PNG-FRIMS

Papua New Guinea
Forest Resource Information Management System

Capacity Development Project for Operationalization of PNG Forest Resource Information Management System (PNG-FRIMS) for Addressing Climate Change

1. What is PNG-FRIMS?

Overview

- PNG-FRIMS is a system responsible for acquiring, managing and using **"spatial information/data"** on forests in Papua New Guinea. This promotes efficiency and sophistication of forest administration, and supports PNGFA decision making.
- It is a system for browsing of various spatial information/data among PNGFA; estimation of forest area using Forest Base Map (which includes vegetation and topographical information); estimation of commercial timber volume / carbon stock amount using logging history; and projection of land use change using time series data.
- PNGFA can update forest resource information and geospatial data in PNG-FRIMS using field survey data with GPS, logging plan submitted from logging companies and forest area / condition change monitored using satellite images etc.

PNG-FRIMS will support

- Planning National Forest Plan / Provincial Forest Plan
- The formulation of new logging project and negotiation with landowners
- Monitoring logging projects and implementation of LCoP (Logging Code of Practice)
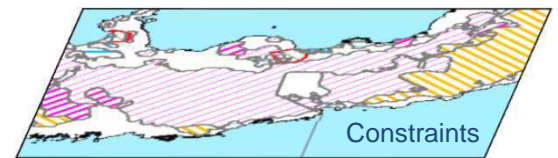- Finding candidate area for forest plantation and management of forest plantation
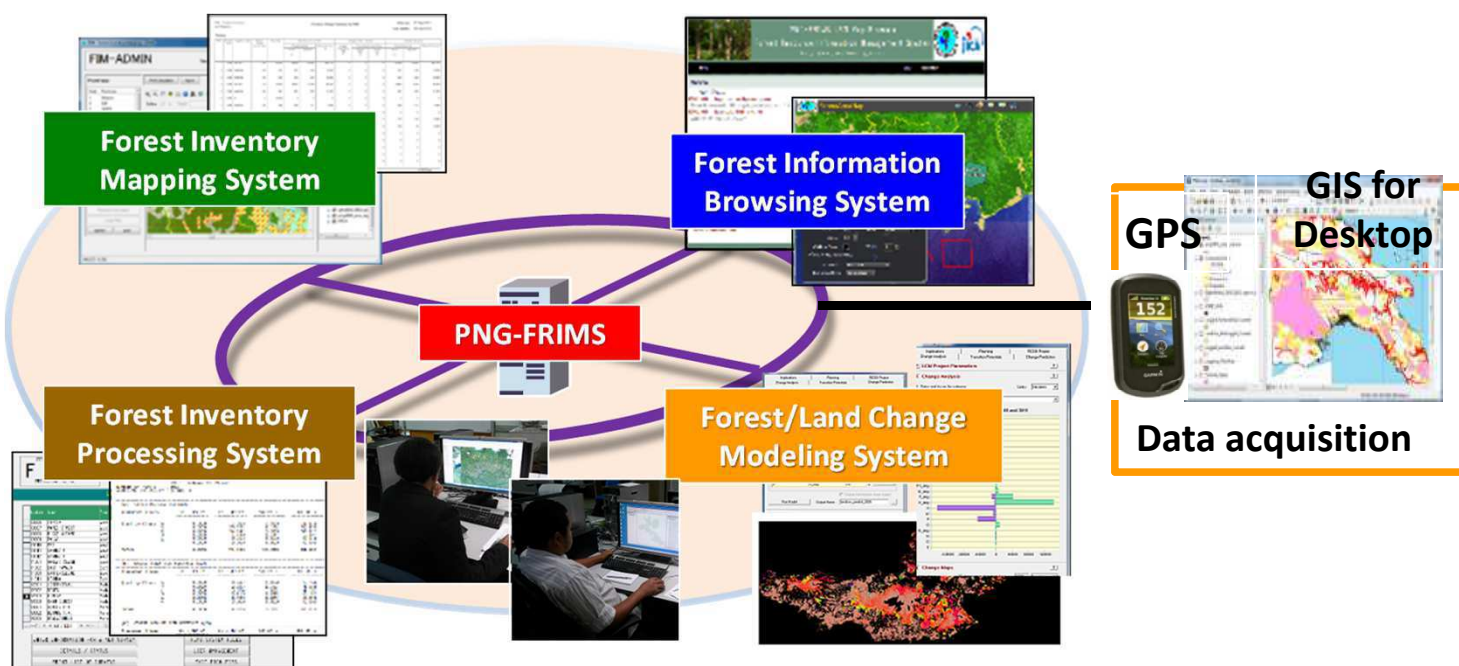
There are four principal types of data in PNG-FRIMS:

- **Logging Concession Information;**
- **Constraints and Land Use;**
- **Forest Base/Cover Maps;** and
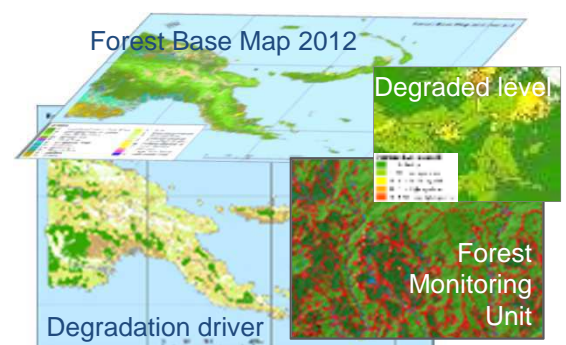- **Base/Topography**,

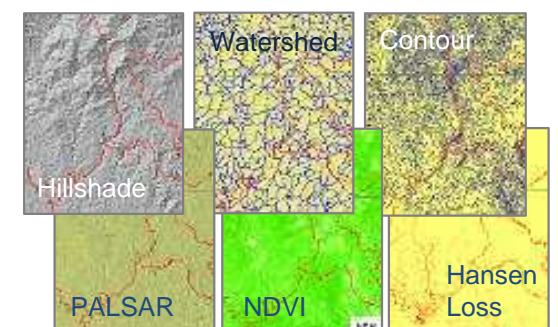|	
Logging Concession Information	Concession Area, Logged Area, Planned Area , Buffer zone Topographic info: Logging road, River/ Stream, Contour Facility info: Bridge/ Culvert, Campsite, Gravel pit, Log landing, Building, etc.

Constraints and Land Use	Social condition:
	  FCA (Forest Clearing Authority), Plantation, Protected Area, Mining operation area
	Natural condition:
	  Slope (Extreme/ Relief), Altitude (Extreme), Karst, Inundation (Extreme/ Serious), Mangrove

Forest Base/ Cover Maps	Data:
	  Forest Base Map 1.1 (2012)
	  Time-series forest cover maps (2000/ 2005/2011) (WNB/ WSP, as of 15th Nov 2017)
	  Forest cover map 2015 (benchmark map) (ongoing)
	  Old vegetation (FIMS Forest Mapping Unit)
	  Collect Earth Landuse change Assessment (Point Sampling)
	  PSP (Permanent Sample Plots), © FRI (Forest Research Institute) All rights reserved.
	  Database of PINFORM (PNG International Tropical Timber Organization Natural Forest Model), © 1998 FRI All rights reserved.
	Attributes:
	  Vegetation area, Tree crown size, Forest Zone, Timber volume, Carbon stock, Degradation driver, etc.

Base/ Topography	Satellite imagery:
	  RapidEye (2011), Landsat AGP (1990/ 1995/ 2000/ 2005/ 2010/ 2011/ 2014/ 2015), PALSAR (2010/ 2011)
	Topomap (scale = 1:100,000, Raster)
	Topography:
	  5m mesh Digital Elevation Model (Airborne Radar in 2006 from National Mapping Bureau), Hillshade, Slope, Contour (10m), Watershed (made from GeoSAR)
	Global Dataset:
	  Hansen data (Tree cover loss/ lossyer/ gain)
	Main road (time-series), River, Incorporated Land Group and Clan boundary/Settlement/ Local Level Government & District boundary/ Province-Region boundary (PNG Census 2000 and 2011), etc.

Constraints

For planning and monitoring

Logging Plan

For planning and estimation

Forest Base Map 2012

Degraded level

Degradation driver

Forest Monitoring Unit

For developing, updating and monitoring

Road

Landsat AGP

Topomap

Hillshade

Watershed

Contour

PALSAR

NDVI

Hansen Loss

Database stores not only PNGFA data but also global dataset and the information from other organizations, which are updated and kept fresh periodically.
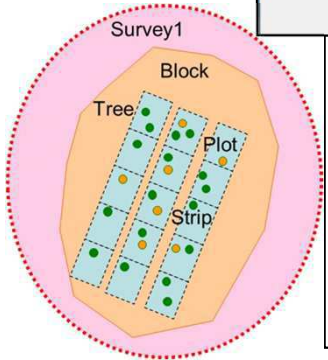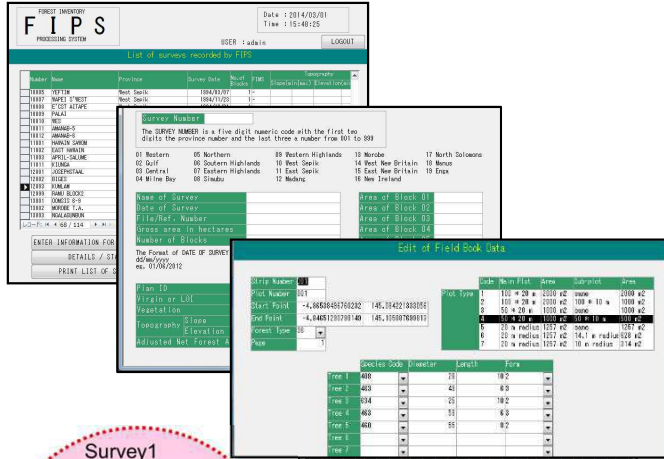
3. Functions of PNG-FRIMS

(a) Forest Timber Volume Estimate (upgraded FIPS and FIMS)

JICA renewed and enhanced FIPS and FIMS which were developed in the previous century and integrated forest information for the estimation of timber volume into the PNG-FRIMS on the PNGFA's network.

FIPS (Forest Inventory Processing System)

Overview:
- FIPS estimates the timber volume of the expected logging project area based on the data of the inventory survey.
- The estimated volume is to be used to determine an annual allowable cut of timber volume for the expected logging project.

Basic functions:
- Enter survey information and assessment data from field books (including species, diameter and length etc.)
- Edit and process assessment data
- Produce survey result and printout as summary report
- Import assessment data from Excel file into FIPS, and Export the Result of processed data from FIPS into Microsoft Excel format

FIMS (Forest Inventory Mapping System)
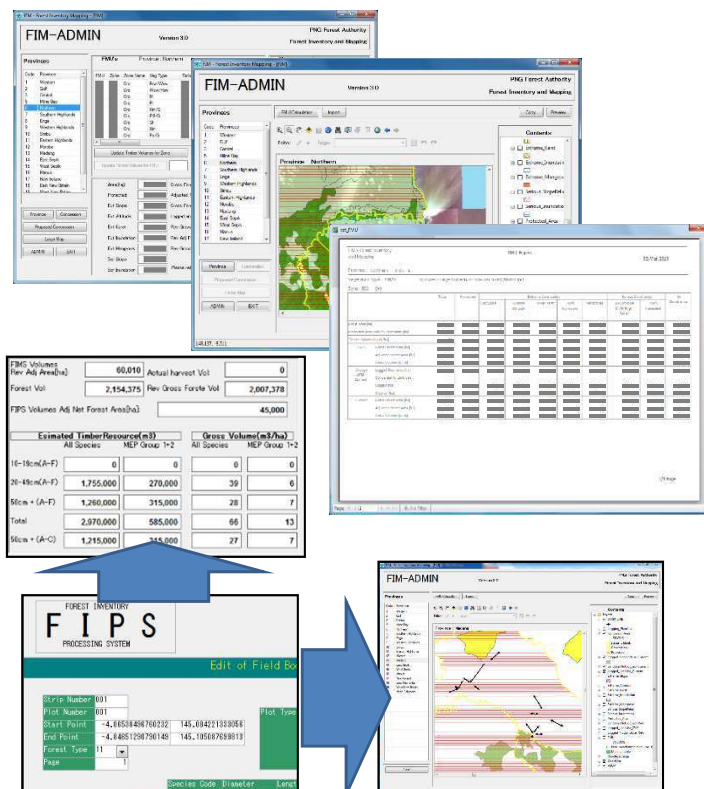
Overview:
- FIMS calculates the potential timber volume in any level of area such as national, provincial and logging project.
- The volume is calculated using forest type per unit timber volume and to be adjusted by logged volume data.
- The volume estimate is to be utilized to develop forest plans (National/Provincial forest plan).

Basic functions:
- Manage not only planned and operational concession boundaries but also logged over areas reported by logging companies.
- Import assessment data from FIPS and show strip lines on map, which were used for surveys and timber volume processed by FIPS.

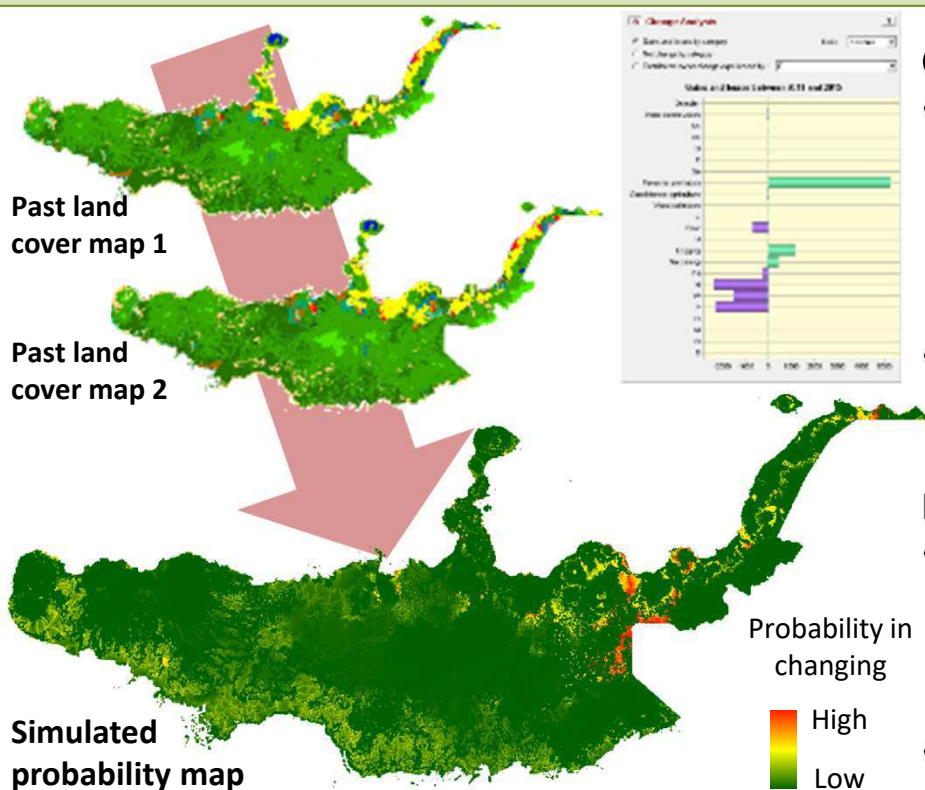## (b) LAN (Local Area Network) Map Browser

Overview:
- Sharing forest information stored in PNG-FRIMS database within PNGFA and promoting its utilization for PNGFA's daily activities.
- Authorized users can see thematic maps through a Web Browser without special software.

Basic functions:
- Turn forest info on and off on the map.
- Search for location/ point of interest.
- Measure length or area on the map
- Sketch simple graphics on the map.
- Print visible displayed map.
- Show attribute info of each graphics.
- Switch background maps (satellite imageries, topographic maps, etc.).
- Develop and add processing functions.

(c) Forest Land Change Modeling System

Past land cover map 1

Past land cover map 2

Simulated probability map

Probability in changing
High
Low

Overview:
- Analyzing chrono-sequential spatial data including forest information, future land change (such as deforestation) and simulate probability in each location.
- This system uses Land Change Modeler, which is a product of Clark Labs, Clark University, USA.

Basic functions:
- The results of the simulation is useful for developing policies such as provincial forest plans and action plan of the national REDD+ strategy.
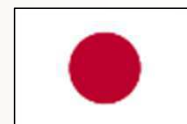- Evaluation of the model is needed for utilization of the results.

Last updated on Feb. 2018