Holdings Limited as the landowner Company representing the areas 163 ILG's, whereby Hunstein Range Holdings transferred the rights to the carbon sequestered within the project area to the project developer. Following this a Joint Venture Agreement was also signed between the two parties.

(Please refer to G 1.6 for the rights of Landowner Companies and Incorporated Land Groups to enter into legal agreements.)

Additional to the legally binding agreement between the landowner company Hunstein Range Holdings Limited and the project developer separate agreements/acknowledgements were signed with all 163 Incorporated Land Groups from the Project Area.

All documents are available for inspection by the validator.

G5.3 Free, Prior, and Informed Consent

Stakeholder consultations have been conducted and there is clear evidence that all parties are informed and have freely consented to the April Salumei FMA project as evidenced by the documentation listed in G3.8.

Consistent with the UN Rights of Indigenous people the landowners first sought a project developer. Following this a series of meetings documented below were held before agreements and were signed.

A copy of any document or video and photos of any of the below mentioned meetings are available for the validator at our companies offices. Please cite the reference number listed below.

Record of awareness and Community Consultation Meetings.

- April 30 2009 Public Notice of meeting – Invitation and outline of meeting
- May 2009 Awareness meetings held in Wewak, Yaraki, Wagu and Bukabugi. (There is a video tape available from the Wewak meeting)
- 22 May 2009 Signing of the Agreement between Project developer and HRHL.
- August 2009 Letter of Allegiance from landowner Companies to Project developer.
- Signing of individual acknowledgement/agreements with all 163 Incorporated Land Groups

Further awareness and consultation programs have also been held.

- Independent survey Nov 2010.
- January 2010 - Individual Landowner Company Meetings in the villages.
- Community Views document from Landowner Company HRH
- January 2010 HRH meeting in Wewak
- January Awareness in Villages
- March 2010 Pre- Assessment field visit.
- Further and final awareness planned for June 2010.

A full timeline and discovery of all documents is available from our offices. All meetings have been documented and all supporting documents are available for view by the validator.

Please refer to G3.8 and G5.2 for further information.

Further to this consent has been obtained from the PNG Forest Authority and is available for inspection by the Validator.

G5.4 Involuntary Relocations

No relocation of any people will result from this project.

G5.5 Illegal Activities

The Project includes a formal community monitoring plan that will identify illegal activities such as commercial logging. The remoteness and tranquillity of the project area allows for illegal activities to readily visible as it would need to transect Ambunti before it gets into the area.

Once identified the person or persons responsible for the illegal activity will be dealt with by the local authorities.

Landowners will be encouraged to develop and formalize their laws in relation to illegal activities.

Please refer to G3.1 for discussion on traditional resolution of disputes and the companies policy documents.

G5.6 Carbon Rights

Under the PNG Constitution these ILG's (previously Clan groups) are recognised as the owners of the land. This was further acknowledged by the government when in forming the Forestry Management Agreement (FMA) it sought the consent from the ILG's for the project. (Refer to comments in G 1.6)

As also discussed in G1.6 and evidenced by the court case between HRH and the Government in relation to declaring a WMA without the consent of the landowners the landowners have the rights to the biodiversity on the said land owned by them.

Please note during the FMA process 30 ILG's refused to sign the FMA. These ILG's have now consented and have agreed to join with the remainder of the ILG's and come together for the project. A Position Paper from the Landowners involved is available for inspection by the validator.

All 163 ILG's (see structure below and G3.8) have confirmed in writing they have consented to the Hunstein Range Holdings Limited executing an agreement with the project developer.

Further to this the project has the support and approval from the PNG Forest Authority and the Office of the Prime Minister. (Refer to G3.8)

These documents are available for inspection by the validator.

Climate Section CL1. Net Positive Climate Impacts

CL 1.1 Net Change in Carbon Stocks

Reproduced from G2.3.

As the project is avoiding the deforestation of the April Salumei FMA the net change in carbon stocks will be the same estimations as in G2.3.

Based on the "without" project scenario, that is the logging project going ahead would create significant reductions in the carbon stocks of the area.

To determine the extent of the change in carbon stocks in the project area we must determine the total carbon value of the project area (see G 1.4) and estimate the residual carbon in the project area following commercial logging. We must also consider other factors that influence levels of carbon stocks in the project area.

We have determined the boundary of the project area is the same boundary as that of the proposed FMA and from G1.4 we have established there is 114 million tonnes of CO2 in the project area. It is important to maintain this original boundary so we can identify the different cultural groups that have been traditionally represented in the area. However, under the Forestry Management Agreement the area to be harvested was determined to be 177,200 ha (gross area less areas for slopes, waterlogged areas, river systems etc. in accordance with the PNG Logging Code of Practice) and in accordance with the agreement a 15% discount is to be applied reducing the area to 150,620 ha. Please refer to Map 6, Map 15 and Map 16.

We have also assumed the Forestry Management Agreement conditions are followed and no illegal activities are undertaken by the harvesting contractor.

Phil Shearman (2008) used Brown and Gibbs (2007a and 2007b) and IPCC (2006) forest biomass carbon stock estimates for equatorial forest of 164 $tCO_2\ ha^{-1}$ (44.7 tC/ha) and 180 up to 225 $tCO_2\ ha^{-1}$ respectively to estimate carbon stocks in PNG. Fox et al (2009) cited average estimations of 120 tC/ha by Edwards and Grubb (1979) and 148 to 669 tC/ha by Chavel et al. (2001) for tropical rainforests based on terrestrial measurements.

Consistent with section G1.4 we have used the 2006 Intergovernmental Panel on Climate Change, Chapter 4, Forest Land, Volume 4, Agriculture, Forestry and Other Land Use methodologies and values.

Assumptions

Sector: Agriculture, Forestry and Other Land Use.

Category: Forest Land Remaining Forest Land
Climate Domain: Tropical
Ecological Zone: Tropical Rainforest
Continent: Asia (insular)

Carbon Pools
Firstly we determined the Carbon Pools to be included. These were Above-ground Biomass and below-ground biomass. For the sake of being conservative and given we are estimating the carbon values to a Tier 1 level we have included Dead Organic Matter (Dead Wood and Litter) but excluded Soil Carbon.

Source of data
Tier 1 estimated above-ground biomass (Table 4.7) 350 tonnes d.m. /ha[48]
Ration below-ground biomass to above-ground biomass (Table 4.4) 0.37
Carbon Fraction default value (table 4.3) 0.47

Carbon Accounting Area
As discussed the April Salumei FMA is a total area of 521,000 ha, with a gross forest area of 177,200 ha. This area of 177,200ha has been determined by PNG Forest Authority as 'merchantable' and therefore is the area we are avoiding the deforestation.

Furthermore, in accordance with the Forestry Management Guidelines 15% buffer zone has been applied to determine a net production area of 150,620 ha.[49]

We are therefore avoiding the deforestation of the 150,620 ha (See Map 16) that would have been harvested as evidenced by Map 16 that delineates the harvestable area as determined by the PNG Forest Authority.

There is no claim for avoided emissions for the remaining 344,000 hectares, although this is part of the project area as determined in G1.3.

In accordance with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 4: Agriculture, Forestry and Other Land Use, (4.2.1.4 CALCULATION STEPS FOR TIER 1) we have completed the following methodology.

Step 1.
Classify Forest Land Remaining Forest Land into forest types of different climatic or ecological zones, as adopted by the country. As a point of reference, Annex 3A.1 of GPG-LULUCF (IPCC, 2003) provides national-level data of forest area and annual change in forest area by region and by country as a means of comparison. Alternatively FAO also periodically provides area data;

[48] We have used the value given in table 4.7 of 350 tonnes d.m. ha of Tropical rainforest, Asia (insular).
[49] Tack Reality Report (2004) Determination of value of harvestable timber.

Step 2: *Estimate the annual biomass gain in Forest Land Remaining Forest Land (ΔCG) using estimates of area and biomass growth, for each forest type and climatic zone in the country available using Equations 2.9 and 2.10 in Chapter 2;*
Step 3: *Estimate the annual carbon loss due to wood removals (Lwood-removals) using Equation 2.12 in Chapter 2;*
Step 4: *Estimate annual carbon loss due to fuelwood removal (Lfuelwood) using Equation 2.13 in Chapter 2;*
Step 5: *Estimate annual carbon loss due to disturbance (Ldisturbance) using Equation 2.14 in Chapter 2, avoid double counting of losses already covered in wood removals and fuelwood removals;*
Step 6: *From the estimated losses in Steps 3 to 5, estimate the annual decrease in carbon stocks due to biomass losses (ΔCL) using Equation 2.11 in Chapter 2;*
Step 7: *Estimate the annual change in carbon stocks in biomass (ΔCB) using Equation 2.7 in Chapter 2.*

See Table 1 "Carbon stock estimates for each forest type" (G 1.4) for the classification into ecological zones and Table 13 to determine the classification of the forest stock in the carbon accounting area. (Source: UPNG GIS)

Above and below ground biomass
To determine the above ground biomass we have selected the default value. Tropical Rainforest – Asia (insular) (Table 4.7 - Tier 1) of 350 tonnes d.m. /ha. Table 4.12 lists Tropical Rainforest at 300 tonnes d.m./ha, and Bryan et al. (2010) has reported the biomass of unlogged forests to be 358 tonnes d.m./ha. We have used Table 4.7 value of 350 tonnes d.m./ha.

To determine the below ground biomass we multiply the above ground biomass value (350 tonnes d.m./ha) by 1.37 (the ration given in table 4.4) to determine the combined above-ground and below-ground biomass is 479.5 tonnes d.m./ha.

We have then applied a carbon factor of 0.47 (table 4.3) to determine 225.365 tonnes Carbon per hectare.

The area of deforestation being avoided is 150,620 ha so we can conclude there is 33,944,476 tonnes of Carbon contained in the above ground and below ground biomass for the area.

Annual Increase in Carbon Stocks
Having used the worksheets (3B1a) provided in the IPCC Guidelines we have determined the annual growth of carbon in the area is 328,389 tonnes.

Given the project life of 20 years we can determine there will be a total increase on 6,657,780 tonnes of carbon over the project lifetime.

Dead Organic Matter (DOM)

USAID-CIFOR-ICRAF Project Report (2009), Topic 4, Section B (Carbon Accounting – Quick steps) indicated that dead wood (standing and lying) can be estimated conservatively up to about 15% of the above-ground biomass (AGB).

Cox et al. (2010) based on field observations estimated coarse wood debris (CWD), which constitutes standing and fallen dead trees to be 25% of the AGB for selective harvested (logged-over forests) and 10% for undisturbed forests in PNG.

To be conservative we use the lower figure of 10% for undisturbed forests to 350 tonnes d.m. ha^{-1} default value which gives give 35 tonnes d.m. ha^{-1}. This then gives an estimation of 5,271,700 tonnes of d.m. for Carbon contained in the litter.

Soil Carbon

The project will not be claiming from the soil carbon pool. This may change as national values and baselines are established that will allow the project to move to a higher tier for assessment. The developer expects to build this capacity over the next five years.

Round log removals

There will be no round log removals from the carbon accounting area. This will be managed and reported by local Climate Stewards see G4.1 and G4.3.

Fuel wood removals

The FAO "Asia Pacific Forestry Sector Outlook Study – The South Pacific" Table 15 determines fuel wood removals to be 1.38m3 per capita.

The population of the project area was 7696 in 2000 (G 1.5, Census data) so we have increased the number to 10,000 (in excess of PNG's population growth rate of 2.7%[50]) to account for population growth.

We can determine the Fuel wood removals from the total project area to be 13,800m3 per annum.

Using a biomass conversion factor of 1.05 (table 4.5) we can determine wood removals to be 9,330 tonnes of carbon per year for the project area.

Although the population distribution map shows the population is not evenly distributed and the carbon accounting area to be least populated we have assumed an even distribution to be conservative.

[50] 2008, PNG R-PIN

The carbon accounting area (177,000ha) represents 33.9% of the project area so we will conclude 35% of the firewood removals or 3,265.5 tonnes of carbon annually would come from the carbon accounting area or 65,310 tonnes of carbon over the project life of 20 years.

Disturbance

In the absence of national data the project will not be claiming for avoided emissions from soil disturbance.

Residual Carbon stocks post logging

To determine the carbon pool remaining following the area being logged we have used work from Fox et al. (2006) using PNGFRI permanent sampling plots from East Sepik Province recorded an average of 59 tC/ha for logged over forest areas.

Applying the average value of 59 tC/ha to the total harvestable area of 150,620 gives a total of 8,886,580 tonnes of d.m.

CARBON SOURCES	*CARBON CONTENTS (tonnes carbon)*
AGB	*33,944,476*
BGB	*6,657,780*
Deadwood a nd Litter	*5,271,700*
Carbon Growth	*783,244*
Soil Carbon	*0 (N/A)*
Total Carbon Content	*46,657,200*
CARBON EMISSION SOURCES	
Firewood Removals	*65,310*
Round Log Removals	*0 (N/A)*
Disturbance	*0 (N/A)*
Residuals	*8,886,580*
Net Carbon Content	*37,705,290*
Less 10%	*33,934,761*

Summary

To determine the total emissions to be avoided we have calculated the following;
(AGB + BGB + Annual growth + dead organic matter) – (Fuel wood removals + Round log removals + disturbance + residual carbon) = emissions avoided by the project.

(33,944,476 + 6,657,780 + 783,224 + 5,271,700) – (65,310 + 0 + 0 + 8,886,580) = 37,705,290 tonnes of Carbon emissions to be avoided by the project.

To be conservative and to allow for any unforeseen factors we have discounted this value by 10% to 33,934,761 tonnes of Carbon.

CL1.2 Net Change in Non-CO_2 Gases

Carbon dioxide is the principal greenhouse gas emitted when a forest is deforested. Other gases such as methane (CH4) and nitrous oxide (N2O) are also emitted during deforestation, but in significantly lower quantities than CO2. It is expect that the impact of non-CO2 gases will not account for more than or less than 5% of the Project's overall greenhouse gas impact and as such will be omitted from analysis. Carbon dioxide is the principal greenhouse gas emitted when a tropical forest is deforested (Houghton, 2005).

CL1.3 Other GHG Emissions from Project Activities

Please refer to the Project Funding Guidelines and Policy.
previously mentioned, no other GHG emissions aside from CO2 will be considered within the Project activities.

CL1.4 Positive Net Climate Impact

As previously described in section CL 1.1, the contribution of the project toward climate change mitigation through the reduction of CO2 emissions is evident.

CL1.5 Avoid Double-Counting

There is no risk of double-counting given that PNG is a non-Annex 1 member for the Kyoto Protocol and no national level REDD activities are currently being implemented by government authorities. All of the Project's emission reductions will be registered and held by an independent third party registry.

CL2. Offsite Climate Impacts

CL2.1 Types of Leakage

The project area is currently a Forest Management Agreement (FMA) and as such is part of the National Forest Plan.

The preservation of the project area and rescinding of the FMA by the Papua New Guinea National Forest Authority (PNG NFA) Forestry will not see the creation of another FMA in the future therefore no leakage will occur as a result of the project.

The National Forest Plan currently identifies all present and future logging concessions (See Map 12). If the April Salumei FMA is converted to a REDD project a new FMA will not be created as a result of revoking the FMA.

As discussed previously (G 5.1) there is a formal process to be followed in applying for and having an FMA approved by the NFA.

Currently there is also a moratorium in place for the allocation of new FMA's. A logging contractor who was intending to commercially harvest the April Salumei FMA could alternatively apply for the concession to harvest another current FMA in PNG.

This right exists today and would in no way be influenced by the rescinding of the April Salumei FMA.

A new FMA area would not be created to replace the rescinded FMA. For any new concession to be issued the proposed FMA project must currently be part of the National Forest Plan and the logging contractor would have to apply for the concession in the area of interest through a set process

CL2.2 Mitigation of Negative Offsite Impacts

There are no foreseen negative offsite climate impacts. Should carbon leakage occur, however, as a result of the April Salumei FMA area project, appropriate action will be taken to account for this loss.

CL2.3 Unmitigated Negative Offsite Climate Impacts

Given the implementation of a climate impact monitoring system, no unmitigated negative impacts to the offsite carbon stocks are expected. CL 2.4 Unmitigated Negative Offsite Non-CO_2 Climate Impacts

The Project has no significant non-CO_2 emissions.

CL3 Climate Impact Monitoring

CL3.1 Carbon Pool Selection and Monitoring

Carbon Pools monitored

The carbon pools to be monitored will include above ground biomass, below ground biomass and wood products. Litter, dead wood and soil carbon are excluded as all these pools are expected to stay constant or increase due to the project and furthermore are insignificant (<5%) in terms of the total CO2-equivalent benefits generated by the project.

Carbon stock monitoring in the project area

The approach of the "tool to estimate the amount of monitoring plots in a CDM A/R activity" will be applied. This includes a preliminary measurement plot established in the main strata of the project area, and sampling on 30 temporal plots established in each stratum in order to obtain preliminary data for each stratum. The outcome of the preliminary sampling will be standard deviations for each value measured. Values measured include Diameter at breast height and total tree height of all trees beyond 3 m height, counting of the number of trees, classification of all tree species in the plot, assessment of any abnormalities (logging activities, tree mortality). The centres of all plots will be recorded in GIS, and marked with a metal pole. Sample plot radius will be 10 and 15 m during temporal plot establishment. The cost of monitoring per plot will be recorded and used as input value for the calculation of the final, permanent monitoring framework.

Ground truthing of remote sensing data

Ground truthing of a remote sample from each stratum will be undertaken to demonstrate the reliability level of the automated classification of baseline vegetation strata. It is important to mention that the monitoring of the deforestation will be via satellite and the infield verification will be carried out in those areas. Otherwise, the verification will be carried out in selected points of the same characteristics identified during the interpretation of the satellite images.

This monitoring and ground truthing will be undertaken as a joint effort with the University of Papua New Guinea's satellite capacity currently being established.

Carbon Leakage monitoring

The essential approach to monitor leakage in this project is to demonstrate that the area of land acquired and/or allocated for legal commercial timber harvesting by Government Agencies does not increase as a result of the project activity. Therefore, the rate of Government allocation of forest to harvesting must be the same as, or no more than the same trajectory as, before the project start date. The project will identify

all governmental agents that allow for logging activities leading to degradation,and will prove that the allocation of forest is constrained to within a pre-determined extent, e.g. The National Forest Plan. If this is the case, it will be assumed that no leakage occurs.

CL3.2 Monitoring Plan

The project will commit to developing a full monitoring plan within six months of the project start date or within twelve months of validation against the chosen carbon Standards and to disseminate this plan and the results of monitoring, ensuring that they are made publicly available on the internet and are communicated to the communities and other stakeholders.

A comprehensive training plan will be implemented to ensure the Climate Steward is trained with the necessary skills to fulfil its role. This is additional to the standard employee induction training and subsequent communications and computer training for all employees.

Local Level - Climate Monitoring

Identification and training of "Forest Stewards". These will be local people employed and trained by the foundation to monitor, observe and report at a local level.

Community Reporting

All timber used for traditional use to be recorded with the Climate Steward. This is to ensure the community maintains the awareness and sees a high value placed on any activity that utilises the resource.

Immediate Reporting

1. Any illegal logging activity
2. Any Fire
3. Any other loss of resource.

Quarterly Reporting.

1. On ground survey of forest area. Reporting of any illegal or suspicious actions.
2. Summary of all timber resource used for traditional use. Eg, Cleared land for making gardens, timber harvested for building canoes or homes.

Annual Reporting

Third party validation of the resource area by a qualified forester with PNG National Forest Service

Measurement of Permanent Sampling Plots (PSP) in the project area

Investigation of any irregularities identified in aerial surveys or satellite imaging.

CLIMATE STEWARD	Frequency	Report to	Comments
Illegal Logging activities	Immediate	Superintendent & Supervisor	Reporting of any commercial or illegal logging activity
Traditional use activities	Monthly	Supervisor	Log of landowner traditional use.
Any clearing	Immediate	Superintendent	Report any areas of cleared land
PSP measurement	Annual	Superintendent	With qualified forester
Climate Monitoring	Daily	Superintendent	Wind, direction, temp, humidity etc.
Report on Fires	Immediate	Superintendent	Any fires in the area.
Identify any soil erosion	Quarterly	Supervisor	Identification of areas of erosion.

Community Section CM1. Net Positive Community Impacts

Photo: Typical Village life in Project Area

CM1.1 Community Benefits

As mentioned in section G 2.4, the ILGs within the April Salumei FMA area would potentially have gained considerably through concession payments, employment and infrastructure investment. The conservation project will aim to compensate, in cash and kind, for their loss by opting not to deforest and degrade their lands.

Please refer to G 3.2 for a list of the priority projects for the area.

As also discussed in G 3.2 a review of the current Health and Education services will be undertaken. Once completed the Health and Education Superintendent respectively will budget and implement a plan to improve these areas consistent with the District 10 Year Plan.

The building of a strategic road as detailed in G3.2 will also provide much needed access and transport options for local people. As the accessibility improves small scale sustainable businesses will start to develop. These businesses will be supported by the Enterprise Superintendent with funding available from the April Salumei Sustainable Forest Management Foundation. Please refer to Project Funding Policy for further information.

All significant development in the project area will be subjected to the Environmental Act 2000 where activities will be screened and depending on its impacts warrants either meeting guidelines or code of conduct or through the submission of an Environmental Impact Statement (EIS). The process for the submission of preparatory documents leading to the assessment process of the EIS is available from the Department of Environment and Conservation. For the road project, an important component is the Environmental Management and Monitoring requirements which must be documented and implemented before, during construction and in the operational phase. The determination of assigning road status and responsibility will be discussed by the project management team and the tiers of government.

CM1.2 Impact on High Conservation Values

As the population within the April Salumei FMA area is very small and their population densities are very low, their use of the land is inherently sustainable. Therefore there is no foreseable impact by the community on high conservation values.

CM2 Offsite Stakeholder Impacts

CM2.1 Potential Negative Offsite Stakeholder Impacts.

There are no foreseeable negative offsite stakeholder impacts. If however there is any discontent being vocalized by surrounding communities, these concerns will be addressed through stakeholder consultations and community discussions.

The formation of the umbrella landowner company and the ILGs provide an avenue where all genuine and identified members would receive benefits from the project. It is possible for relatives either through marriages and kinship for them to benefit from the project. However, there are certain rights as to what this group of surrounding communities will be able to claim for, such as communal hunting groups. Communication between clan groups within the project area have been through the language groups (see G 1.5) and often through allies during tribal conflicts in the past. Hence, the authority for communities to settle within the project area will follow these arrangements. It will be unusual for other tribes totally remote from the project communities to coexist, although maybe through marriages. This is quite rare at this stage.

CM2.2 Plans to Mitigate Potential Offsite Impacts

Any surrounding communities have the right to voice project impact concerns to the project administrators and community leaders. See G3.1 and Complaint Handling and Dispute Resolution Policy.
Please refer to our notes on the establishment of Community Auxiliary Policing for further plans contained in Project Activities..

CM2.3 Unmitigated Offsite Impacts

There are no identified negative community impacts are anticipated by this project. Through the community stewards in application of the monitoring plan, should there be negative impacts identified they will be mitigated.

Please see section G3.1 for traditional solutions and the companies policies for further guidance.

CM3 Community Impact Monitoring

CM3.1 Community Impact Monitoring Plan

Monitoring of community impacts is important to allow us to determine the effectiveness of proposed programs. Below is a table indicating the key activities that will be monitored. In addition the Community Steward will be living and working in the community. Refer to CM 3.3 below.

Table 1 : Monitoring Plan

Activity Description	**Indicator**	**Frequency**	**Respon-sible (tbd)**
Demographic growth	Population per district	Every 5 years	
Road expansion in project or buffer area Road improvement in project or buffer area Road use expansion	Kilometers of new paving (length and width) Classification of roads paved (paved, non-paved) Use of roads paved (timber, Brazil nut, agriculture, mining, other)	Every 5 years	
New settlements in project or buffer area	GPS location and area Type (native community, rural settlement, urban settlement) Population Main productive activities (crops, cattle, hunting, logging, average extension)	Every 5 years	
Apply surveys to local families that are being supported by the project to develop sustainable economic activities	Number of local families developing new sustainable economic activities	Annually	
Apply surveys in local schools that are being supported by the project	Number of local students involved in environmental protection activities	Annually	
Register remaining, regulated and legal logging activity (number and species), register amount of discovered illegal logging activity, using paper formats defined for custody chain process	Volume of wood extracted legally in m3 Volume of illegal wood extraction discovered	Permanent	
Surveys to households and communities to determine land converted since the beginning of the	Hectares converted in the Project area	Annually	

project			
Surveys to communities to determine the demand of land for agriculture because of the population growth (not migration)	Demand of new land for agriculture in communities	Annually	
Success of diversification into NTFP use	Number of extracted non-wood products (measures the diversification of products of the forests)	Annually	
Number of training and capacitating activities carried out by the project		Annual	
Number of institutions in which REDD project developers count with a formally designed representative	Copies of the documents related to the institutions	Annual	
Number of guided visits organized for locals and tourists in the project area, focused on the REDD project	Reports of the activities	Annual	
Number of signed or ratified agreements with public or private universities Number of researches carried out within the agreements with universities framework Number of publications made, reporting the main results of the researches carried out	Copy of the agreements Copy of the researchers reports Copy of the publications Bi-monthly	Annual	
Gender equality: % of women participating in guided visits % of women involved in new sustainable commercial activities % of women employed by the project % of women representing the project in local and regional institutions	Participants list Survey report Salary list of project Copies of the documents related to the institutions	Annual	

CM3.2 Community Impact on High Conservation Values

Given the small population living within the April Salumei FMA area and their proven commitment to forest conservation, no negative impact on high conservation values is foreseen.

Please refer to the companies High Conservation Value Policy and Environmental Policy.

CM3.3 Community Impact Monitoring Plan Development Commitment

A comprehensive training plan will be implemented to ensure the Community Steward is trained with the necessary skills to fulfil their role. This is additional to the standard employee induction training and subsequent communications and computer training for all employees.

The RPM commits to developing a full monitoring plan within six months of the project start date or within twelve months of validation against the chosen carbon Standards and to disseminate this plan and the results of monitoring, ensuring that they are made publicly available on the internet and are communicated to the communities and other stakeholders.

Assessment will be annual to ensure that monitoring variables are directly linked to the project's community development objectives and to anticipated impacts both positive and negative.

Any negative impacts will be reviewed by RPM and local stakeholder's representatives with an aim to mitigate or removing them.

Local Support

Identification and training of "Community Stewards"
There will be two local people per village over 500 inhabitants, employed and trained by the foundation to monitor, observe and report at a local level.

Immediate Reporting

1. Any conflict arising directly from the project activities.
2. Any significant hardship caused to community group as a result of the project activities.
3. Any damage to a culturally significant site.

Quarterly Reporting.

1. Summary of all issues reported in the immediate area above and the actions taken to resolve the issue identified.

Annual Reporting.

Note the community steward is to be selected from individual community groups. There must be at least one representative from the women's group and one from the youth group.

Table 2: Community Steward Monitoring requirements and frequency

COMMUNITY STEWARD	Frequency	Report to	Comments
Community Survey	Annual	Superintendent	
Birth/Death Report	Monthly	Supervisor	Log of births and deaths.
Evaluation Community Enterprise Projects	Annual	Superintendent	Summary of all projects.
Identify any new Villages or Village	Monthly	Supervisor	

relocations			
Identify new community groups / activities	Monthly	Supervisor	
New Income producing activities	Monthly	Supervisor	Assist to prepare funding requisition.
Community group - Project Requests	As requested	Supervisor	Assist to prepare funding requisition.
Community Disputes or Concerns re project	Immediate	Supervisor	
Cultural Threats	Monthly	Supervisor	Identify any threats to traditional cultures from the project.

Photo: Community Discussion during awareness November 2009.

Biodiversity Section

B1. Net Positive Biodiversity Impacts

B1.1 Net Positive Biodiversity Impacts

As stated in G3.1 the major goal of the April Salumei Sustainable Forest Management Project is to prevent the commercial logging of the project area.
The establishment of the project will remove the potential for commercial logging and the area will remain in its current natural state.
The preservation of this area would see no negative impacts to the biodiversity of the area.

The following is an extract from the Greenpeace report "Preserving Paradise" (Nov 2008) "Logging is the key driving force in forest change and degradation in PNG and a leading contributor to eventual deforestation and conversion for other uses".

It is this degradation and deforestation that will obviously cause loss of habitat and changes to the existing ecosystems. These will be avoided with the implementation of the project.

As sustainable landowner projects are developed they will be consistent with the projects policies to ensure Genetically Modified Organisms are not used and to restrict the increase on invasive and non native species

B1.2 Impact on High Conservation Values

As this project will eliminate the possibility of commercial logging in the FMA no high conservation values will be negatively affected by this project.

The preservation of this area would in fact provide protection to the reserves of flora and fauna, maintaining local biodiversity and HCV.

The protection of HCV's is fundamental to the project's success.

Please refer to our High Conservation Values Policy and our Environmental Awareness Policy for further details.

B1.3 Species Used by the Project

No invasive and non native species are planned to be introduced to the April Salumei FMA area. The project aims to conserve and protect native flora and fauna.

Additional guidance will be sort from the National Agriculture Development Plan 2007 - 2012.

B1.4 Use of non native species by the Project.

No non native species are planned to be introduced to the project area.

Exotic species of fish and were introduced in the 1960s to provide for enhanced protein diet for the Sepik river community (see G1.7). This introduction created changes in the predator relationship in the aquatic ecosystem. Aquatic grasses were also removed as a result of the exotic species habitual and feeding behaviour. As a result of this, native fish and crocodile hatcheries were impacted and there is noted changes in fish and crocodile population (2010, J. Duguman, pers comm.,19 June). The aquatic weeds such as the Salvinia *molesta* have its share of destruction by covering lakes and waterways.

The communities throughout the project area may carry exotic species into the project area and that is a potential threat, however, the project will not engage in the transportation of exotic species.

B1.5 Genetically Modified Organisms

The project will not use any genetically modified organisms in its operations to generate emission removals or reductions.

B2. Offsite Biodiversity Impacts

2.1 Potential Negative Offsite Biodiversity Impacts

As the project's main outcome will be conservation, no offsite negative biodiversity impacts are anticipated. However, should any negative impact be identified, the Project Management Team, together with the local communities, will address such problems quickly and effectively. Any offsite impacts will mostly be positive, as conservation of a large area of pristine forest habitat will improve the long-term viability of populations' offsite as well.

Safeguards against biodiversity impacts will be guided by the management and mitigation measures contained in the Environmental Impact Statement that will be submitted to the Department of Environment and Conservation. These measures will also be contained in the Monitoring Plan which the community stewards will be using to ensure all threats to biodiversity are effectively mitigated.

This Project will have only positive impacts on the high conservation values of forests. The fact that it will eliminate logging and all of its negative impacts, will protect and conserve the natural habitats and the flora and fauna they harbour, particularly the endemic species. Any degree of habitat degradation or fragmentation could result in a significant loss of endemic species or distinct species populations.

B2.2 Mitigation of Potential Negative Offsite Biodiversity Impacts

The project does not anticipate any negative offsite biodiversity impacts. As mentioned in B2.1, should any changes in offsite biodiversity be detected, appropriate actions through monitoring and mitigation would commence.

B2.3 Evaluation of Potential Negative Offsite Biodiversity Impacts

The project does not anticipate any negative offsite biodiversity impacts. In fact, offsite biodiversity impacts from the project are anticipated as being positive as the conservation area will provide a larger habitat for species and thereby improve their long term viability in the region.

B3. Biodiversity Impact Monitoring

B3.1 Biodiversity Impact Monitoring Plan

Under the proposed REDD project, a biodiversity monitoring programme will be implemented, which will include regular data collections, assessments of existing and new threats to biodiversity and the local communities living within the Project area or nearby areas. One of the aims of monitoring should be to continue building up and improving the scientific data on the Project areas biological diversity, and to determine whether the Project is achieving its main objective as a Carbon Bank. Details of monitoring methodologies will be developed and continue to be refined throughout the life of the Project.The initial inventory data of the area's biological diversity will help to develop and direct future monitoring activities.

Activity Description	Indicator	Frequency	Responsible
Biodiversity exploitation Level	Number of illegal events detected. Number of illegal hunting complaints. Number of native fauna confiscations.	Annually	
Biodiversity in project area	Amount of species/species families identified in sampling plots established in different project strata, using selected indicator families (for example mammals or butterflies or moths (animals, key families (plants)), focus on globally, regionally or nationally significant biodiversity.	5 yearly	

The project owner commits to developing a full monitoring plan within six months of the project start date or within twelve months of validation against the chosen Carbon Standards and to disseminate this plan and the results of monitoring, ensuring that they are made publicly available on the internet and are communicated to the communities and other stakeholders.

A comprehensive training plan will be implemented to ensure the Biodiversity stewards are trained with the necessary skills to fulfil their role. This is in addition to the standard employee induction training and subsequent communications and computer training for all employees.

B3.2 Biodiversity Impact Monitoring Implementation

The project will within twelve months of the validation of the project have an initial monitoring plan to quantify and document the changes in biodiversity resulting from the project activities (both in and outside the project boundaries). The monitoring plan will identify the types of measurements, the sampling method, and the frequency of measurement.

An annual survey will be undertaken by the project through a suitably qualified third party such as WWF to assess the changes both positive and negative in the biodiversity of the area. This will include particular attention to species with High Conservation Values (HCV), invasive species and native species generally.

Biodiversity Impact Monitoring – Local Level

Identification and training of "Biodiversity Stewards"

There will be two local people per village of over 500 inhabitants, employed and trained by the foundation to monitor, observe and report at a local level. (This will include one member from Women or Youth groups)

Immediate Reporting

1. Any change in an area of high conservation value.
2. Disturbance to nests or the taking of eggs from HCV fauna.
3. The hunting, killing or finding of a dead animal of HCV.
4. The identification of any invasive species.

Quarterly Reporting.

1. Summary of any issues reported in the immediate reporting area above and the actions taken to resolve the issue identified.
2. In conjunction with the Forestry Steward to visit the PSP and identify any new species of fauna present during the field trip.

Annual Reporting.

1. Annual report to be complied in conjunction with suitably qualified and independent third party such as WWF.

BIODIVERSITY STEWARD	Frequency	Report to	Comments
Hunting Log	Monthly	Supervisor	
Illegal hunting Activity	Immediate	Supervisor	
Illegal Collection of Flora or fauna	Immediate	Supervisor	
Monitoring of water access	Monthly	Supervisor	
Monitoring of water quality	Monthly	Supervisor	
Animals found dead	Monthly	Supervisor	

GOLD LEVEL SECTION

GL2. Exceptional Community Benefits

GL 2.1 Location of project area in low human development country

The April – Salumei Sustainable Forest Management Project (ASSFMP) is located within three Local Level Government (LLG) areas, namely, Ambunti – Drekikir, Wosera Gaui and Hunstein Tunal. Because of this project having areas within the three LLGs, service delivery to all areas of the ASSFMP have been poor, uncoordinated or essentially absent. The community is often left to survive based on their own understanding of the traditions and cultures that have provided survival for each generation right through the century.

Papua New Guinea's Human Development Index (HDI) for 2000 was 0.523 and ranked 139 out of 177 listed countries (UNDP 2006). PNG's situation is worse than other South Pacific countries, although it is the biggest country within the South Pacific islands[51]. Within East Sepik province, the HDI value is among the lowest in PNG where in 1980, it was 0.2 – 0.3 (UNDP 1994). This figure has not improved over the last 30 years when Millennium Development Goals (MDG) was assessed for PNG in 2004.

Prior to that, in 2001, a country wide study of the districts in PNG noted Ambunti – Drekikir and Wosera Gaui Districts as seriously disadvantaged Districts in comparison to the other eighty three Districts. Within the two Districts, the most disadvantaged were those in the Korosameri, Salumei and April valleys, Hotmin and Frieda rivers and those on the fringes of the Central ranges (Hanson et al 2001). There are few opportunities to improve their livelihoods, hence very low incomes and living in an environment of low potential with seasonal inundation, poor soils and high rainfall thus making arable land very limited (ibid).

The MDG Progress Report for PNG in 2004 noted MDG 1 for the Momase region, which includes East Sepik province having a K218 income per annum at the food poverty line and a upper poverty line of K314 per annum as compared to the national food poverty line of K302 income per annum and K461 per annum on the upper poverty line. This is the lowest of the other three regions (UNDP GoPNG 2004). Differences in poverty at the sub national level in Papua New Guinea are very large. The Northern region including the East Sepik province has the lowest poverty line and also the highest proportion of people under that line (ibid).

Life expectancy in the East Sepik province is 52.2 years and is the second lowest after West Sepik province. MDG 2 covering Primary Education notes Cohort retention rate at

[51] Australia and New Zealand are excluded from this classification.

the primary level to be 71.5% which is below the national average. Literacy rates within youths aged 15 – 24 is 0.551 or 55.5% within the Ambunti – Drekikir, this is stated in section G 1.5 and G 3.2 where youth do not continue their secondary schooling because of their inability to pay the school fee.

MDG 3 involves the promotion of gender equality and empowering of women. Here, females have a comparative advantage being above the national average by 8.6% which does provide evidence of the equal treatment of women, although the traditional trends of women only being considered as useful for the household is still embedded within a high percentage of Melanesian culture (Duguman 2004).

The MDG 4 main thrust is reducing child mortality rates. In the East Sepik province, there is a high percentage of 79% out of every 1000 births. The reduced level of aid posts, health centres and medical workers within the April Salumei area (see G 1.5) help create this high rate. There is also a low percentage of children under one year old (43%) that have received measles or triple antigen vaccines (50%). Within the villages of Wagu and Yerakai, aid posts have limited medical supplies and the children showed signs of malnutrition. Factors contributing to this include no health education and how nutritious meals could be prepared (Duguman 2004; Hanson et al 2001).

The average percentage of pregnant women having antennal visits once a year in East Sepik is 53%, while only 18% have supervised births, which is low. Within the UNDP/GoPNG report, a composite MDG index was developed for PNG where East Sepik Province had a value of 0.551, which is ranked 16 of the 20 Provinces hence it is an under developed province in PNG (UNDP- GoPNG 2004).

GL2.2. Half of households are within the lowest category of well being.

Total population within the impacted zone is 31,227 which is the 2000 census data and there will no doubt be an increase up to the present time (2010) (see G 1.5). The large villages and communities within the ASSFMP are sporadically distributed along the tributaries of both the April, Salumei and main Sepik Rivers within the vicinity of Ambunti, being a district headquarter. These communities contain over half of the population where the largest (709) is at Hauna.

This is in the vicinity of the American run hospital that has the best facility in the province and is among the best in the country. The rest of the 135 communities are in hamlets or scattered villages over the ASSFMP area and on its fringes (see Map 8). Poverty is very evident in the southern and south western areas in the Ambunti – Drekikir and Wosera – Gaui LLG areas where income generation for each person is very low K 0 – K20 per person per year to moderate K 20 – 40 per person per year (see G1.5) (Hanson et al 2001). These concerns were noted in Duguman (2004) and are addressed

in a proposed ten year Ambunti District Development Plan by the Ambunti – Drekikir Member of Parliament, Hon Tony Aimo (see G 3.2).

GL2.3 Barriers or risks identified to increase benefits to poorer households.

Within the ASSFMP area, notable risks amongst the community are often associated with poor literacy and numeracy skills where comprehension of the basic development services may be lacking as noted in Wagu and surrounding villages (Duguman 2004). However, the community and villagers forage over a large area in search of wild meats and the gathering of forest products, among them Agarwood (see G 1.5). They also visit administrative areas and have felt the level of community improvements as provided by the previous Sepik Community Land Care project (ibid). Through that, they will have aspirations of what they perceive as useful in their community.

Whilst education is a limiting factor, villagers already have in mind what they would like to see being introduced within their household and community. Some of the community assistance such as the supply of water tanks and piping for water supply into communities has improved in a small way dealing with the household chores, although there may be a sustainability issue after this project ceased.

By the formation of the Integrated Land Groups within a Umbrella Land Group Company (see G 3.5 & 3.8), benefits will be equally distributed as it flows down to clan leaders and their members. In addition, the formation of the April Salumei Foundation will assist in facilitating the appropriate development projects with accompanying benefits to the community within the ASSFMP. (see G 3.2 & G 4.1).

Within resource development projects in Papua New Guinea, landowners often venture into a number of options when considering their participation. As in the case for the forestry sector, this is often not well organised and as a result, the community gets very little with only a few key landowners or clan leaders. In this instance, there is no equity given and only royalties paid for the use of the resources, i.e. trees.

In the mining and petroleum sectors, landowners participate better through Incorporated Land Group (ILG) representing the different clan groups within project areas. Here both royalty and to some extent equity have been negotiated resulting in better returns to the landowners. A similar arrangement is the formation of landowner association that is an umbrella vehicle where the ILGs are embedded here. In this project, the proponent's wants to ensure community benefits are equally distributed to everyone in the community. Some options are suggested here for the benefits to be equally distributed. Three possible options are provided here for the community to decide as shown below.

The first option involves the liaison with the ILGs and the project will liaise with these land groups. The 163 ILGs in the project area have an umbrella company that can manage the benefits in that manner. The second option would be to have a Community Association, eg, April – Salumei Forest Conservation Association which represents the interests of ILGs within the April – Salumei project area. In this arrangement, only key representatives of ILGs would be able to represent their community on a Board of the association.

The third option entails having everyone within the community agreed among them to have trust among themselves for the purposes of negotiating with the developer or government. A similar option is already practised in areas in PNG. In Madang, a conservation deed was drawn up amongst the Wanang community where clans agreed to set aside their land for conservation for a seven-year period where this allowed for the stocking of the flora and fauna in their forest. After that period, land use options on the land would be re-examined[52]. Similarly, in Manus, a community trust was set up in a island community where the community worked together in developing their resources. This offered a balance between those who had land and those who were landless but had human resources that could provide labour into a community project[53]

Reference

Duguman, J, 2008, Integrated Conservation and Development Projects in Papua New Guinea: A Case Study Approach, PhD Thesis, University of Newcastle, unpublished, p.96.

Posman, Kua and Aisi Lawyers, 2006, Bundro Asi Trust, A Legal Agreement for the community of Rambutso Island, Manus Province, PKA Lawyers.

[52] Duguman, J, 2008, Integrated Conservation and Development Projects in Papua New Guinea: A Case Study Approach, PhD Thesis, University of Newcastle, unpublished, p.96.

[53] Posman, Kua & Aisi Lawyers 2006

GL2.4 Measures to identify poor and vulnerable households

The formation and registration of 163 Incorporated Land Groups (ILG) within the ASSFMP allows whole families and clans to be represented and participate meaningfully in this project (See G 3.8 & 3.2). The 10 year plan prepared under the guidance of the Ambunti – Drekikir member in Parliament provides for capacity building for these vulnerable communities. ILGs also act as social safety nets for clan and kinship relationships.

The board of Hunstein Range Holdings have provided clarification on the distribution of funds that are to be distributed equally to all individual members of the ILG's.

Further to the previously discussed development plans traditional support systems exist in the villages and we will support these with the identification of poor and vulnerable households through the community stewards. Church groups also provide an important mechanism for assistance and there is funding available for projects they may wish to instigate.

GL2.5 Community Impact Monitoring

Through the appointment of project stewards, community impact monitoring will be undertaken within the ASSFMP (see G 3.8). Conflict resolutions skills will be imparted to them to resolve issues within the community. The Local Level Government does have councillors within wards and village court magistrates in larger communities. These will provide the necessary governance within the ASSFMP.

Reference

Duguman J, 2004, Review of the Sepik Community Land Care Project, Consultant report to WWF – SPP, Port Moresby. Papua New Guinea.

Hanson, W. L., Allen, B. J., Bourke, M. R. and McCarthy, T. J. 2001. Papua New Guinea Rural Development Handbook, The Australian National University. Canberra.

UNDP, 2006. Human Development Report 2006: Beyond Scarcity: Power, poverty and the global water crisis, Palgrave Macmillian, New York.

UN & PNG Government, 1994, Yumi Wankain: Report of the United Nations Joint Inter – Agency Mission to Papua New Guinea on Sustainable Development

GL3. Exceptional Biodiversity Benefits

The April Salumei Sustainable Forest Management Project (ASSFMP) has exceptional biodiversity with the high endemicity rate for birds eg; 385 birds out of 725 total bird species within the Sepik river region indicating 53% endemism (Sherman et al 1999).

Two bird of Paradise species together with the three Falconiformes species are threatened from trading activities under CITES together with the Southern Crown Pigeon (*Goura scheepmakeri*) where numbers may be dwindling, although, no thorough avifauna survey has been undertaken since the FCES (2009) port.

It is possible to find the other twenty one birds of paradise species within the area up to the Central Range (Beehler et al 1986) although the FCES (2009) study was only within the lowland rainforest areas of the ASSFMP. Thus the area has the vulnerability of the endemic birds of Paradise together with the others within the total bird species found on the island of New Guinea. Besides this is one of the last remaining tracts of Kauri pine (*Agathis sp*) that has a high conservation value and hence the declaration of the Wildlife Management Area together with other biodiversity (see G 1.8).

Additional reference

Beehler, B, M, Pratt,K, T, and D,A, Zimmerman, 1986. Birds of New Guinea, Princeton University Press, New Jersey, United States.

CITES Appendices, 2010, Available from <http://www.cites.org/eng/app/index.shtml> Accessed 29 April 2010.