

PAPUA NEW GUINEA COUNTRY REPORT

Status of Mangrove Wetland Protection and Sustainable Use in Papua New Guinea

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Introduction

The ecological, environmental and socio-economic importance of mangrove forests is widely accepted by international agencies, governments, NGOs, scientists and tropical coastal communities alike. It is appreciated that mangrove ecosystems provide a unique and valuable range of resources and services, making them far more valuable than the sum of the products they generate. Nonetheless, responsibility for mangrove management historically has generally been assigned to sectorial institutions, normally Forestry Departments or Fisheries counterparts, or in urban settings to infrastructure or utility authorities.

Only to a limited extent have these institutions catered for the multiple functions of mangrove ecosystems. As early as the 1920s the Malaysian Forest Department, for example, recognized the legitimate needs of fishermen for various secondary products, but admitted them to be somewhat vexatious complications in an otherwise straightforward scheme for fuel and pole wood production (Watson, 1928).

From such beginnings, mechanisms for mangrove management have continued to be largely along sectorial lines. Inevitably, individual agencies have approached coastal resource management with prejudices that limit their priorities to those directly related to agency jurisdiction and goals.

Multiple use management, though much talked about, is still the exception in practice, rather than the rule. Tomlinson succinctly describes the problem in 1986: 'A forestry department will emphasize utilization that may degrade the resource, a fisheries department will emphasize conservation with minimum disturbance, and an agriculture department may advocate conversion and replacement by some putatively and more valuable resource. *This conflict is the background to mangrove management.*

In PNG, the management of multiple or mono cultural use of mangroves and the wetlands on economical scale remains strictly prohibited as far as the PNG Logging Code of Practice and environmental laws are concerned but has appreciated a somewhat multiple use system by the traditional users without set management guidelines and control mechanisms, simply because the lives of the coastal people of the river deltas and the waterways are greatly dependent on these fragile resources for food, shelter, transportation, shoreline and river protection, etc. from generation to generation.

The management plans and guidelines for multiple use of wetlands, particularly the mangroves by the traditional users remains to be seriously considered, as the pressure from the wetland owners in the Gulf of Papua and the Western part of PNG to exploit their fragile forests to generate cash has escalated in the last decade.

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In the nation's capital, Port Moresby, the mangrove resources that occur in small patches are somewhat under threat. The population pressure from the nearby villages has forced the coastal communities to exploit this fragile and valuable resource to generate cash income through the sale of fuelwood to the city residents.

At the same time the toxic wastes from the city may also have caused harmful effects to these important resources, but no studies have been conducted to verify this statement. The National Botanical Gardens of PNG has attempted to re-afforest certain areas under serious threat, but the program had failed due to a funding problem and the lack of public awareness on its importance.

Fragile Forest Resource Information

The most extensive and luxurious mangroves and wetland resources are in the delta systems of major rivers in the Gulf of Papua and Province of Papua New Guinea.

There are about 14 fragile forest types as defined and described by the department of environment and conservation in PNG. The current area, as adjusted since 1975 is 26,280,554 hectares. It was also recorded that 1,019,499 ha was converted to agriculture and 394,636 ha was logged some decades ago (FIMS, NPS png, 1994).

From the above total, the mangrove forest area is 550,942 hectares for all the twenty (20) Provinces in PNG, and the fragile area described as wetland is 11,951,729 hectares (FIMS, NFS png, 1994).

Whilst PNG is blessed with its extensive and luxurious mangroves and wetland resources which are protected and conserved under the environmental laws and the PNG Logging Code of Practice, the WWF has seen fit to establish an agency called, the Kikori, Integrated Conservation and Development Project in the Kikori Basin of the Gulf of Papua.

This particular project has created concerns amongst the indigenous and government agencies; particularly because of its involvement in the Eco-forestry project development of wetland and mangrove harvesting involving 18 incorporated landgroups in the Kikori Basin.

However, in this presentation and throughout the workshop, I wish to focus on this particular project development and find a balanced equation between conservation and sustainable use from an economical point of view and what PNG and the other Pacific Island countries can do to accommodate the increasing pressure to sustain population growth and the expansion and diversification of national economies.

WWF'S Kikori Integrated Conservation & Development Project

WWF's Kikori Integrated Conservation and Development Project in PNG operates within one of the largest remaining tracts of undisturbed tropical rain forest in the southern hemisphere. The Kikori Basin covers an area of 2.3 million hectares and stretches from the extensive mangrove wetlands of the Gulf Province to the alpine grasslands of Doma Peaks in the Southern Highlands Province.

The operation started in 1994 and involved various village communities in the Kikori Basin to conserve their forest and aquatic resources while addressing their development needs. The project is promoting rural development and income-generating activities that contribute to the sustainable management of the area's natural resources.

The Kikori Basin which is characterised by numerous waterways, has always been the main means of transport for locals, barging of logs, shipping of merchandized goods, and the oil pipeline.

Due to the heavy use of the waterways within the Kikori Basin, the WWF has conducted 13 bio-diversity surveys and confirmed the extraordinary flora and fauna of the area, focusing on fresh water fish, reptiles, amphibians, aquatic insects, moths and butterflies.

Eco-forestry

On the other hand, WWF has established an Eco-forestry umbrella company, Kikori Pacific, which acts as a marketing agent and provides training for community-based eco-forestry groups in the Lower Kikori area.

Kikori Pacific is buying, milling and selling timber on a sustainable basis and continues to export timber to an international buyer in Australia. The Company is working closely with the 18 incorporated landgroups who have determined their boundaries excised from the original Forest Management Area, Turama Extension.

The actual program started in 1994 and initially established four (4) Eco-forestry enterprises to work with Kikori Pacific Ltd. These villages based companies are:

- Hope Forest Ltd
- Darken Lumber Investment Ltd
- Iviri Timber Investment
- Keboi Kerowa Investment Ltd

These projects are all aimed towards sustainable development by way of producing sawn timber for their own use, and generating cash income for the communities through proceeds of sawn timber sales to Kikori Pacific Ltd.

However, due to technical and financial problems experienced by most of these projects, the only maintained groups and individuals are from the Veraibari village. They are:

- Darken Lumber Investment Ltd
- Iviri Timbers
- Veraibari Village

Operational Areas

The operational areas are confined to the clan's tribal boundary, mostly along the main Kikori river system and the delta areas.

These areas are within the Turama Forest Management Area, categorised as block 1 and 2, which are defined as semi and permanent flood plains, hence are restricted for logging by the large-scale operator.

These fragile areas are being negotiated between the developer, the landowners and WWF, so that these wetland areas can be released back to the resource owners to develop by way of small-scale sawmilling operations with low impact. There has never been a concrete agreement between the parties and the state to date.

Sawn Timber Sales

The sawn timber products have found comfortable markets, locally and internationally. The main species processed and marketed is *Xylocarpus* sp. or commonly known as the mangrove cedar.

It was reported that the volume harvested and marketed is less significant. The hard data could not be accessed from WWF Eco-forestry enterprise despite numerous attempts.

Legal Implications

The operations of these Eco-Forestry Projects including Kikori Pacific Ltd do not have the legal cutting power called the timber authority, as far as the Forestry Act and Regulations are concerned.

Attempts over the issuance of timber authority have been made but were unsuccessful, due to the legal fact that areas applied for timber are under the Turama Forest Management Agreement Area (FMA).

The Eco-forestry projects are not licensed to operate, as far as the Act and Regulations are concerned, and this also includes the Kikori Pacific Ltd. Attempts have been made to license these community based operators.

The areas, located in the river deltas, are legally within the boundary of the state acquired Forest Management Area, and the permit to operate this area has been issued to a different operator called, Turama Forest Industry (TH).

Economic Implication

The promotion of resource owner participation in the utilisation of their own forest resource is one of the objectives of the NFS in the Forest Resource Development Sector. However, this may not always be the case with the waterway and the river delta people, when one looks at the large-scale operations in the Gulf Province.

These 18 incorporated land groups have decided to withdraw from the large-scale timber concession area due to the fact that they have little say over the timber resources on dry land, unrestricted for harvesting. These people are still beneficiaries of the proceeds of sale from the large-scale operations in terms of 100% of 7% premium based on F.O.B. exports. At the same time they also receive indirect and direct monetary benefits from the delta infrastructure and the annual waterway funds, except for the timber royalties.

The Eco-forestry projects set-ups in the villages along the waterways and the river deltas have attempted to generate extra income from the sale of semi-processed product, particularly the mangrove cedar at K24.00 stumpage. However, when taking into account the escalating running costs of this type of operation, in terms of fuel and parts, perhaps the cash flow may be far from sustainable.

The extreme scenario is the travelling distance which one would find the furthest and most Mangrove Cedar harvested is from the Veraibe village some 15-20km down the river system and to the coast. The logs are normally floated with the river current, which sometimes take about a week to reach the centralized milling point at Kikori.

At the same time the waterway people greatly rely on the marine and aquatic food to sustain their living. The main supplies of local fresh water crabs, prawns and barramundi come from the Gulf and Western Province of Papua New Guinea.

Environment Implication

The environment regulations on the exploitation of mangrove and wetland timber resource will remain unchanged for the years to come.

Ironically, the current operation of Eco-Forestry Projects in the delta region, which concentrates on the harvesting of one type of mangrove species called the Mangrove Cedar is a total breach as far as the environmental laws and the Logging Code of Practice are concerned. This practice will definitely have an impact on the species in a long run, if not properly managed and regulated.

Mangrove cedar or *Xylocarpus sp.* does not exist in abundance in swamp areas, but is scattered or occur in small patches of less than 4 to 6 cu m/ha. The species occurs in almost pure stands along the riverbanks where there is tidal brackish water.

The regeneration of this species is quite poor in the area, as the tide level does not always allow the base of the standing tree free of water thus reduces to some degree the germination and survival rate of seeds and saplings. The seeds normally float and as the high tide comes in daily it sweeps them into the river system and away from their place of origin. It is assumed that the continuous floating of seeds greatly contributes to loss of viability and increased mortality. Those that are deposited on dry land have a better chance of survival.

Planning Implications

The Kikori Integrated Conservation and Development Project (KICDP) with its establishment have introduced Eco-Forestry Projects in the delta area of Kikori Basin. The aim to achieve sustainable development of the Forest Resources, through small-scale sawmills, is a good management approach at the community level. However, it would be better if it was applied on non-fragile areas, and place more emphasis on conducting applied research on the mangrove wetland in the Kikori Basin in conjunction with other government agencies to help assist in the formulation of a better management plan and guidelines for the sustainable use of these fragile resources.

At present there are no management plans and guidelines in place to accommodate this practice, simply because it contravenes the act and regulations of PNG.

Nevertheless, the KICDP has tapped into a number of projects related to the management of mangroves and the wetlands in the Kikori Basin and has redefined some of its objectives to enhance better management and sustainable use.

Some Related Projects Undertaken by KICDP

The KICDP has identified and conducted a number of environmental studies, directly and indirectly related to the wetland activities by the Eco-forestry projects as established under the Kikori Pacific Ltd.

These projects and activities include to:

- Establish environmental impact assessment protocols for Eco-enterprises, (this activity is completed but information is not available).
- Conduct environmental impact assessment for all Eco-enterprises, (impact assessment has been completed on all Eco-enterprises, with some monitoring programs and guidelines completed)
- Develop and implement monitoring programs of Eco-enterprises as needed.
- Collect environment baseline data on all Eco-enterprises.
- Complete the final technical reports of the baseline biodiversity surveys of Iviri, Keboi Kerowa and Darken eco-forestry areas when the remaining reports are received from the consultants.
- Conduct community-based environmental monitoring of eco-forestry harvest areas in the lower Kikori and provide regular feedback to landowners of eco-forestry operations.
- Complete the report on the establishment of bio-diversity-monitoring plots in Iviri, Darken and Keboi Kerowa Eco-forestry areas.
- Re-survey Iviri monitoring plots to monitor impact of harvesting *Xylocarpus* trees on biodiversity indicators.
- Implement post-logging environmental impact assessments (PHA) as timber is felled.

Some Objectives of the KICDP project (as redefined)

The redefined objectives and forward steps taken for better management:

- to create an enabling environment for biodiversity conservation in the Kikori catchment.
- Maintain communications with national and provincial government officials.

The Project Manager along with other WWF staff within the South Pacific region met with the Director of the Office of Environment and Conservation (OEC), and two of his staff to introduce WWF's new representative for the region, David Hulse, and to discuss WWF and OEC collaboration. Following this meeting, the Project Manager and the Conservation Science Coordinator met with the project's Desk Officer at OEC.

Project staff have also met with individuals at the National Museum and Art Gallery, the University of PNG, and the Forest Research Institute staff to keep them updated on

project activities, and to discuss ways to further improve collaboration between WWF the private sector and governmental agencies directly and in-directly involved.

The project's Eco-Forestry Officer continued to maintain dialogue with the Gulf Provincial Forestry Officer, Allanson Avae, on the state of the project's submission on community based eco-forestry. At the same a submission on the entire project and activities has been submitted to the Provincial Forest Management Committee (PFMC) of the Province to deliberate in its next meeting,