MRV Country Presentation
PAPUA NEW GUINEA

JOE POKANA

*The United Nations Collaborative Programme
on Reducing Emissions from Deforestation
and Forest Degradation in Developing Countries*

UN REDD Programme

MRV meeting with UN REDD Countries – Rome, September 10 to 11th 2009

Country information

- Country area is 464. 100 sq. km
- Forest area is 330, 650 sq km (71%)
Data sources:
- vegetation maps use by forestry
- land use maps use by agriculture

- remote sensing survey non have been done

- PNG's classification of forest vegetation is currently in use for vegetation/forest classification. It's a national classification. It comply and combine with the FRA one.
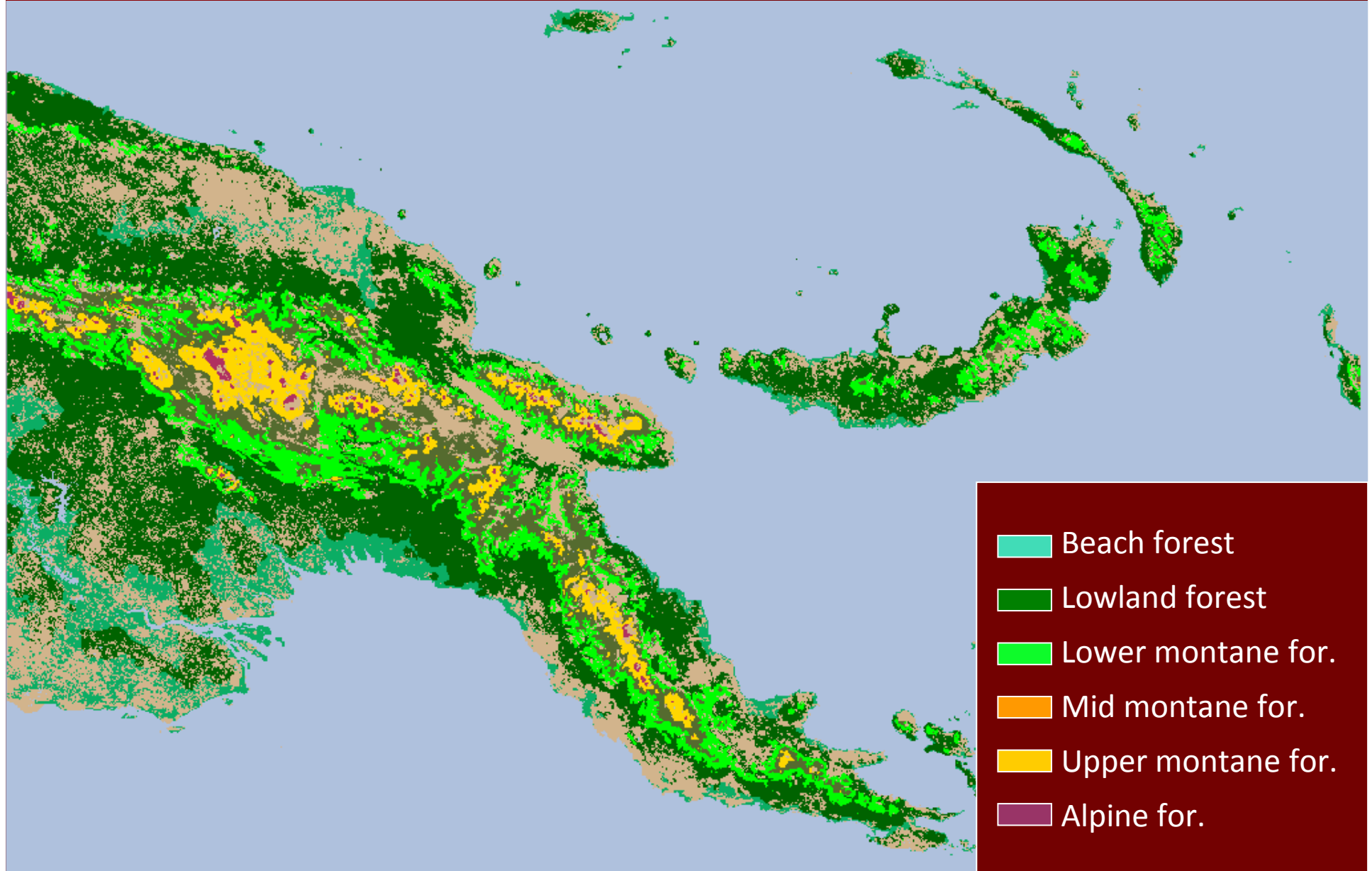
Location of PNG

PNG FORESTS

- PNG land area – 46.410 mil. ha – 71% forest cover – (30.365 mil. ha).

- Various forest types – Coastal to Alpine.

- Classified into 6 structural formation and 56 vegetation classes (PNGRIS 1996)

- Host to 7.5 % of world's plant biodiversity & considered floristically rich in the world. (15-20,000 plant spp), 2000 are plant species of which 400 commercial timber trees

- Rainfall averagely is 3, 000 mm/yr

- Landownership is 97% customarily own

- >5,190,786 million people (2000 fig), 83% still live in rural areas. Average growth rate of 3.2

PNG forest stratification

Beach forest
Lowland forest
Lower montane for.
Mid montane for.
Upper montane for.
Alpine for.

NFIs and national assessment/monitoring programmes

- **PNG Forest Authority (PNGFA) records show no National Forest Inventory done**
- **Exception for aerial photographs for period 1972-1975**
- **Rapid Resource Appraisal (RRA) done in 1991 which established Forest Inventory Processing System (FIPS) and Forest Inventory Mapping System (FIMS) that also use the PNG Resource Information System (PNGRIS)**
- **All FI are project base for commercial harvesting or protection.**
- **The design use is the Continuous plot Assessment**

NFIs design

- There is a national manual for PNG's NFI.
- The plot size are either 50 x 20 m or 100 x 20 m.
- Current research carried out is the PSP of plot size 100 x 100 m. PNG Forest Research Institute (PNGFRI) has established 137 throughout the country.
- The same research have also tested the Point Sampling technique.
- Multipurpose NFI will be implemented soon under UN-REDD and ITTO funding

Remote sensing survey

- PNG has not seriously use remote sensing survey due to the cost of obtaining images etc
- Only an academic project with the UPNG try using RSS on state of the forest project
- Others are working in isolation
- Now PNG is working in collaboration with Australia to have RSS done.
- PNG has been working with ACIAR, CSIRO, EC JRC, and FAO to built capacity and start using RS to assess land cover change and land use change.

Forest carbon estimates

PNG have allometric equation for the country vegetation especially for timber volume computation.

PNG does not have an official model to estimate carbon emission and carbon stock, but research have been currently carried out to sort this.

PNG has taken actions by the establishment of the Office of Climate Change and Environment Sustainability (OCCES) to coordinate its effort on all issues relating Climate Change. The OCCES will establish and coordinate the national MRV system under UN-REDD project.

The new NFI will be developed starting from the existing information available from the Permanent Sampling Plot Network

- *Distribution:* Mainland and five adjacent islands
- *Established:* Since 1992
- *Size:* 1 hectare each
- *Scale:* Currently 137 plots operational

| Lowland rainforest (0 - 1000 m)		Mid montane forest (2000 - 3000 m)	
127		8	
Managed	Natural	Managed	Natural
116	11	6	2

Permanent Sampling Plots Design

- **Distribution:** Mainland and five adjacent islands
- **Established:** Since 1992 with up to 3 reassessments
- **Size:** 1 hectare each (25 x 400 m² sub plots)
- **Scale:** Currently 135 plots operational
- **Recorded Parameters:**
  - Position and altitude
  - Trees with diameter of 10 cm and larger
  - Initially tree height
  - Diameter at breast height
  - Species or genus identification
  - Canopy size
  - Light condition
 - Quality of crown and stem

20 m

20 m

100 m
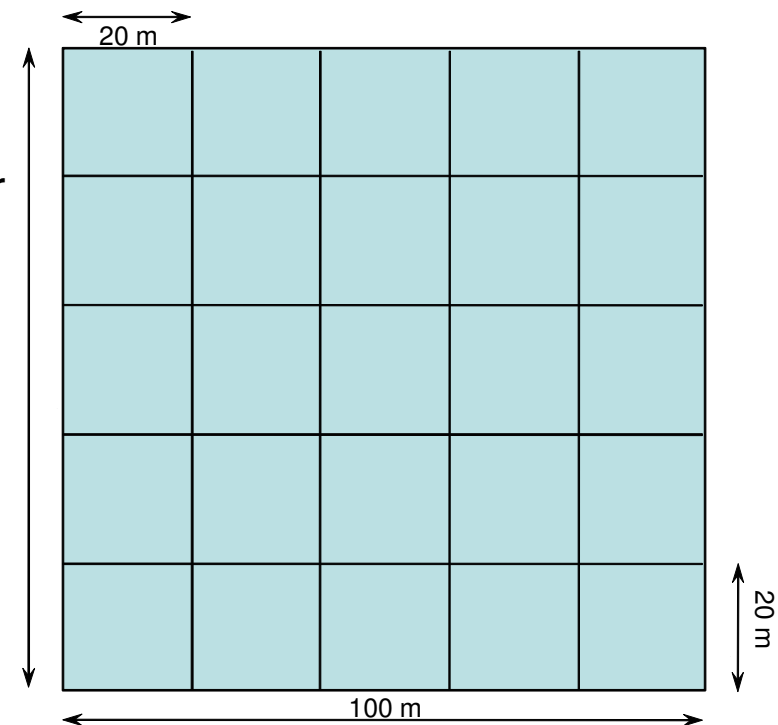
Above-ground biomass

- *Managed lowland forest carbon stock:* 70 t C ha^{-1} (83 plots)
- *Present situation:* 6.2 % of uncertainty (i.e. random errors) at 95 % CI
- *Ambition:* 125 plots required for < 5 % uncertainty at 95 % CI

83 managed lowland rainforest plots
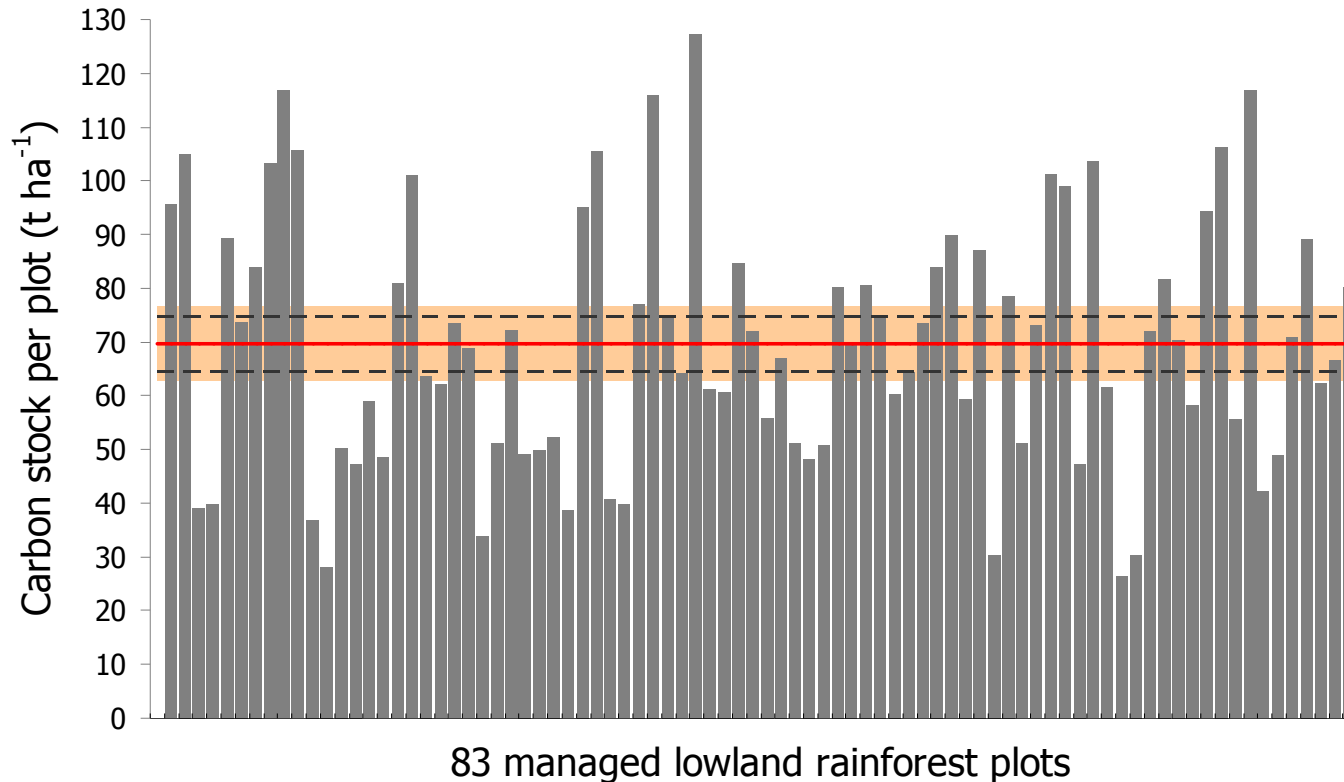
PNG aims to assess biomass at < 10 % uncertainty (due to random errors) because it will likely also increase the accuracy, despite the uncertainty of the reduced emissions (trend uncertainty, IPCC 2006 GL) is **NOT** affected by random errors in biomass estimation.

Soil carbon

- *Grid:* 12 sample points per plot, assessment of top 30 cm & litter
- *Resolution:* 4 depth increments of 0-5, 5-10, 10-20, 20-30 cm
- *Recorded Parameters:* moisture, density, C, N, pH
- *Correction scheme for soil skeleton*
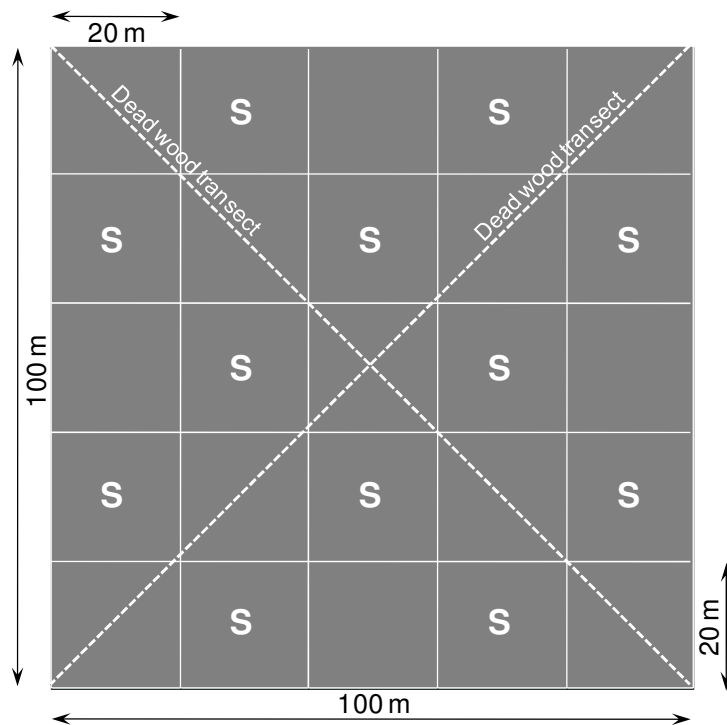
Soil carbon – first results

- **Large soil carbon pool:** 53 t C ha^{-1} in lowlands
- **Large soil carbon potential:** >100 t C ha^{-1} in montane forests
- **Litter:** additional pools expected at least in montane forest litter

Forest type	No of Samples	Carbon pool in mineral soil (t C ha^{-1})*	Litter depth (cm)
Lowland managed	188	53	1.5
Mid montane managed	48	113	12
Mid montane unmanaged	36	103	36

* upper 30 cm

Soil carbon – first results

- *Large soil carbon pool:* 53 t C ha^{-1} in managed lowland forests
- *Large soil carbon potential:* >100 t C ha^{-1} in montane forests
- *Litter:* Additional large pool expected at least in montane forest litter
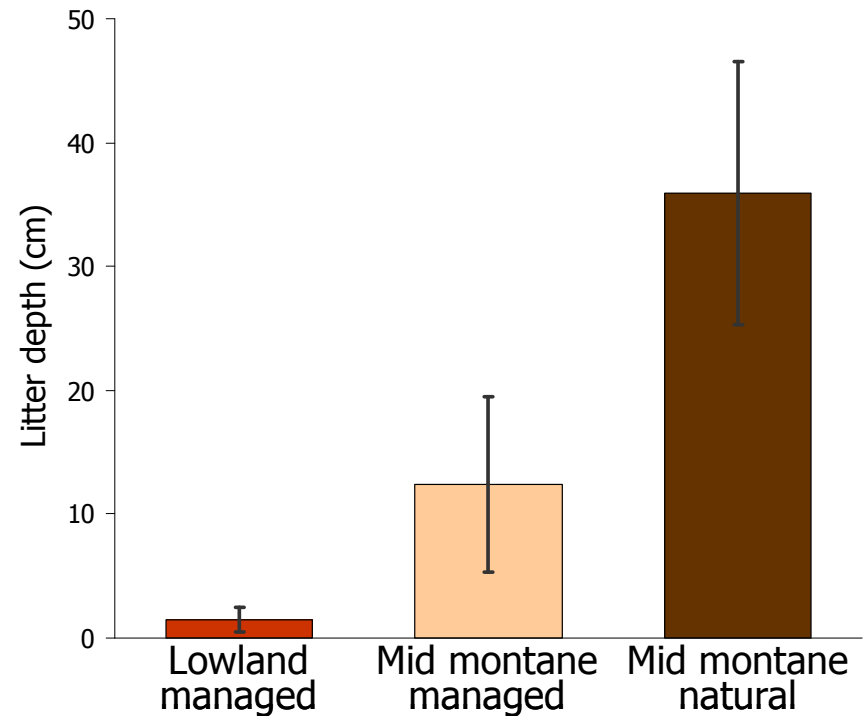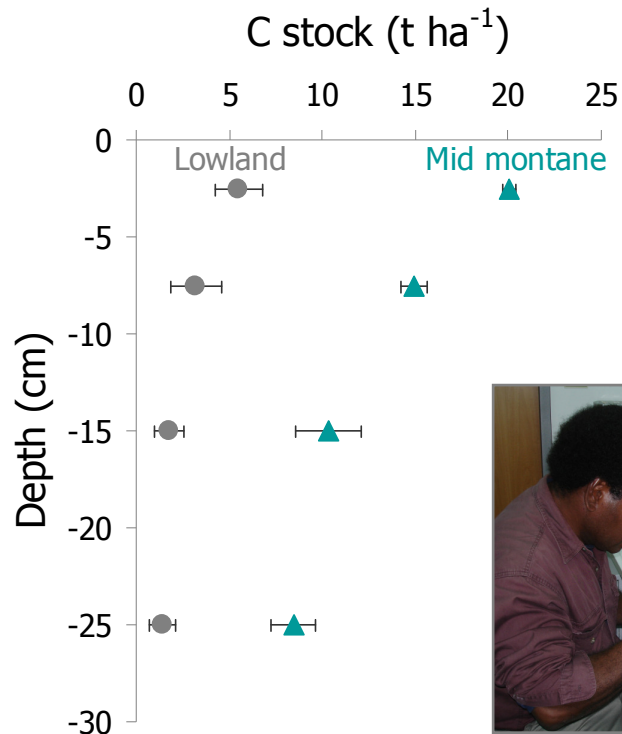
Conclusion

- **PNG only used vegetation maps for planning in forestry and land use maps in agriculture**
- **PNG NFI is project base especially for protection and commercial harvesting.**
- **PNG has been trying out remote sensing technique over some years now but on ad hoc basis**
- **Need to develop localised allometrics**
- **Need to develop individual-tree carbon dynamics**
- **In collaboration with other countries and organizations more emphasis is now given to RS/GIS as a planning tool and MRV.**
- **Given the leadership PNG is taking on REDD in the UNFCCC, the UN-REDD project intervention will greatly help PNG built capacity and demonstrate it significant contribution towards REDD.**

Thank you

Joe Pokana
Director – Climate Change
Office of Climate Change and Environment Sustainability
P O Box 854, Waigani 131, Papua New Guinea
Ph: +675 3239444, +675 72256620, Fax: +675 3237248
Email: jpokana@climatepng.org or jnpokana@gmail.com
Website: http://www.climatepng.org