



# 3<sup>rd</sup> PNGFA Workshop: Development of methodologies for the first National Forest Inventory in Papua New Guinea

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Hotel Hodava – Port Moresby*

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# PROJECT TITLE: Technical support to the Papua New Guinea Forest Authority to implement a multi-purpose National Forest Inventory

- To improve the capacity of the PNG Forest Authority and the University of Technology-Department of Forestry on continuous and multi-purpose forest inventory;
- To establish the first multi-purpose NFI of PNG (generally referred to as NFI);
- To set up a NFI Information System with web-portal interface to disseminate and share data and information;
- To carry out specific forestry and landscape studies including ones on allometric equations, wood density, forest land uses, biodiversity and indigenous forest practices;
- To enhance policy dialogue on forestry;

# PNG NFI PROJECT PARTNERS

## **Implementing partners:**

- PNG Forest Authority
- University of Technology-Department of Forestry

## **Support partners:**

- Office of Climate Change and Development
- Forest Industries Association
- Environmental NGOs

## **Development partners:**

- UNREDD
- Food and Agriculture Organization (FAO)
- EU
- JICA

*(Others ...???)*

# Workshop 1 - 8-9 October, 2012, Lae

The expected outputs/outcomes of this workshop were:

- A gap analysis of existing Multipurpose national Forest Carbon Inventory Capacities, existing field data and on-going forest inventory activities is documented;
- Multipurpose Forest Carbon Inventory data collection field manuals developed;
- A detailed forest inventory methodological process documented; and
- A 'Master Document' detailing the inventory work plan adopted.

# Gap Analysis

## The Report: Issues Identified:

1. Detailed review of methods previously used, including variables measured and cost per plot
2. Description of activities taking place at sites where data was collected
3. Review of programmes that funded previous inventory work
4. Legal context of inventory/field data collection

## Data Issues:

- FPIC process to address LO issues
- Soil study needs capacity-DAL have soil guidelines
- Field form (forest inventory) can use as a guide
- Have its own processing system (Database system)
- Capacity on data analysis

# Field Manual

Four Carbon Pools that will be measured include:

## **1. Above Ground**

Standing trees

Non-Timber Forest Products\*

Biodiversity\*

## **2. Soil Organic Carbon**

## **3. Litter**

## **4. Deadwood (Standing and Fallen)**

## **5. Below Ground – not discussed – why??**

# Consideration and Outstanding Issues – for Field Manual:

- Collection of data from existing work done by others
- Identifying different users of forests
- Development of Templates to allow data generation
- Training and Capacity Building
- Development of different field Manuals for all the four different carbon pools
- Definition of Biomass/Carbon/Volume
- Usage of Carbon Calculator
- Acknowledge lack of expertise in some significant areas of work - Training and Capacity
- References from other countries

# Field Methodology

## Summary of discussion



Scope: Nation-wide



Optimal allocation of the resources



Sampling Methods: Probability sampling



Stratification (Restricted random sampling)

○ **Province – Forest Types – Cluster Plot design – Test – (shape will be decided later)**



# Master Plan –

- Plan incomplete
- Awaiting finalization of Methodology

# Issues for further Discussions during the 2<sup>nd</sup> Workshop (1)

- NGO's/Researchers/Academia applying some methodology for capturing various data for different purposes
- No standard method
  - Plot design
  - Stratification
- Given the importance for a NFI in particular to mitigate against climate change, need to have a standard methodology in PNG
  - Saves cost
  - Getting quality results
  - Allows PNG to use such results in its National Communication

# Issues for further Discussions during the 2<sup>nd</sup> Workshop (2)

- Methodology
- Manual
- Protocol – standardized method of collecting data
- Role of others, NGOs, other researchers

# Workshop 2: 3-15 February 2013, Lae

The expected outputs/outcomes of this workshop were:

- A gap analysis of existing Multipurpose national Forest Carbon Inventory Capacities, existing field data and on-going forest inventory activities is documented;
- Multipurpose Forest Carbon Inventory data collection field manuals developed;
- A detailed forest inventory methodological process documented; and
- A 'Master Document' detailing the inventory work plan adopted.

The main Issues that were picked up during the Workshop were-

- Difference between NFI and MPNFI
- Definition of Forest
- Forest Classification
- Sampling Design
- Plot Design
- PNG's Capacity to Implement the NFI
- Participation of Stakeholders

# NFI/MPNFI

## **National Forest Inventory (NFI)**

Is the systematic collection of data and forest information for assessment or analysis

## **Multi-purpose National Forest Inventory (MPNFI)**

The main purpose for a MNFI for PNG would be that the information collected from the MPNFI may be used to Assess and Report Carbon Stock changes related to forestland. Further, it would provide all information necessary to inform country policies and measures on REDD+.

Parameters to measure:

Trees

Diameter at breast height over bark (DBHOB)

Height – Merchantable & Total height

Stem form

Crown diameter

Palms, Vines

Dead wood - standing/fallen

Soils

Litter

(Non Timber Forest Products (NTFP)

Fauna?

**Consensus was to maintain as NFI**

# Definition of Forest

Outcome of Climate Change Workshop in 2009:

- 0.5 ha
- 10 % canopy/crown
- 3 m tree height

Current Workshop (2013) recommended:

- 1 ha
- 30% canopy
- 3m height to retain
- Need to consider a width definition as well

## **Conclusion:**

**A Technical Working Group to consider again the issues of forest definition, taking into account what Thresholds to consider in defining what is a forest for purposes of climate change monitoring, reporting and verifiable actions**

# Forest Definition (2)

## NFITWG Recommended

- 1 ha
- 10% canopy
- 3m height to retain
  
- Approved by NFB – awaiting NEC consideration and approval



# Forest Classification

Forest Inventory Mapping Systems (FIMS) – 63 Vegetation Types

1991 Forest Policy:

- Production – Areas either under concessions or being proposed in the near future
- Reserve – forests where a decision has yet to be made on its use
- Protection – area that have legal status mostly for protection and conservation
- Afforestation – mostly grasslands have Afforestation potential
- Salvage – savanna forests that can also be cleared for afforestation

JICA Project –

Vegetation Type – 17, including Forest Plantation

Total Land Classes – 21, including Lakes and larger rivers; Bare Land, Larger urban centres, Other Plantations

**Conclusion:**

**To focus on the current work by JICA of the 21 land classes**

**Define the vegetation types**

# Sampling Design

## Double Sampling Approach

### Systematic Sampling – Phase 1

- Use RS to identify/confirm the 17 vegetation classes
- 2mX2m, 4mX4m, 5mX5m

### Random Stratified Sampling – Phase 2

- > From Phase 1, may be necessary to combine or separate vegetation classes

# Plot Design

To work on the existing data, i.e., the PSPs (analyzed data) to determine the size of the plot

Shape and size matters so what would be the optimal size?

**Conclusion: Circular plot has more advantages than others.**

# PNG's Capacity to Implement the NFI

- UPNG - 4 Botanists
- WINROCK/LEAF- Palm specialist
- FRI - dendrology refresher course (in March)
- FPCD - field manual
- FRI - wood technologist (to provide list of equipment)
- UNITECH/BUC - 4 Botanists, GIS (1)
- WWF- 2 Foresters, 1 GIS, protocol of field survey (forest inventory and carbon)
- DAL - agriculture land use (updating of agriculture land use map), soil information (PNGRIS, soil database, ),
- DEC - RS (Land cover classification), biodiversity information
- Timber Companies - Assists in logistics (transport, etc)
- MOU between UPNG and JCU, should try and use that as well for training purposes
- FRI - plant database, 8 botanists, tree key species database

# Summary of Workshop 2 Outcome:

Three preparatory phases:

- Phase I: planning:
  - Methodology development;
  - Stratification;
  - Institutional arrangements;
  - Logistical arrangements.
- Phase II: pre – sampling:
  - Field campaign;
  - Population statistics.
- Phase III: inventory:
  - Re-assessment of sampling design;
  - Socio-economic survey;
  - Data analysis.

## 3<sup>rd</sup> NFI Workshop: 20-22 May, 2014

The expected outputs/outcomes of this workshop are:

- Methodology of land use assessment using open source satellite information is introduced
- Outcomes of first phase (remote sensing based) of NFI are presented
- Draft methodologies and implementation plans of the second phase of NFI (field sampling) are presented, discussed and finalised

# CONCLUSION:

LOOK FORWARD TO FURTHER DISCUSSIONS TO  
DESIGN THE FIRST NFI FOR PNG