



# Papua New Guinea National Forest Monitoring System

## 4<sup>th</sup> UN-REDD Regional Lessons Learned Workshop:

### *“National Forest Monitoring Systems for REDD+”*

15 – 17 October 2013, Swissotel Nai Lert Park, Bangkok, Thailand

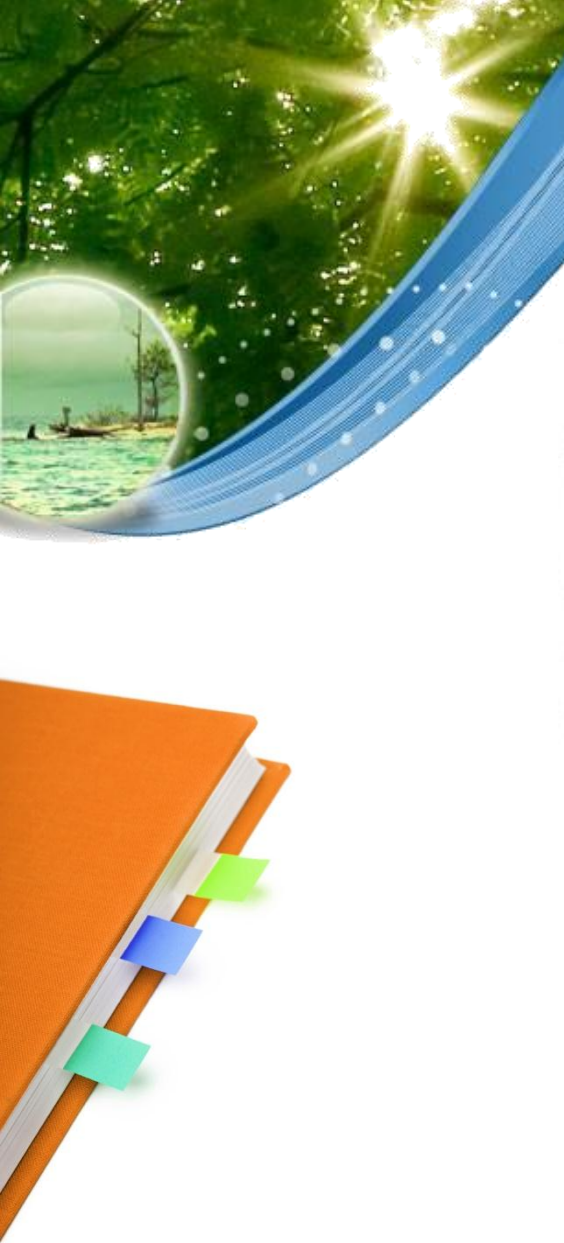


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**Office of Climate Change and Development  
Papua New Guinea**

- 
- 1. Objectives**
  - 2. PNG's International and National Context**
  - 3. PNG's UN-REDD Programme**
  - 4. PNG's National Monitoring System**
  - 5. PNG's NFMS Web-Portal**
  - 6. Way Forward**

# Objectives and Outcomes

## Objectives



**Share Papua New Guinea's  
experiences on developing its  
National Forest Monitoring System**



A dense tropical forest in Papua New Guinea, featuring numerous large tree ferns and tall trees. The forest is lush and green, with a variety of plant life. The text is overlaid on a semi-transparent white banner at the bottom of the image.

# Papua New Guinea

## International and Nation Context

## COP Decisions

COP 11, 2005

RED introduced to UNFCCC by PNG and Costa Rica

COP 13, 2007

REDD+ included in Bali Action Plan

COP 15, 2009

REDD+ financing and methodological issues part of Copenhagen Accord

COP 16, 2010

Cancun Agreement

**Section C:** “Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries” → REDD+

- National forest monitoring system for the **monitoring of REDD+ activities**
- REDD+ safeguards should be promoted and supported (paragraph 69)
- Countries should develop a system for providing information on how the REDD+ safeguards are being addressed and respected (paragraph 71(d))

**Annex I:** Guidance and safeguards for REDD+

## Five REDD+ Activities

### REDD+ mitigation activities as defined by Dec. 1/CP.16

- 70. Encourages developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities, as deemed appropriate by each Party and in accordance with their respective capabilities and national circumstances:
  - (a) Reducing emissions from deforestation;
  - (b) Reducing emissions from forest degradation;
  - (c) Conservation of forest carbon stocks;
  - (d) Sustainable management of forest;
  - (e) Enhancement of forest carbon stocks;

## COP Decisions

**COP 17, Durban 2011**

**Safeguards information systems and modalities relating to reference levels**

**COP 18, Doha 2012**

- **SBSTA focused on modalities for national forest monitoring systems and measurement, reporting and verification (MRV)**
- **+ focus on REDD+ financing**

**COP 19, Warsaw 2013**





## REDD+ Safeguards Cancun Agreements

### The seven Cancun Agreements (Decision 1/CP.16) REDD+ safeguards

- a) Consistent with the objectives of NFPs and international agreements
- b) Transparent and effective national forest governance structures
- c) Respect for the knowledge and rights of indigenous peoples and local communities
- d) The full and effective participation of relevant stakeholders
- e) Consistent with the conservation of natural forests and biological diversity
- f) Actions to address the risks of reversals (permanence)
- g) Actions to reduce displacement of emissions (leakage)

**How can forest monitoring help [*promote/support/address/respect*] the REDD+ safeguards?**





**Papua New Guinea**  
**UN-REDD National Programme**

## PNG's UN-REDD NPD has been in development since 2009

### PNG's UN-REDD NPD formulation and validation process

2009



- Joint Programme proposal formulation begins
- Presented to Policy Board

2010



- GoPNG opts to review Proposal (National Programme Document) to align funding request with country needs
- Agreement to focus NPD on developing an MRV system for PNG
- NPD submitted to Policy Board

2011



- NPD conditionally approved by Policy Board
- OCCD revises Proposal and launches 1-month review period
- Validation workshop in Feb 2011 finalises NPD with stakeholder inputs incorporated
- **Policy Board approves PNG's UN-REDD NPD on 28 Apr 2011**

# Objectives of PNG's UN-REDD National Programme

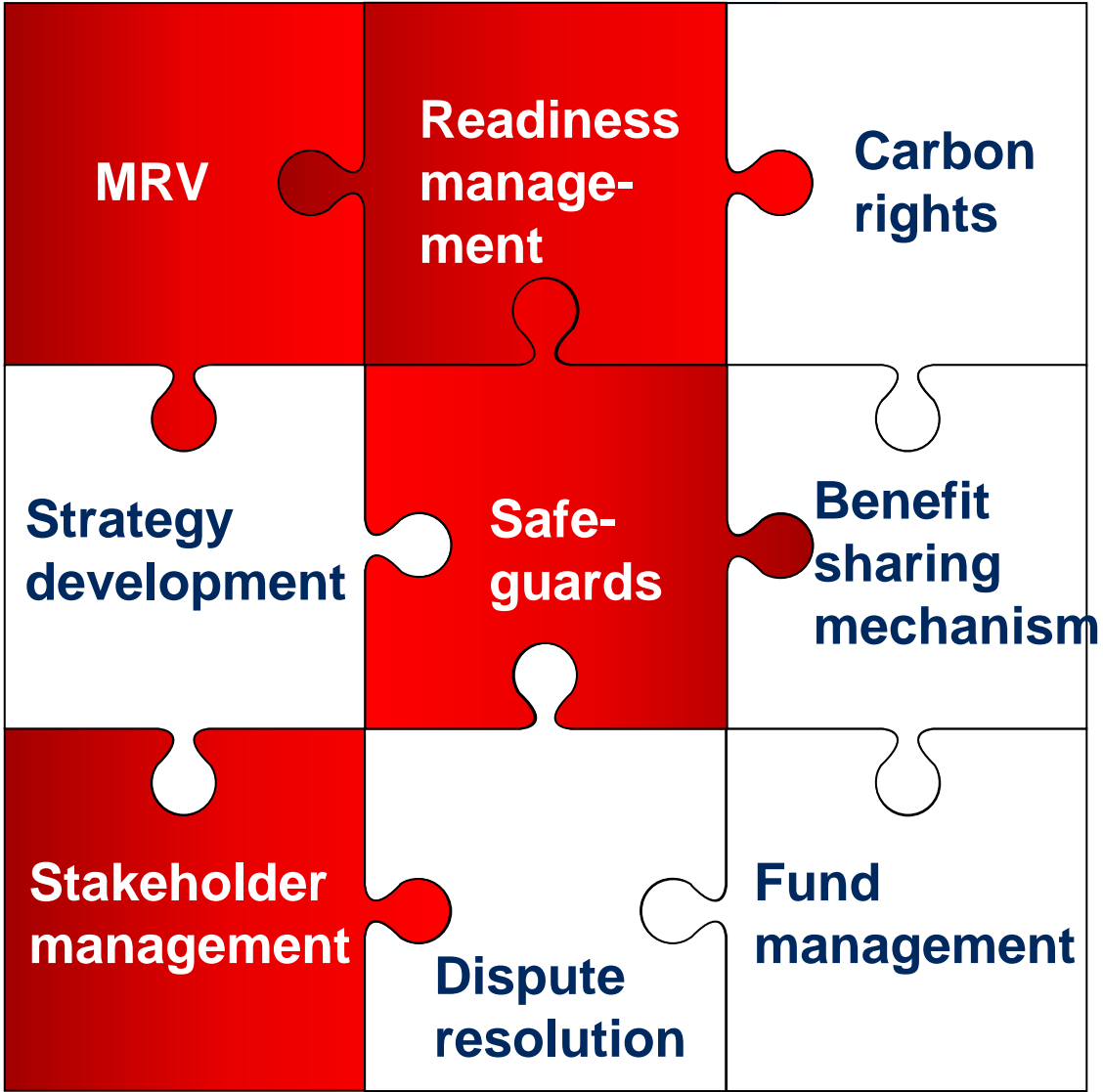


- Support the Government of PNG to **progress its activities towards REDD-plus readiness**
- **Complement existing efforts to establish a REDD-plus framework** in PNG, including efforts from GoPNG, civil society, the private sector and development partners
- Focus on the **refinement and implementation of a full MRV roadmap** for PNG that supports PNG's overall REDD framework and readiness efforts





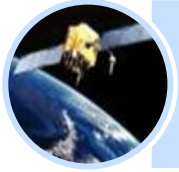







# The UN-REDD National Programme is just one contribution to PNG's readiness efforts

 UN-REDD





# PNG's UN-REDD NP is expected to deliver on five outcomes

Outcome	Lead UN Agency	Potential Implementing Partners
 <p><b>1. Readiness Management Arrangements in Place</b></p>		<ul style="list-style-type: none"> <li>▪ DNPM</li> <li>▪ OCCD</li> </ul>
 <p><b>2. National MRV System Developed</b></p>		<ul style="list-style-type: none"> <li>▪ DEC</li> <li>▪ UPNG</li> <li>▪ PNGFA</li> <li>▪ DAL</li> <li>▪ OCCD</li> <li>▪ DLPP</li> <li>▪ UNITECH</li> </ul>
 <p><b>3. Historical Drivers of Deforestation Assessed</b></p>		<ul style="list-style-type: none"> <li>▪ PNGFA</li> <li>▪ UPNG</li> <li>▪ DAL</li> <li>▪ OCCD</li> </ul>
 <p><b>4. Monitoring of Abatement Concepts Supported</b></p>		<ul style="list-style-type: none"> <li>▪ PNGFA</li> <li>▪ OCCD</li> </ul>
 <p><b>5. Framework for Stakeholder Engagement Processes in place</b></p>		<ul style="list-style-type: none"> <li>▪ OCCD</li> </ul>

# Each outcome fits into a part of PNG's climate change priorities

## Priorities for 2011

## Relevant UN-REDD NP Outcome



**REDD+**

- **REDD+ pilots** for key abatement levers
- REDD+ readiness, e.g., **benefit sharing approach**



**Low-carbon growth**

- **Rural electrification**, e.g., new micro hydro plants
- **Energy efficiency** measures
- **Renewable Energy**, e.g., geothermal



**Adaptation**

- **Mangrove** planting
- **Coastal Early Warning System**
- **Food security and agricultural yield changes**




**MRV & Cons.**


- **MRV System**
- **Consultation, education, awareness**
- **Second National Communication**

**Others**


- A number of priorities, e.g.,
- Securing **interim funding** of USD 50 million
  - Draft **Climate Change Act**




**1. Readiness Management Arrangements in Place**




**3. Historical Drivers of Deforestation Assessed**



**4. Monitoring of Abatement Concepts Supported**



**2. National MRV System Developed**

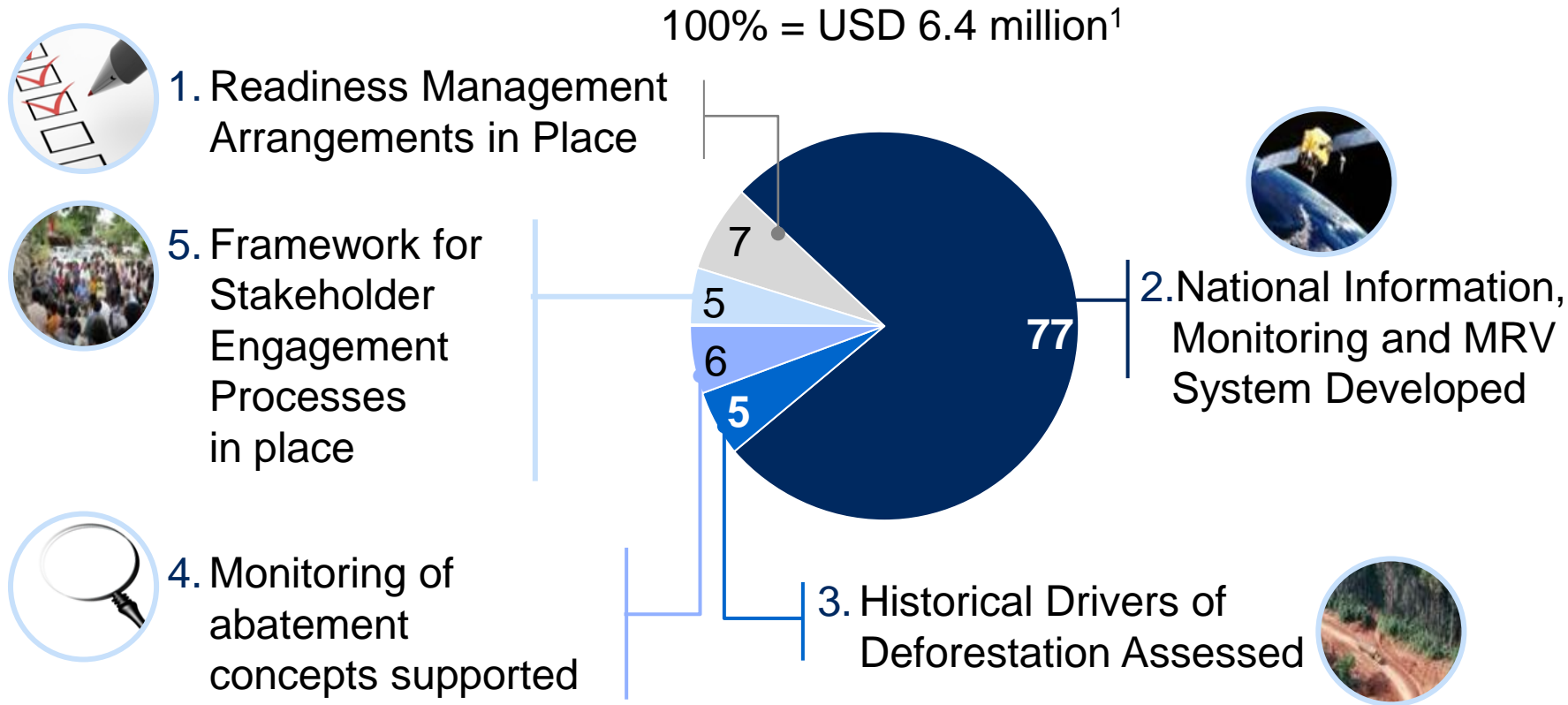


**5. Framework for Stakeholder Engagement Processes in place**

# The National Programme allocates funding to 5 outcomes

USD Millions

## Total Agency contribution by outcome



<sup>1</sup> Includes 7% Agency indirect support costs



An aerial photograph of a lush, dense forest in Papua New Guinea. The forest is characterized by a high density of large tree ferns with broad, fan-shaped fronds, interspersed with tall, slender trees. The overall color palette is a vibrant green, with some brownish tones on the fern fronds. The text is overlaid on a semi-transparent white banner at the bottom of the image.

# Papua New Guinea National Forest Monitoring System



# Towards REDD+: the Papua New Guinea efforts in building its National Forest Monitoring System



# HIGHLIGHTS:



• PNG is realizing its “National Forest Monitoring System” as a system that will address all the information, monitoring and MRV needs under the Convention;



• The National Forest Monitoring System will be developed with a multiple purposes approach, e.g. forests, land use, land tenure, food security, biodiversity and rural livelihoods;



• The National Forest Monitoring System is a long-term effort that will be developed with a clear and strong institutional base;



• The design and implementation of the National Forest Monitoring System is including a full and effective participation and capacity development of all relevant institutions and stakeholders;



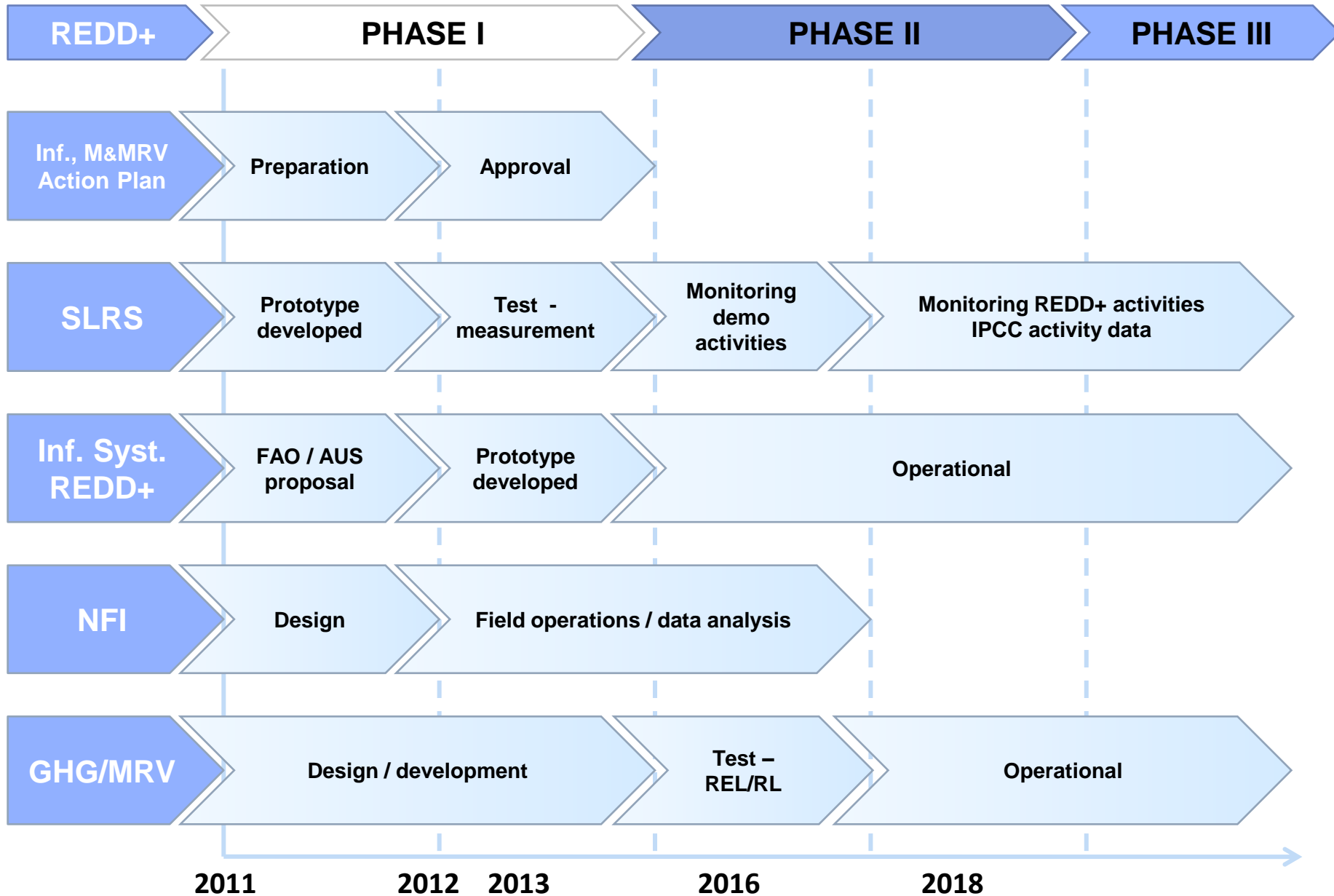
• The National Forest Monitoring System will provide free access, transparency and timely delivery of all relevant data and information to all relevant stakeholders;



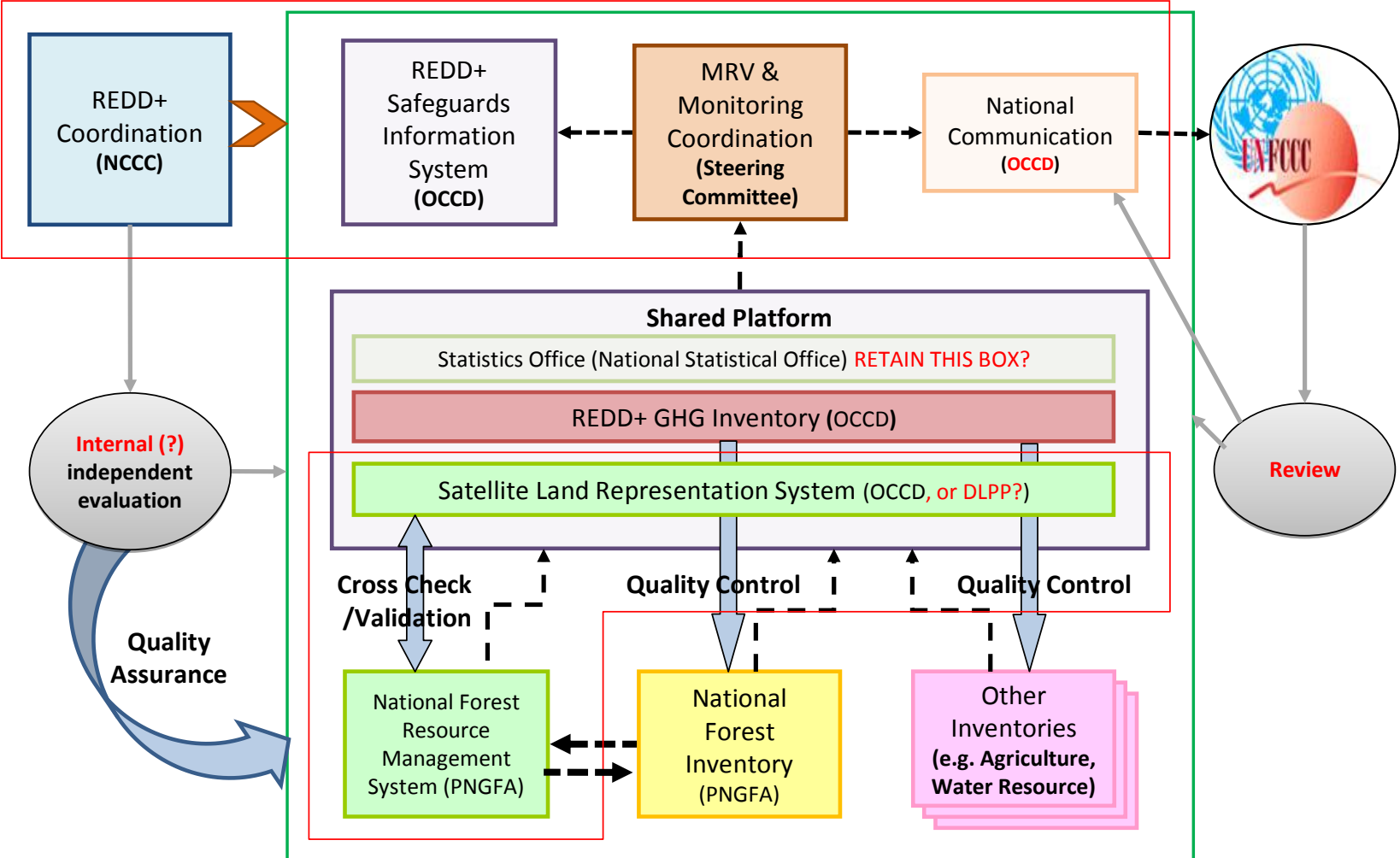
• The National Forest Monitoring System is currently under development with contributions and supports from UN-REDD Programme, AusAID (Australia), and JICA (Japan).



# PNG INFORMATION, MONITORING & MRV ROAD MAP



# INSTITUTIONAL ARRANGEMENT:

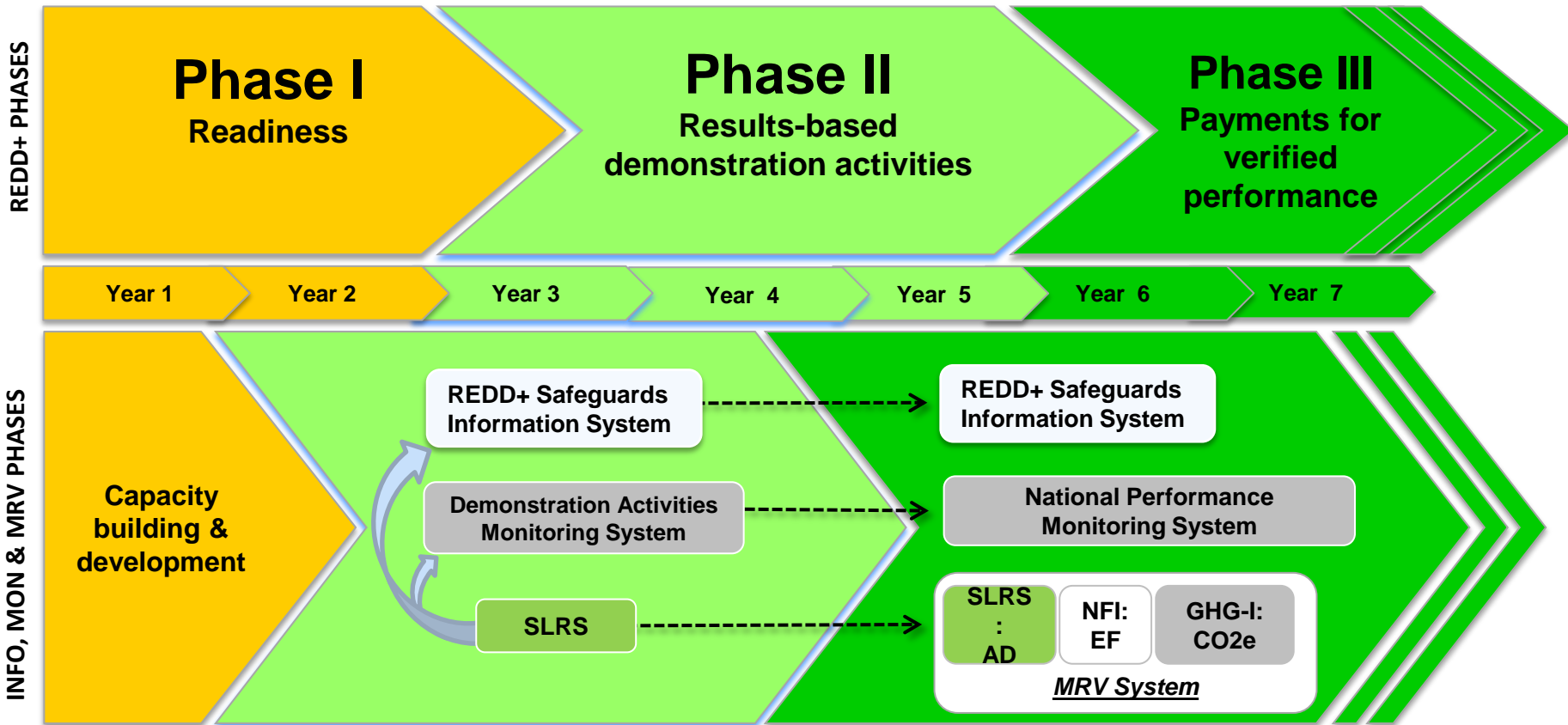


REDD+ Phase 2     
  REDD+ Phase 3     
  Information flow     
  External coordination     
 ➤ Overall coordination





# REDD+ PHASES & NFMS ELEMENTS: Bringing it all together



# ONGOING ACTIVITIES:



• **MRV Technical Working Group:** coordinated by OCCD with the participation of all the country relevant stakeholders;



• **NEW 2011 Forest Map:** coordinated by PNG Forest Authority with technical support from JICA. This map will be use as baseline to assess past and future forest changes;



• **1<sup>st</sup> National Forest Inventory:** coordinated by PNG Forest Authority with technical support from UN-REDD. The NFI it will be the key element to assess forest related emission/removal factors



• **1<sup>st</sup> Information, Monitoring & MRV Action Plan:** coordinated by OCCD participation of all relevant country institutions and relevant stakeholders;



• **Prototype for a Satellite Land Monitoring System:** coordinated by OCCD with technical support from UN-REDD and INPE. A team of PNG experts has attended a course in Brazil, the beta version of the prototype with its web-portal have been presented in Durban in COP17



An aerial photograph of a dense forest in Papua New Guinea. The forest is characterized by a high density of large tree ferns with broad, fan-shaped fronds. The ferns are in various stages of growth, with some showing a reddish-brown hue on their fronds. The forest floor is covered in a thick layer of ferns and other vegetation. The overall scene is a vibrant display of tropical biodiversity.

# Papua New Guinea NFMS Web-Portal



# START-UP PHASE:

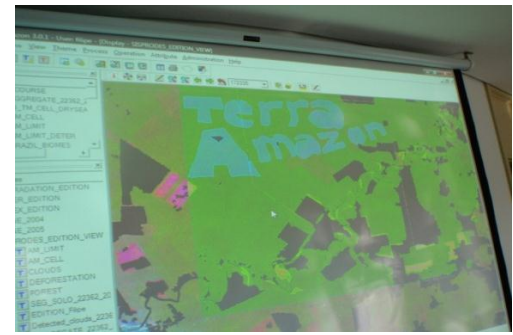
## development of a prototype for the National Forest Monitoring System

- **Build on existing national forest monitoring experiences**
- **FAO (UN-REDD) / INPE collaboration**
- **Two components: TerraPapua platform**  
**National forest monitoring WEB-Portal**
- **Combination of open-source database, user interface, tools and algorithms adapted according to country needs**
- **Free-of-charge and supported by analysis and programming teams in Brazil (INPE) and FAO**
- **linkage of information from other technical partners and contributors for analysis and verification.**





# TERRAPAPUA PLATFORM:



- Application of INPE national forest monitoring techniques and satellite image processing to PNG context (TerraAmazon software platform)
- Two weeks training on software utilities at INPE Amazonia, Belem, Brazil (Sept 2011)
- Follow-up and country implementation in FAO-HQ (on going in Rome, 21Nov-2Dec 2011)



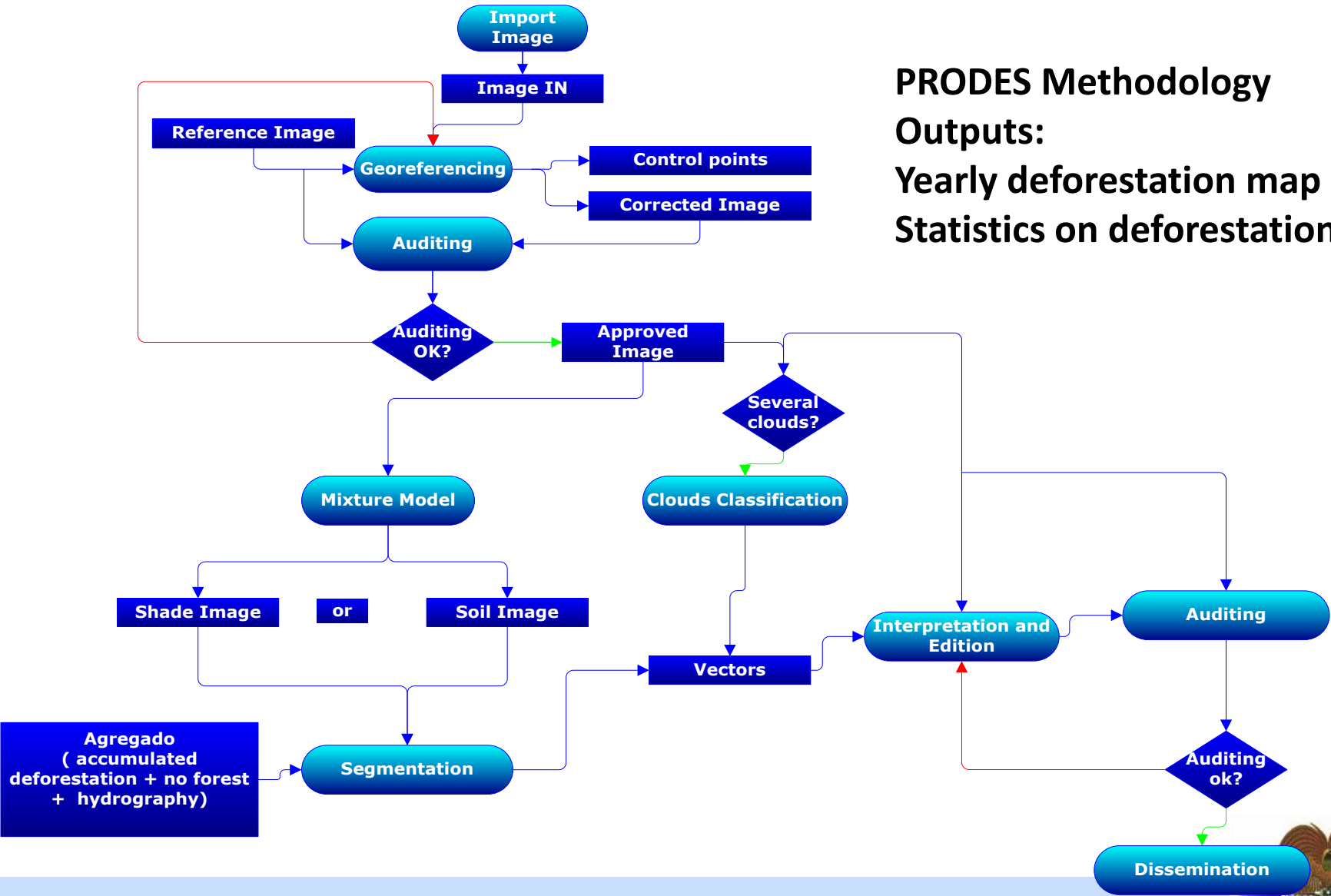
# BUILD ON TERRAAMAZON PLATFORM:



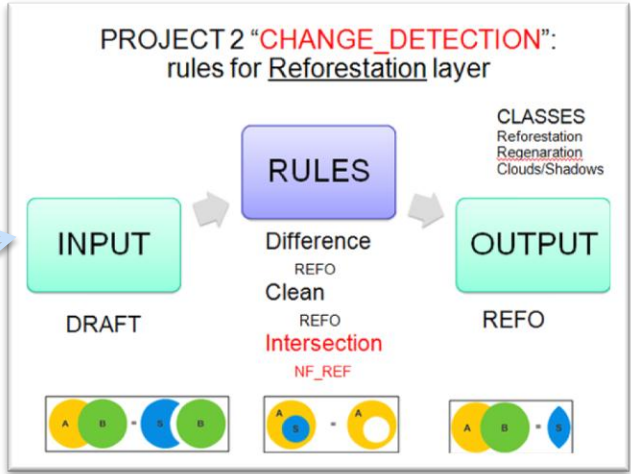
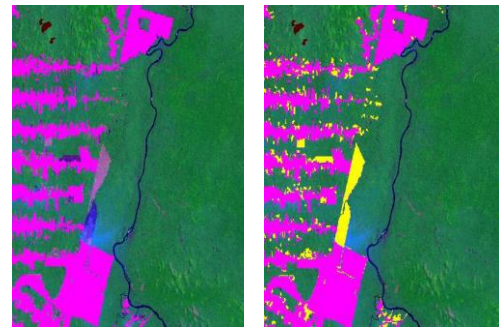
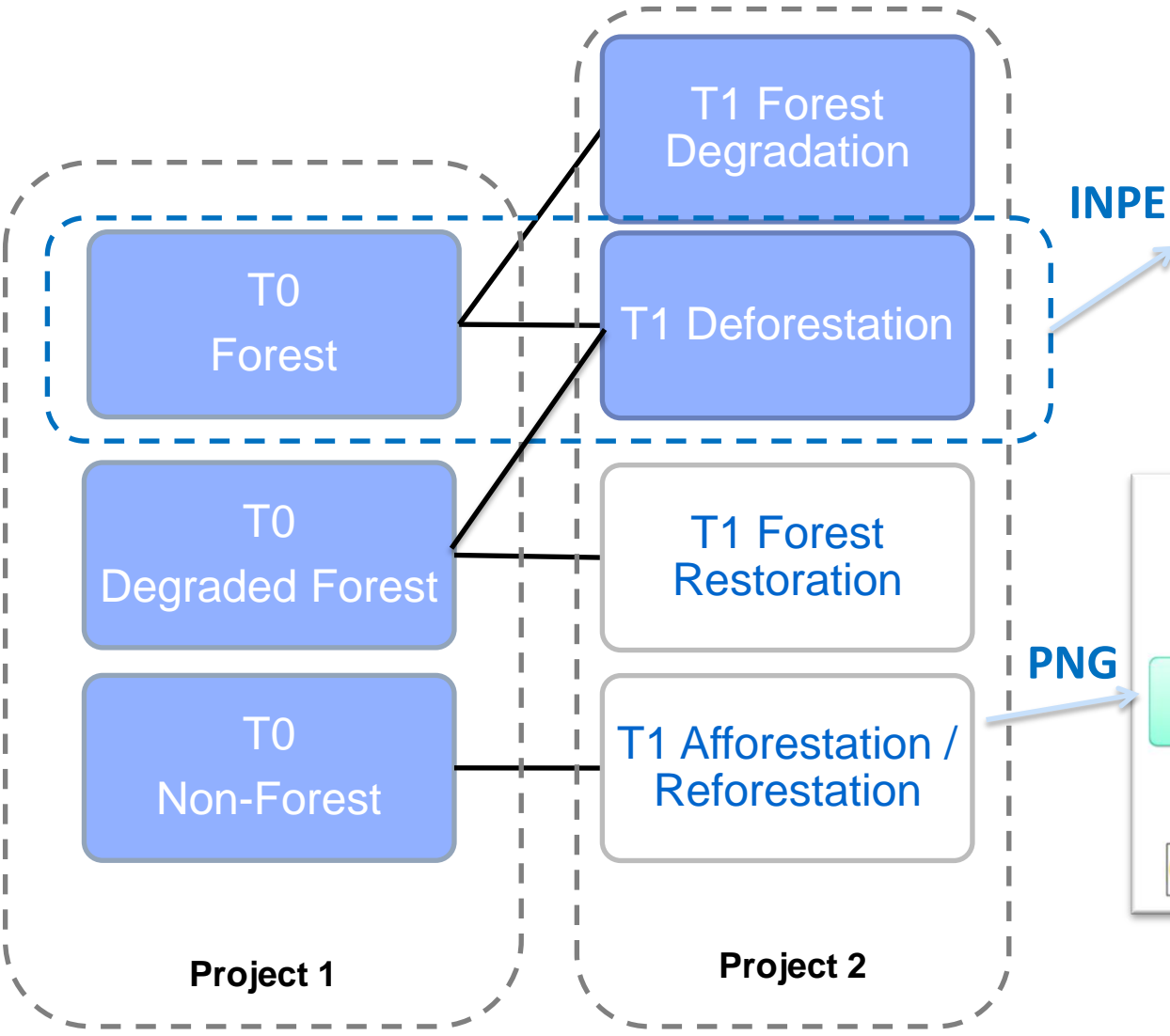
- **RS/GIS software platform designed to be a multi-user editor of geographic vectorial data stored in a unified database**
- **Free of charge (open-source)**
- **Self sustaining system (open to improvements)**
- **Up to 20 concurrent users during the interpretation phase**

# TERRAAMAZON IN BRAZIL:

**PRODES Methodology**  
**Outputs:**  
Yearly deforestation map  
Statistics on deforestation area

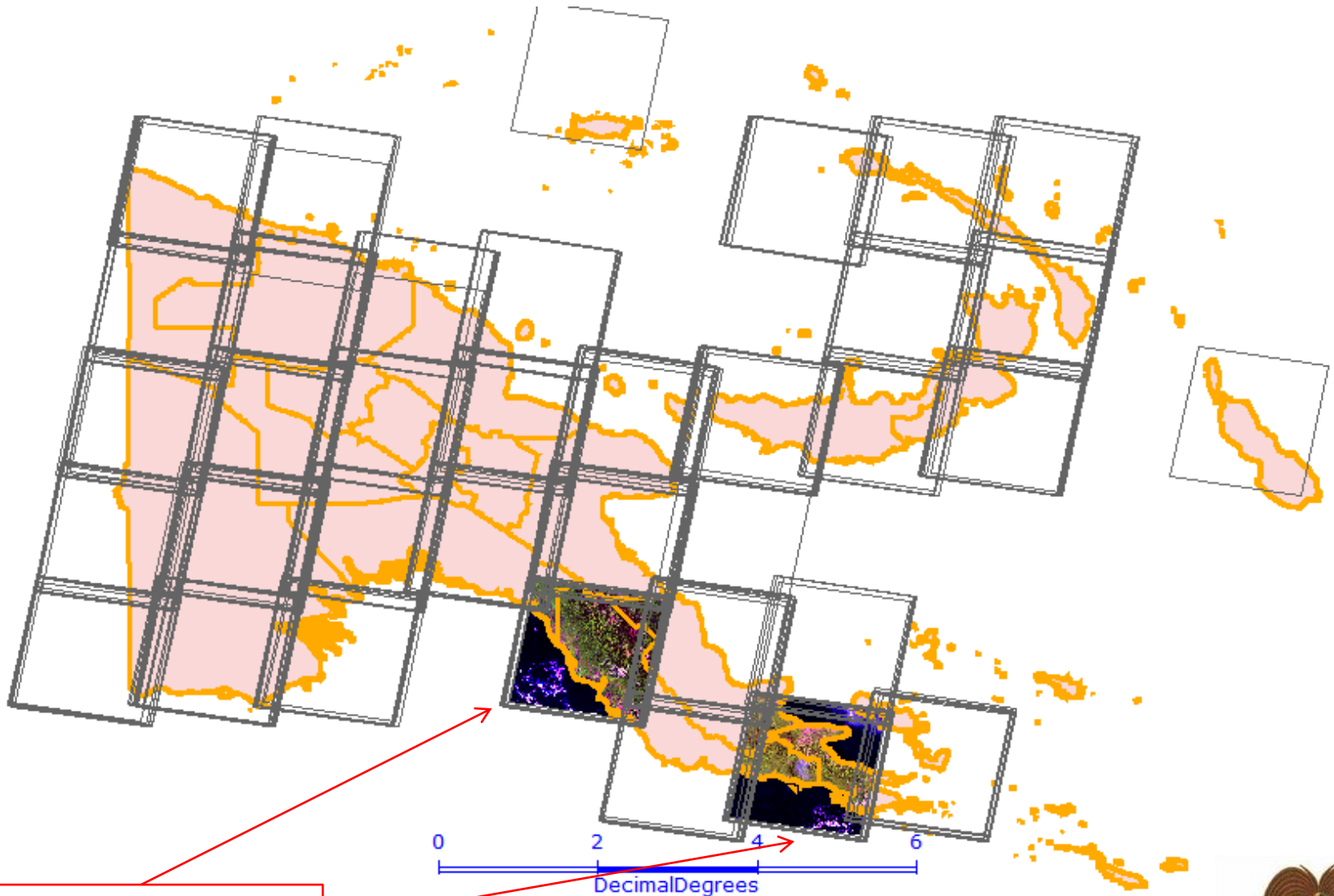


# PNG CONCEPTUAL MODEL:





# TERRA-PAPUA WORKSHOP FAO HQ, 21Nov.–2Dec2011:

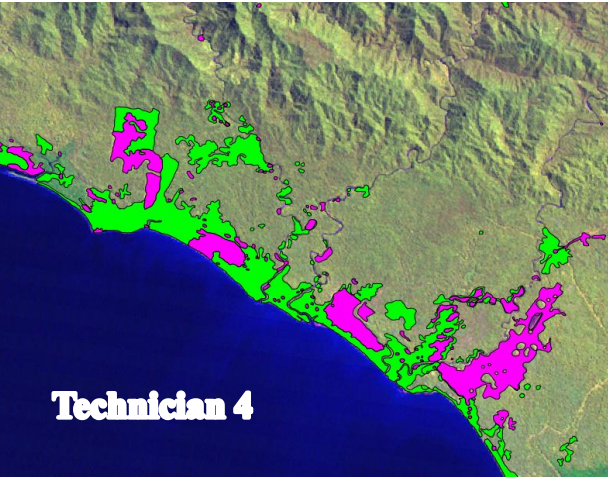
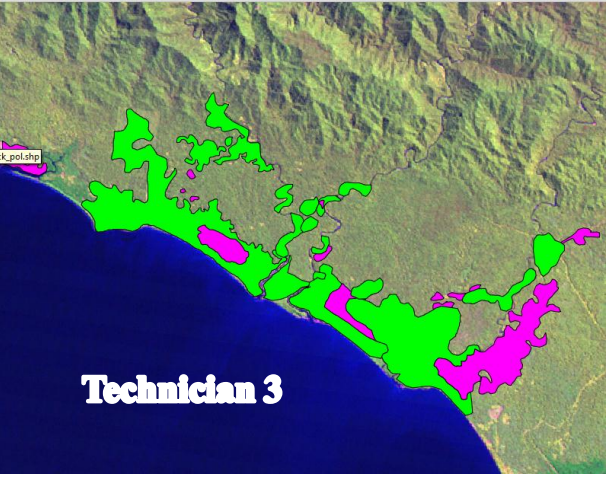
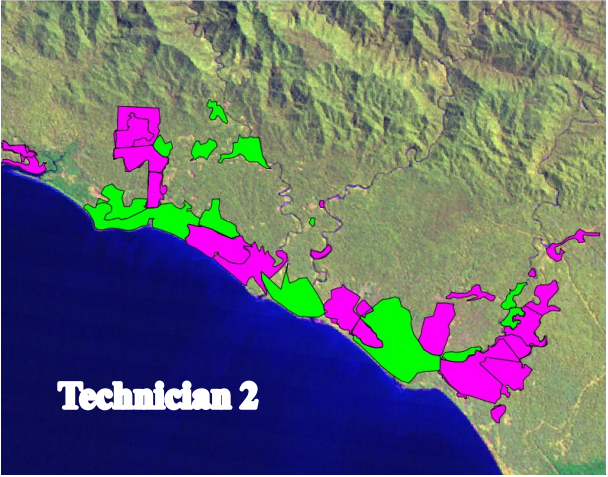
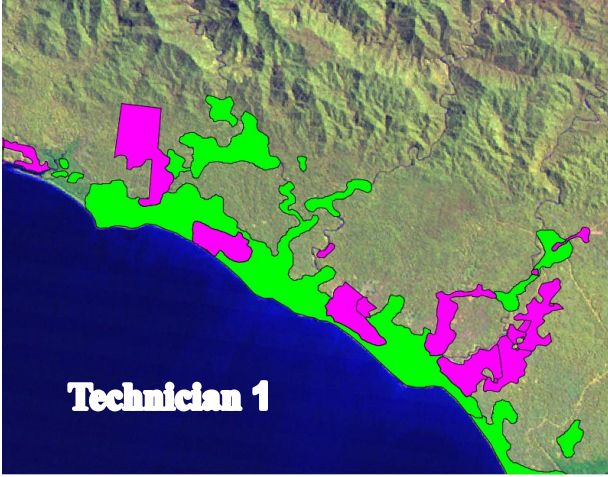
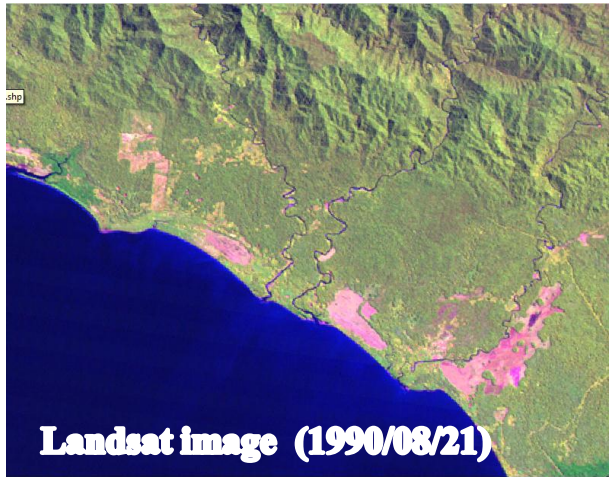





**TEST AREAS**



# TERRA-PAPUA WORKSHOP CALIBRATION OF IMAGE INTERPRETATION:

FAO HQ, 21Nov.–2Dec2011



-  CLOUDS/SHADOWS
-  DEGRADED FOREST
-  NON FOREST



# TERRA-PAPUA WORKSHOP

## MULTI-USER EDITION:

FAO HQ, 21Nov.-2Dec2011

TerraAmazon - [Display - general]

File Show View Theme Process Attribute Administration Help

0.01 AFFOREST

Layers

- PNG\_change
  - AFFORESTATION
  - CELL
  - Cen\_veg
  - CLOUDS\_SHADOW
  - DEFORESTATION
  - DEGRADATION
  - DEGRADED FOREST

Themes

general

- CELL
- LandsatIndexDEG10
- PNG\_box
- PNG\_adm1
- DRAFT
- DEGRADATION
- FOREST\_RESTITUTION
- REFORESTATION
- AFFORESTATION
- DEFORESTATION
- NON\_FOREST
- DEGRADED\_FOREST
- Draft\_1\_pol
- Lan\_MB\_p095r66\_19890708
- Lan\_MB\_p094r67\_19900821
- Cen\_veg
- Mil\_veg
- CLOUDS\_SHADOW
- Lan\_MB\_p096r66\_19900328

images

Cells Manager

List of locked cells...

	User Name	Cell Oid	Date	Hour
1	Frederick	042038	30/11/2011	16:46:18
2	Frederick	042039	30/11/2011	16:46:18
3	Gewa	042040	30/11/2011	11:35:12
4	Gewa	042041	30/11/2011	11:35:12
5	Mericha	036028	30/11/2011	12:13:12
6	Mericha	037028	30/11/2011	12:13:12
7	Popei	037029	30/11/2011	16:4:8
8	Popei	037030	30/11/2011	16:4:8

Help    Unlock Cell    Close

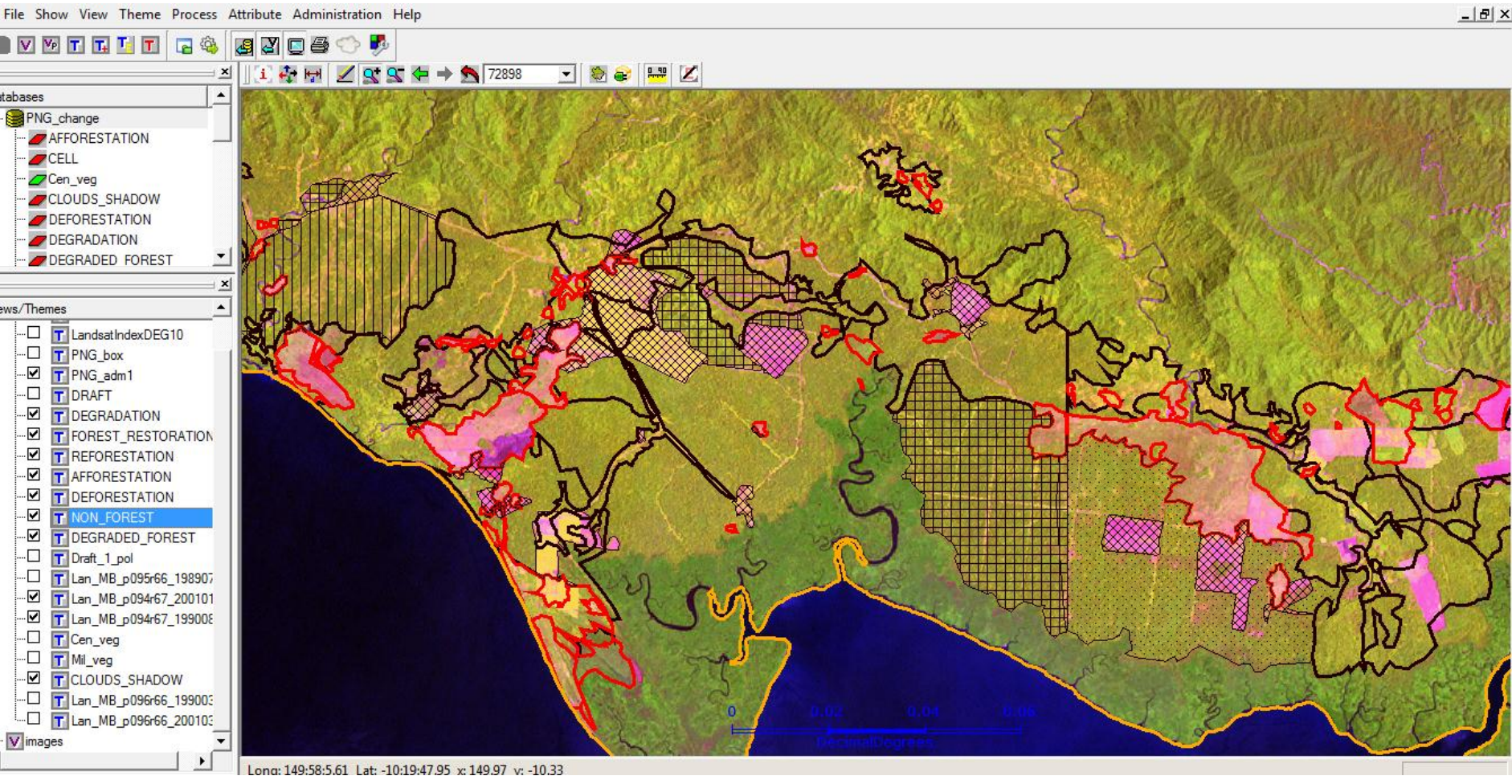
Decimal Degrees





# TERRA-PAPUA WORKSHOP RESULTS:

FAO HQ, 21Nov.–2Dec2011





# PAPUA NEW GUINEA NATIONAL FOREST MONITORING WEB-PORTAL:

- **Web portal under development through the support of FAO, UN-REDD Programme , expected to be on-line June 2012**
- **Enable the country to follow all the actions related to the implementation of its national REDD+ policies and measures and to communicate its results to the international community (transparent and open data access)**

## **In practice...**

- **Allow any user to interact with the system through a web-interface;**
- **Visualise data; download statistics; visualise information on logging concessions, protected areas, REDD+ activities,....**
- **Allow users to provide feedback on areas of deforestation, etc.**



# PAPUA NEW GUINEA NATIONAL FOREST MONITORING WEB-PORTAL:

PNG National Forest Monitoring Portal - Windows Internet Explorer

Secure Search McAfee

PNG National Forest Monitoring Portal

PNG National Forest Monitoring Portal

2010

Francais English

- REDD+ Activity
  - Deforestation
  - Degradation
  - Conservation
  - Sustainable forest management
  - Enhancement
- Forestry information
  - REDD+ Safeguards
  - Forest Management Data
- Land use/Land use changes
  - Land use map
  - Forest land -> Other land use
  - Other land use -> Forest land
    - Reforestation
    - Afforestation
  - Forest land -> Forest land
    - Selective Logging
    - Fire

Port Moresby

Scale = 1 : 7M

YAHOO! ©2011 Yahoo! Inc

Papua New Guinea



# PAPUA NEW GUINEA NATIONAL FOREST MONITORING WEB-PORTAL:

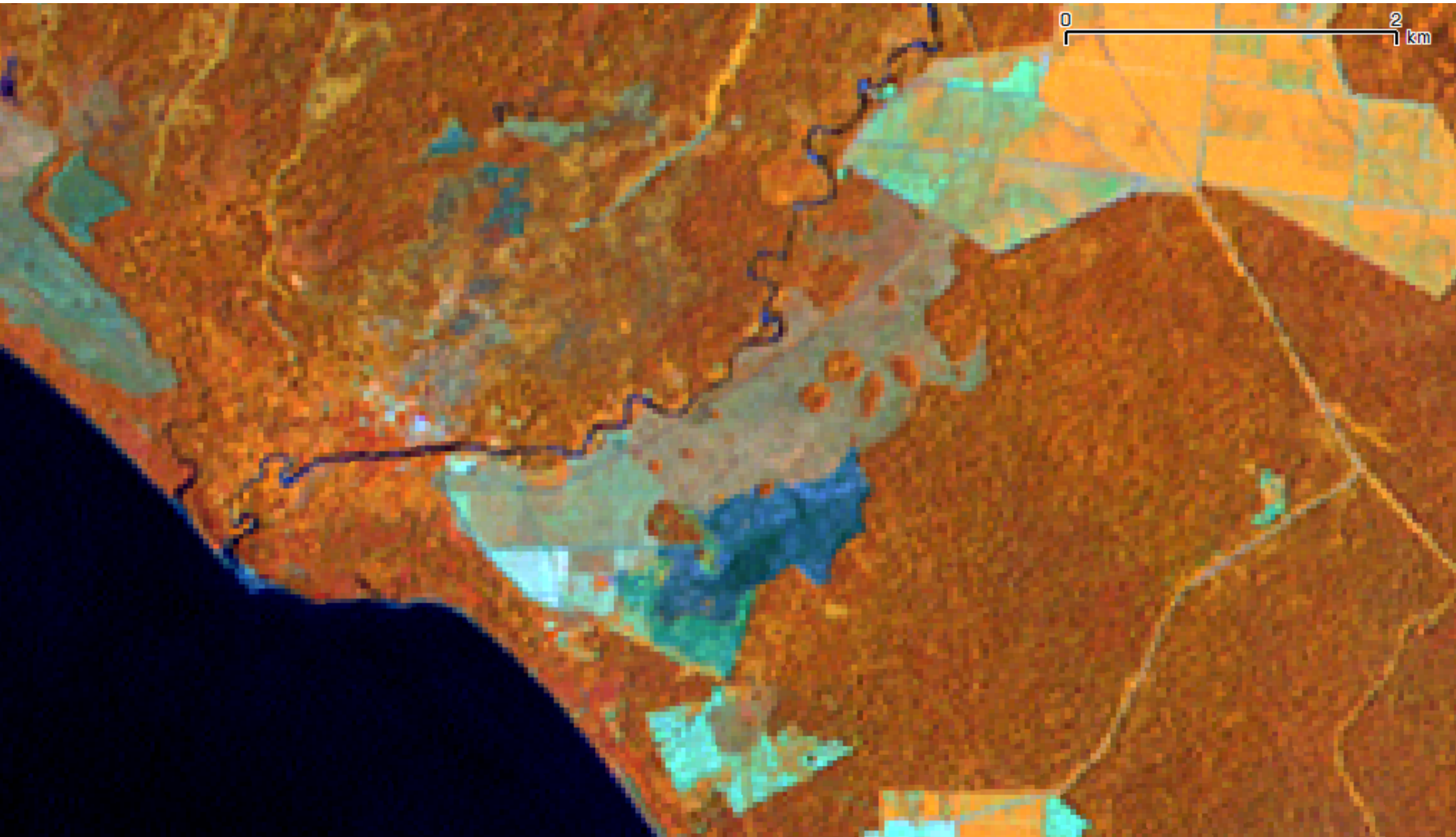
The screenshot displays the PNG National Forest Monitoring Portal. At the top left is the PNG coat of arms logo. The main title "PNG National Forest Monitoring Portal" is centered at the top. Below the title is a navigation bar with icons for home, back, forward, search, and other functions, along with a year selector set to "2010". The main area features a satellite map of Papua New Guinea with various colored overlays representing forest monitoring data. A legend on the left side is open, showing "REDD+ Activity" with categories: Deforestation (red), Degradation (yellow), Conservation (green), Sustainable forest management (dark green), and Enhancement (light green). Below this are "Land use/Land use changes" and "Forestry information". A "Selected layers" window is also open, showing "Forest mask" with "Clouds/shadows" (grey), "Non-forest" (red), and "Disturbed forest" (yellow). The map shows a red dashed box highlighting a specific area in the central part of the country.

# LANDSAT 1990

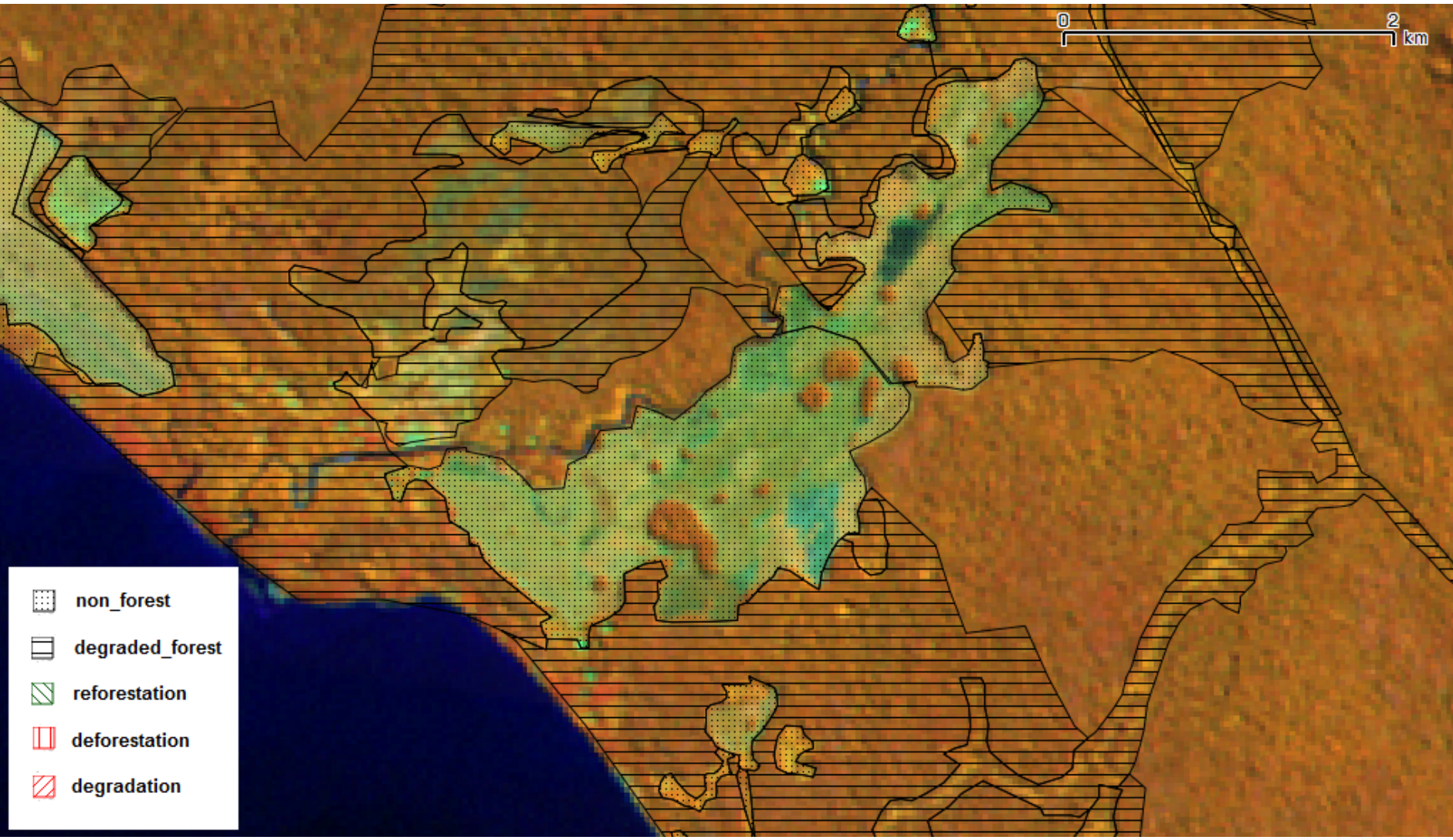




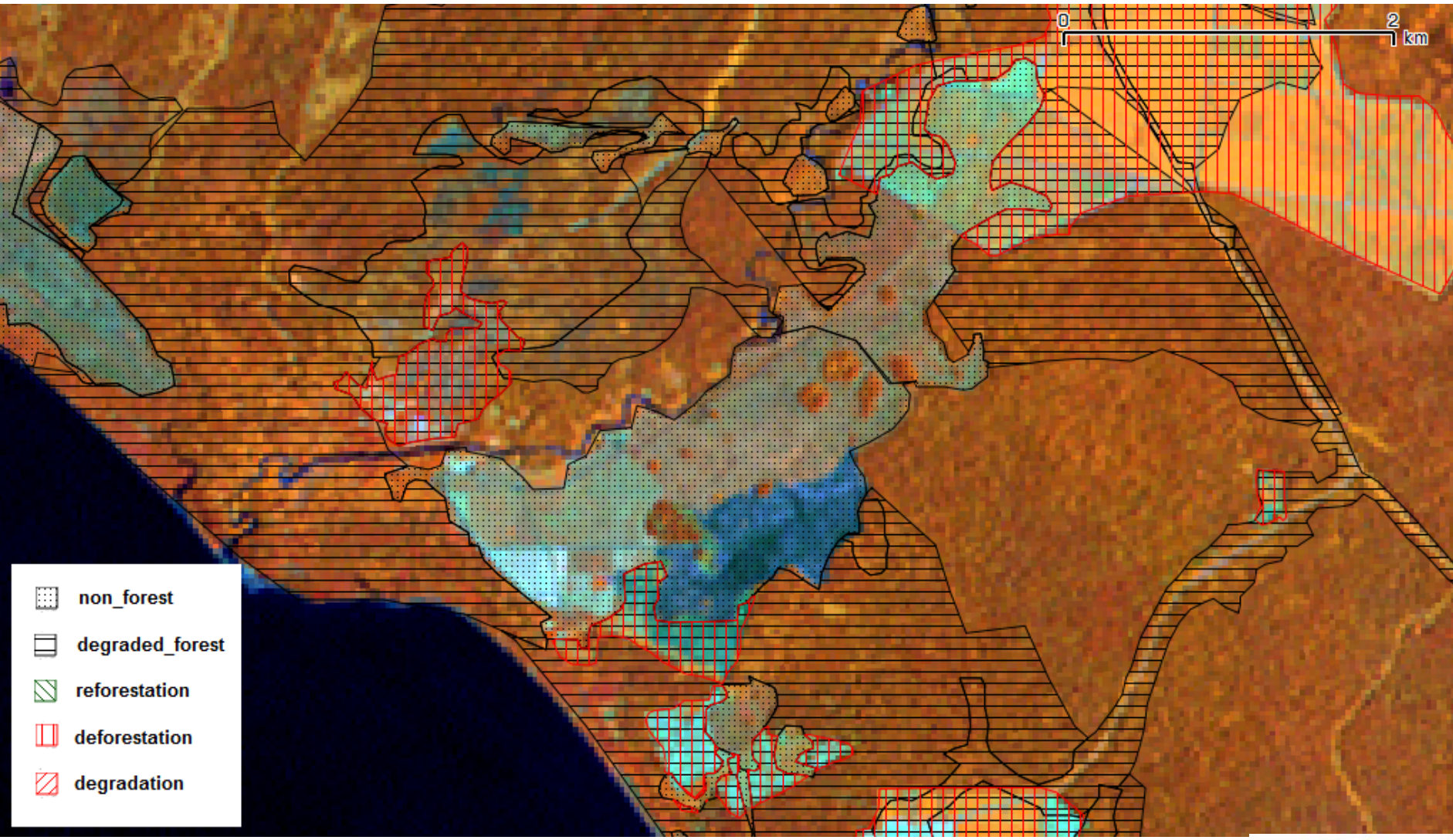
# LANDSAT 2000



# LAND USE ASSESSMENT 1990

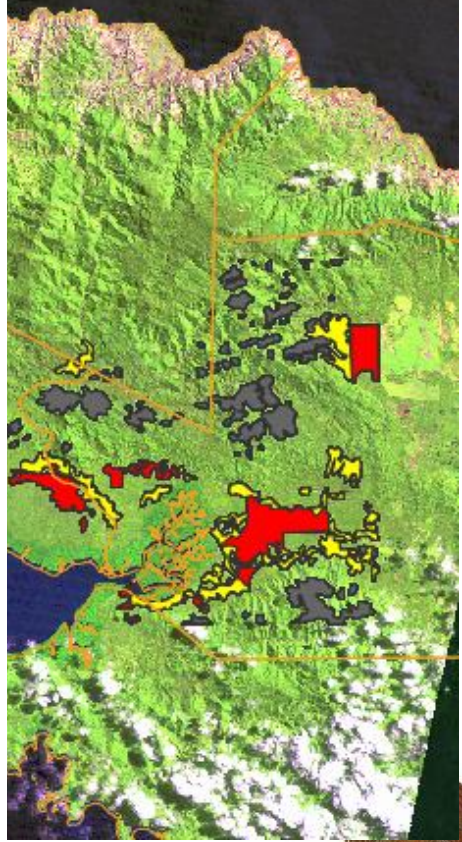
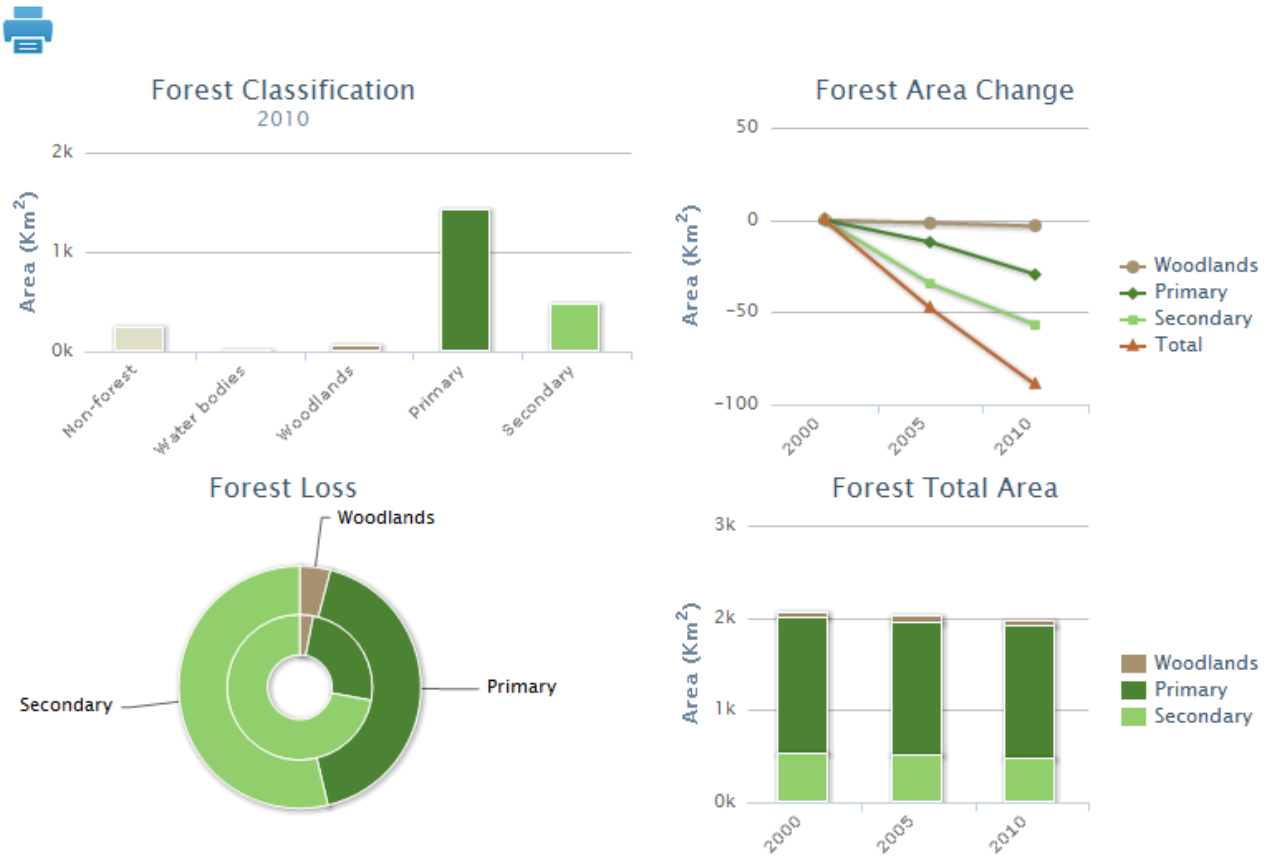


# LAND USE ASSESSMENT 2000





# PAPUA NEW GUINEA NATIONAL FOREST MONITORING PORTAL:



Please place the mouse pointer over the charts to see values





# Summary

1

Forest monitoring is required to assess the outcomes of REDD+ activities

- Are the activities working??

2

Forest monitoring can also provide useful information on the REDD+ safeguards

3

Online “web-GIS portals” can allow open access to forest monitoring (and therefore some safeguard) information

4

Forest monitoring is not a silver bullet!

- Useful for as part of the ***system to provide information*** on the safeguards
- Other information is needed!



## Contact

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Website: [www.occd.gov.pg](http://www.occd.gov.pg)

