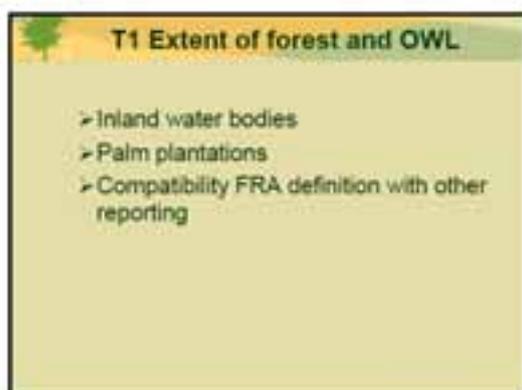
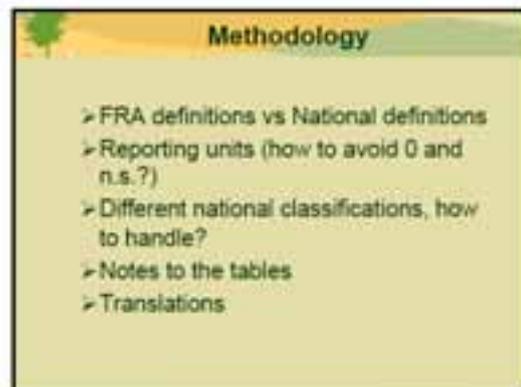
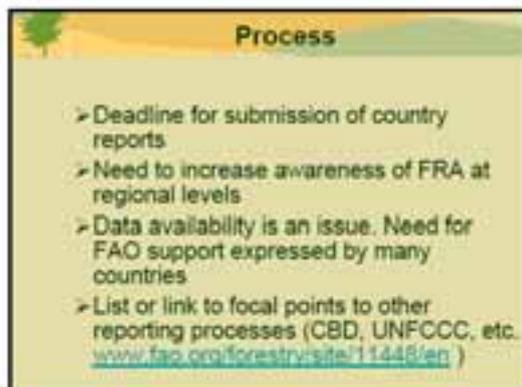
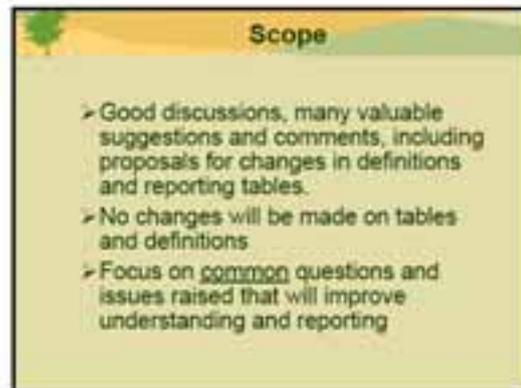


## Annex 6: Plenary presentations (Thursday 6 March)

### Annex 6.1: Summary of group work



### T3a Primary designated functions

- Functions vs designations
- Level of designation
- When to report multiple use
- Why are IUCN Categories V-VI excluded?

### T3b Special designation and management categories

- Permanent Forest Estate (PFE)
- SFM vs management plan
- Doing nothing = Sustainable management?
- Protected area and illegal logging...

### T4a Characteristics

- Introduced species / naturalized species
- Planted forest (difficult to differentiate)?
- Forest fallows
- Primary forest vs protected areas

### T5 Forest establishment and reforestation

- Afforestation vs Reforestation
- Reforestation FRA / UNFCCC
- Natural regeneration not included
- Enrichment planting

### T6 Growing stock

- Biomass to Growing stock
- How to report on Bamboo?
- Growing stock of commercial species vs volume available for wood supply
- Fuelwood species commercial?
- Volume of trees in protected areas?

### T7 Biomass & T8 Carbon

- Conversion factors
- Lack of data a recognized issue
- Should the same figures be reported as UNFCCC figures?

### T9 Forest fire

- Total area affected by fire difficult to report on for many countries
- Planned fire vs Wildfire
- One fire may cover different categories or occur several times on the same area

### T10 Disturbances

- When does a damage become a disturbance?
- Link defoliation and damage
- Woody invasive species
- Data availability an issue

### T11 Removals and value of removals

- Point of measure (road side)
- "Industrial" round wood
- Illegal / informal removals
- Portable mills, charcoal etc.
- Self consumption and given away for free, how to value?

### T12 NWFP removals and values

- Include services, water, ecotourism, recreation, hunting, carbon etc.?
- Ornamental plants and crops growing under tree cover
- Honey, Christmas trees
- Value refers to raw material
- Grazing vs fodder collection

### T13 Employment

- Reporting on employment in T13, T15 and T16 are mutually exclusive
- FTE and reference period
- Difficult to separate production of goods and management of protected areas
- Participatory forest management
- Tourism management

### T14 Policy and legal framework

- Policy – sometimes part of an overarching development policy
- Policy but no formal statement
- Status of nfp you may tick several options.
- National vs sub-national

**T15 Institutions**

- Number of years to be considered as university degree
- Clarification on total staff
- Autonomous agency responsible for forestry not depending on a minister
- Several ministries responsible for forest

**T16 Education and research**

- Students educated abroad excluded
- Foreign students graduated in the country included
- Number of years for different academic levels
- Forest degree holders not working in forestry?
- Partially privately funded research centers?
- Secondary training of technicians?

**T17 Forest revenues**

- Public owned business entities?
- Transfer payments
- Allocation vs Expenditures
- Exclusion of tax income?

**Annex 6.2: Harmonizing forest related reporting: ITTO and FRA**

**Harmonizing international forest related reporting: ITTO and the FRA**

Technical Meeting of National Correspondents to the Global FRA 2010  
3-7 March 2009

INTERNATIONAL TROPICAL FOREST ORGANIZATION

**Forest Reporting**

- Forest products
  - already harmonized (JFSQ)
- Forest area and management
  - FRA
  - C&I (ITTO, MP, MCPFE)
  - UN Conventions
  - Others (OECD, etc.)

**Streamlining Forest Reporting**

- UNFF and other fora requested CPF members to reduce reporting burdens on countries
- CPF response: Work towards more coordinated and joint approaches
- Task force: FAO, ITTO, CBD, UNFCCC, UNCCD, UNFF, UNEP-WCMC

**Outcomes of CPF Task Force**

- Analysis of reporting requirements of major forest-related international processes
- Identification of impediments and opportunities for harmonization
- Portal to access country reports ([www.fao.org/forestry/cpf-tsar](http://www.fao.org/forestry/cpf-tsar))
- Joint information framework and collaboration especially through FRA

**FRA as a harmonization framework**

- Comprehensive and global coverage
- Structured around 7 thematic elements of SFM (7<sup>th</sup> element added to 2010 FRA)
- Already providing information for organizations/processes (MCPFE)

**FRA as a harmonization framework**

- Kotka V recommended continuing/ increased collaboration with CPF members, C&I processes, etc.
- FRA 2010 to provide forest info to assess 2010 CBD biodiversity target (including SFM areas)
- ITTO will work with FAO, FRA on future assessments of tropical forest management and of progress towards ITTO's Year 2000 Objective

### Status of Tropical Forest Management

- Primary data source: C&I reports
- First rigorous attempt to estimate areas of tropical forest under SFM
- Covers 33 tropical countries accounting for over 80% of total tropical forest area

### Information base – Quality of country C&I reports

Indicator	Number of indicators	Average score			Overall average
		Africa	Asia & Pacific	Latin America & Caribbean	
1. Country conditions for SFM	20	1.8	2.1	2.2	2.0
2. Forest resource quality	8	1.1	1.6	2.1	1.6
3. Forest governance (legal and political)	5	1.2	1.8	1.8	1.6
4. Type of forest product	18	1.7	1.8	1.8	1.8
5. Ecological diversity	12	1.2	1.6	1.6	1.4
6. Economic value	4	2.8	1.4	2.2	2.1
7. Economic, social and cultural benefits	11	1.3	1.8	1.7	1.6
<b>Average of overall scores</b>		<b>1.5</b>	<b>1.7</b>	<b>1.7</b>	<b>1.6</b>

Source: ITTO/FAO, 2008

### Data sources: ITTO sources in Africa

Country	ITTO C&I report	ITTO mission	ITTO C&I workshop
Cameroon	★		★
Central African Rep		★	★
Senegal	★	★	★
Cote d'Ivoire	★		★
DRC	★		
Gabon	★	★	
Ghana	★		★
Liberia		★	
Nigeria			★
Togo	★		★

### Data sources: ITTO sources in Asia & the Pacific

Country	ITTO C&I report	ITTO mission	ITTO C&I workshop
Chad	★	★	★
Ti		★	
India			★
Indonesia	★	★	
Malaysia	★		
Myanmar	★		
Papua New Guinea	★		★
Philippines	★	★	★
Thailand	★		
Vanuatu	★		★

### Data sources: ITTO sources in Latin America & the Caribbean

Country	ITTO C&I report	ITTO mission	ITTO C&I workshop
Belize	★		★
Brazil		★	
Colombia	★		★
Ecuador		★	★
Guyana		★	
Guatemala	★		★
Honduras	★		
Panama	★	★	★
Peru	★	★	★
Suriname		★	
Turkey & Tadjik	★	★	
Venezuela	★		★

### Other data sources

ITTO consultants and staff	Country visitor consultations
FAO	FRA – forest area, etc; FODG, Forest products
UNEP-WCMC	Forest in IUCN protected area categories
IUCN	IUCN red list of threatened species
Certification bodies	Certified forest area
Other published and unpublished sources, including official websites	Various data

**Information base**

**Inconsistent/conflicting information**  
eg country estimates of forest area vs FRA vs UNEP-WCMC vs other sources

**PFE – not all countries had clear definition or good-quality data; concept didn't always apply**

**Little verification of implementation of forest management plans/legal obligations**

**Ascertaining SFM areas**

**Sum of FMUs:**

- independently certified or making progress towards certification;
- with fully developed, long-term (10 year +) mgmt. plan and evidence it is being implemented;
- included in model forests with information on mgmt. quality; and/or
- community based with secure tenure and known high-quality mgmt.

**Status of tropical forest management**

**Total PFE: 859 million hectares**

Of which:

- 353 million hectares** natural production forest
- 45 million hectares** production planted forest
- 461 million hectares** protection forest

**Status of tropical forest management**

**Natural-forest production PFE (353 m ha)**

Area under management plans	96.2 m ha
Area certified	10.5 m ha
Area managed consistent with SFM	at least 25.2 m ha (7.1%)

**Status of tropical forest management**

**Natural-forest protection PFE (461 m ha)**

Area under management plans	17.8 m ha
Area certified	n.a.
Area managed consistent with SFM	at least 11.2 m ha (2.4%)

**Status of tropical forest management**

**Total natural PFE (814 m ha)**

Area under management plans	114 m ha
Area certified	10.5 m ha
Area managed consistent with SFM	at least 36.4 m ha (4.5%)



### SFM Tropics: Conclusions



Area under SFM has increased significantly but is still a small proportion of the PFE

More work needed to strengthen information base

The PFE needs further clarification, and work to determine its extent, location and integrity

International technical and financial support often pivotal, including in use of C&I



### FAO FRA Data Relevance to ITTO





- Around half of ITTO's 57 indicators covered or partially covered by FRA data tables
- Very relevant: extent of forests, designated function(s), characteristic (forest type)
- Relevant: ownership, growing stock, carbon stock, disturbances, tree species, growing stock composition, NWFPs, employment
- Less relevant: biomass, wood removals (JFSQ)



### FRA and ITTO




- ITTO will continue to work towards and report on sustainable forest management in tropics
- ITTC requested SFM Tropics 2005 report to be updated for 2010
- Concepts important to ITTO (eg PFE, assessment of sustainability) being incorporated in FRA 2010



### FRA and ITTO (cont.)




- Possibility of utilising common database, joint questionnaire approach
- Possibility of joint/shared analytical work for tropical countries, special study of studies
- ITTO has included coordination with/ support for FRA 2010 in 2008-2009 Work Program, more work to do to ensure major countries support this





THANK YOU

[www.ito.or.jp](http://www.itto.or.jp)

[www.fao.org](http://www.fao.org)

## Annex 6.3: FAO support to National Forest Monitoring and Assessment

Technical Meeting of the National Correspondents to the Global Forest Resources Assessment (FRA 2010)

**FAO Support to National Forest Monitoring and Assessment**



3-7 March 2008  
Mouhamed Soudi

**Why a NFA?**



Sustainable management and use of forestry resources

National Decision Making (NFA)

Quality information at national level

National assessment of forestry resources

Overarching Development Objectives

National Decision Making (NFA)

Technical and Scientific

Planning, Policies, Actions

Knowledge

Forests and Forests

**Why FAO supports NFMA?**



100% with NFI (14 countries)

77% only by IIS (14 countries)

0% No NFI and Mapping (54 countries)

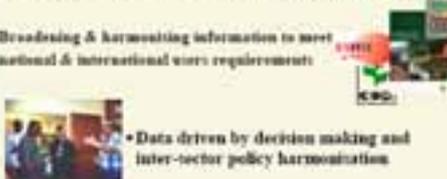
Data status on forests in developing countries (FRA 2005)

**Support to NFMA**

- FAO Mandate
- COFO
- IPF and IFF

**How ?**

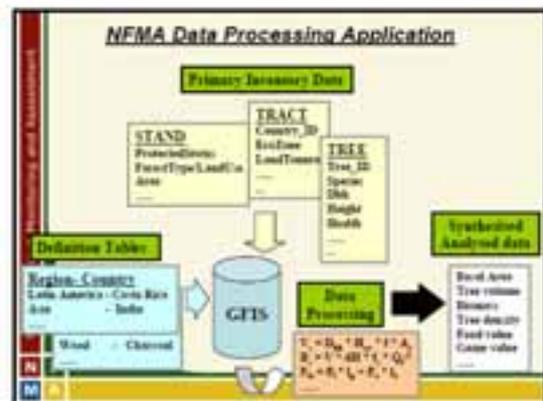
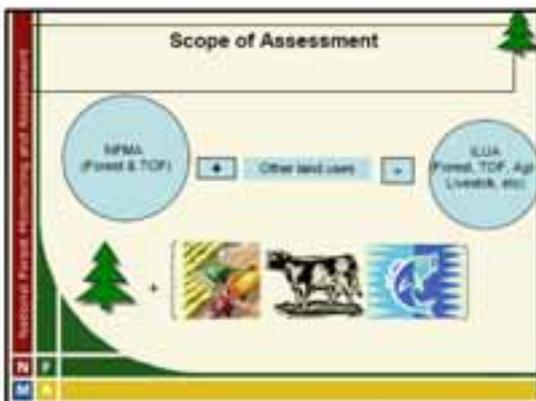
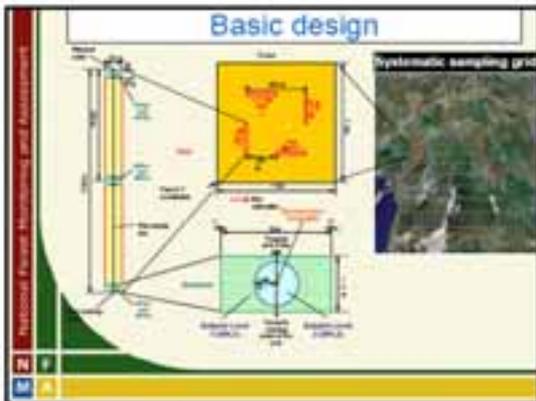
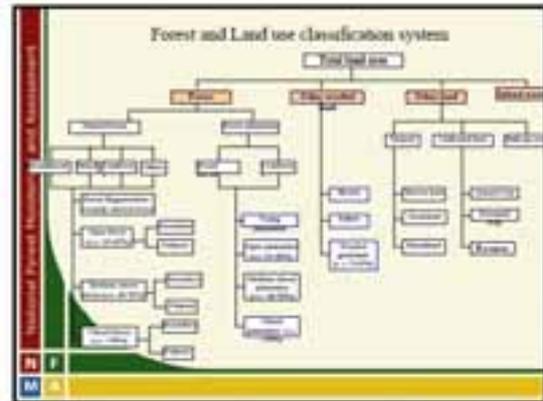
- Through adopting holistic and cost effective approach to NFMA
- Broadening & harmonising information to meet national & international users requirements
- Data driven by decision making and inter-sector policy harmonisation
- Support national policy dialogue and reporting to international processes

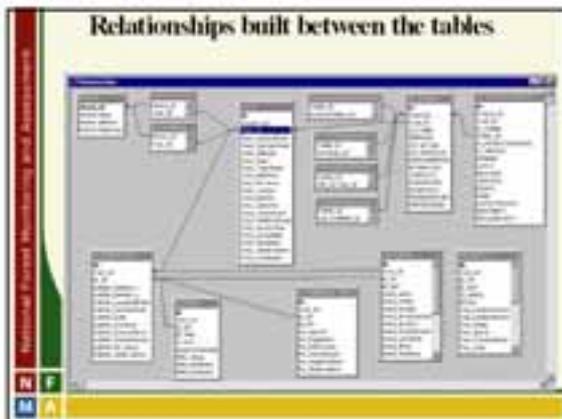


**Approach**

- Capacity building
- Improve knowledge (National Decision making)
  - State of resources in forests and TOF and their benefits (products & services)
  - Management, use and users of resources
- Improve information management systems
- Set up long term monitoring of indicators for national & international reporting (extent, growing stock, carbon, biodiversity, health, etc)







### Outputs of NFMA, basis for policy analysis

System	Forest	Use	Participating IFA Tables
Extent of forest, other wooded land & other land	x	x	11 Extent of forest & other wooded land
Ownership	x	x	12 Forest ownership & management rights
Designation	x	x	13 Forest designation & management
Forest characteristics	x	x	14 Forest characteristics
Origin of forest and trees	x	x	15 Forest establishment & reforestation
Volume per land use category	x	x	16 Harvesting stock
Biomass per land use category	x	x	17 Biomass stock
Carbon per land use category	x	x	18 Carbon stock
Forest fires	x	x	19 Forest fires
Environmental problems	x	x	20 Forest fires & Other disturbances affecting forest health & vitality
Forest and tree health	x	x	
Biodiversity (tree species)	x	x	21 Environmental & social indicators
Products	x	x	22 Forest inventory and management rights
Land rights	x	x	23 Forest designation and management
Management & utilization	x	x	24 Policy and land management
Policy analysis	x	x	25 National forest inventory of resources
Forest health	x	x	26 Forest health indicators
Forest use	x	x	27 Forest use indicators
Forest management	x	x	28 Forest management indicators
Forest policy	x	x	29 Forest policy indicators

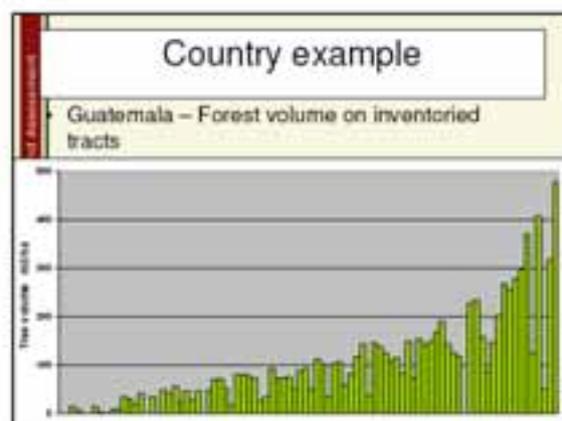
### Monitoring REDD

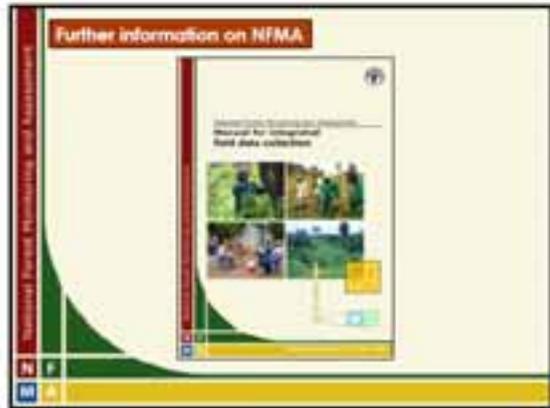
- Extent of biomes and forest
- Extent of forest change - deforestation, reforestation, afforestation
- Disturbances and forest degradation
- Abundance and distribution of timber tree species
- Activities of forest dependent populations
- End-use of resource

### Biodiversity variables

- Extent of biomes, ecosystems and habitats
- Protection status of different ecosystems
- Forest composition
- Extent of primary forest
- Forest fragmentation
- Forest management systems
- End-use of resource
- Disturbance levels
- Crop diversity
- Tree species abundance and distribution

#### Tree species richness





*Thank You*

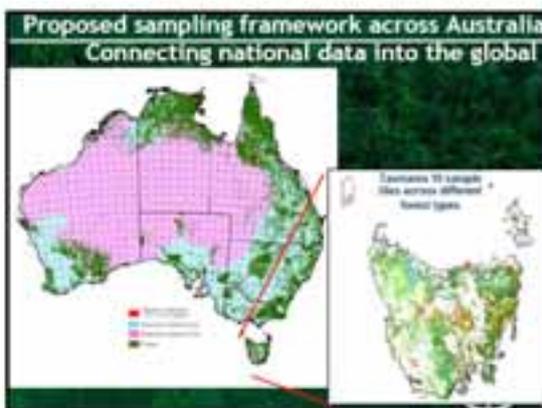
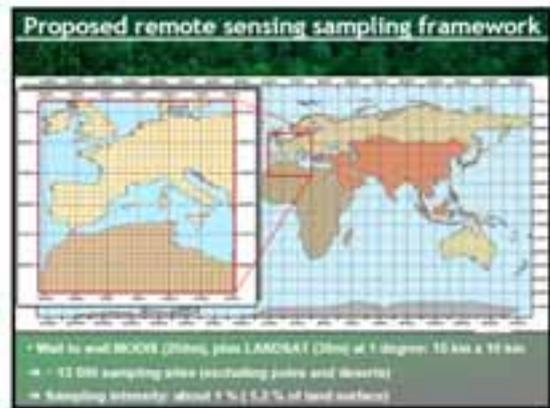
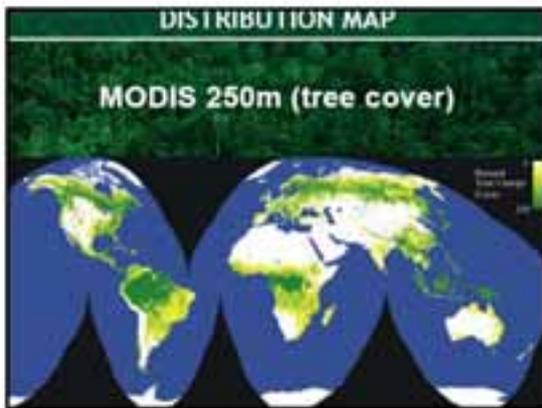
## Annex 6.4: The FRA 2010 Remote Sensing Survey



Why are we doing a REMOTE SENSING SURVEY?

1. Complement (not replace) National data
2. Global and regional maps of tree cover
3. Get TRENDS from more consistent data = show where changes are located
  - deforestation and
  - + afforestation

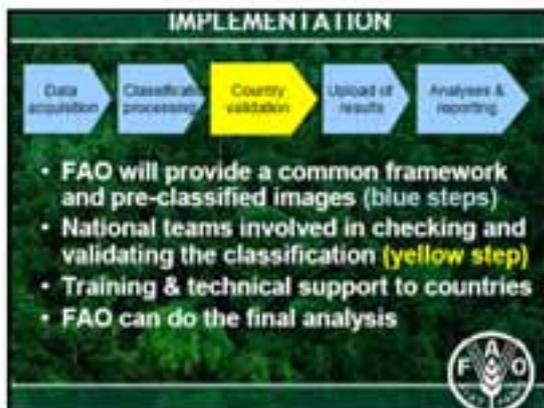
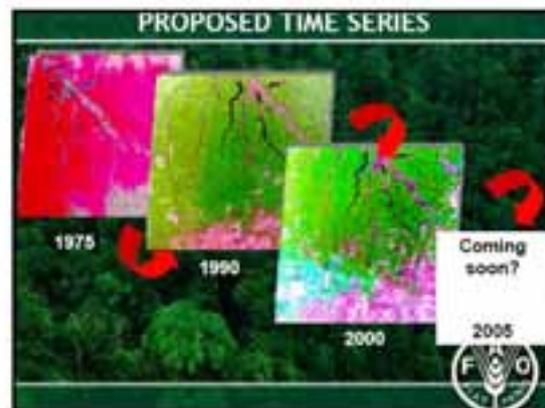
The slide includes an image of a stack of books on the right and two small satellite images at the bottom right.



Pilot study to test the process

- The initial step will be to undertake a Pilot study to test and refine the process before global application
- 20 countries covering wide range of forest types participating in Task Force and Pilot
- using a subset of the global scenes selected across varied biomes

The FAO logo is visible in the bottom right corner.



- ### EXPECTED OUTPUTS
1. Global and regional tree cover maps - (not intended to be used at national scale)
  2. Trends in regional, biome and global tree cover from 1975 (if poss.), 1990-2000 and to 2005
    - area change statistics
    - information on tree cover and dynamics
  3. Improved technical skills through capacity building
  4. A framework to support monitoring of forests, land use & environment
  5. Baseline data for further research & modeling

- ### Partners to add expertise and value
- Countries: national agencies, regional hubs
  - FAO
  - Joint Research Centre (Italy)
  - Universities (SDSU, UMD, Jena, Boston, Mississippi)
  - USGS/EROS data center
  - NASA
  - Heinz Center (US)
  - World Bank
  - UNEP
  - World Resources Institute, CI
  - GEO-C-GOLD
  - GEO Secretariat
  - Open to others

## NEXT STEPS

- Finalise preparations for the remote sensing survey
- RSS Task Force set up to refine methods, advise & test the process
- 2008-2009: most of the work
  - Hold regional workshops, training etc
- 2010: Data analysis and prepare drafts
- 2011: Final report and maps



## THANK YOU

More information is available from:

[www.fao.org/fra](http://www.fao.org/fra)

[fra@fao.org](mailto:fra@fao.org)



## Annex 6.5: Evaluation of methodologies in the context of application of Remote Sensing Survey for the Global Forest Resources Assessment Programme

Food and Agriculture Organization of United Nations  
Natural Resources Environment Assessment and Management (NREMA)

### Evaluation of methodologies in the context of application of Remote Sensing Survey for the Global Forest Resource Assessment (FRA 2010) Programme

John Latham  
Natural Resource Environment Assessment and Management (NREMA)  
Food and Agriculture Organization of United Nations

Rome, March 2008

1

Food and Agriculture Organization of United Nations  
Natural Resources Environment Assessment and Management (NREMA)

### Introduction

- o Background and linkages
  - o Global Forest Resource Assessment (FRA)
  - o National representatives
  - o International Partners
    - o FAO - FOM, NRCE, EU-JRC, SDSU, University of Jena et al...
- o Methodologies
- o Functionality and Tools – Processing & Gateway

2

Food and Agriculture Organization of United Nations  
Natural Resources Environment Assessment and Management (NREMA)

### FRA 2010 – Remote Sensing Survey

- o Specifically designed to cover the forest-related information needs for monitoring and progress towards the 2010 Biodiversity Targets, the Global Objective on Forests of the UNFCCC and the Millennium Development Goals
- o Over 220 countries will be covered
- o A systematic sampling design (grid of blocks at 1x1 deg intervals) will be used.
- o The area covered at each sample site is 12 km x 10 km (with a 5-km buffer zone)
- o Landsat images—starting from 1990, 2000, 2005 will be analyzed, initially
- o Opportunity for broader utilization of country level

3

Food and Agriculture Organization of United Nations  
Natural Resources Environment Assessment and Management (NREMA)

### Activities

- o Expert consultations to identify
  - Main activities and tasks
  - Input data sources
  - Legend
  - Minimum mapping unit
  - Processing environment
- o Testing and assessment of various approaches and proposed methodology
  - Sample blocks creation and screening
  - Evaluation of methodologies
  - Information gateway
- o Evaluation of software and tools
  - Mapping Device – Change Analysis Tool software

4

Food and Agriculture Organization of United Nations  
Natural Resources Environment Assessment and Management (NREMA)

### Sample blocks screening

5

Food and Agriculture Organization of United Nations  
Natural Resources Environment Assessment and Management (NREMA)

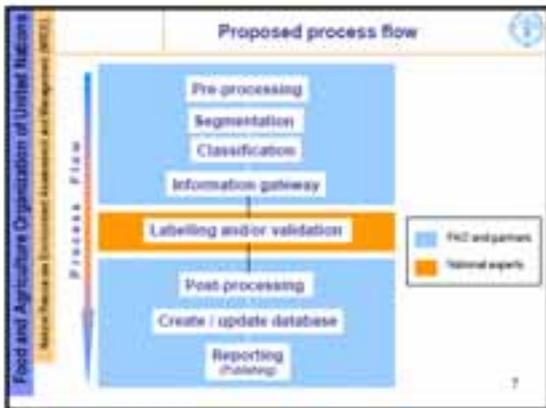
### Activity two - Methodology

Evaluation of different approaches to FRA change detection

```

    graph TD
      Input["Input  
(1x1 deg blocks  
grid for 2000)"] --> Visual["1. Visual"]
      Input --> Pixel["2. Pixel Based"]
      Input --> Object["3. Object Based"]
      Visual --> Output["Output  
(vector data or  
raster format)"]
      Pixel --> Output
      Object --> Output
      Output --> Evaluation["Evaluation"]
    
```

6



**FRA-RSS Information Gateway**

The FRA-Remote Sensing Survey-Information Gateway is a Web-based integrated system to manage data and information produced by the FRA 2010 programme activities.

It aims to:

- disseminate and share remote sensing and any other geo-spatial data relevant to the programme;
- facilitate global, regional and national monitoring efforts; ATIS
- implement a decentralized approach that ensures an increased involvement of countries in the assessment and mapping task.

**FRA-RSS Information Gateway**

- **Functionalities**
  - search/display
  - download
  - upload
  - users management
  - process status
- **Guidelines/tools**
- **Features:**
  - User friendly interface
  - Controlled access to various level of information
  - Online decision support tools

Provides controlled access to raw and processed satellite imagery, software download, interpretation, pre-processed segments, auxiliary information, statistics, maps, and other information related to RSS assessments.

**Thank you!**

Contact:  
[john.l.guyon@fao.org](mailto:john.l.guyon@fao.org)

**Food and Agriculture Organization of United Nations**

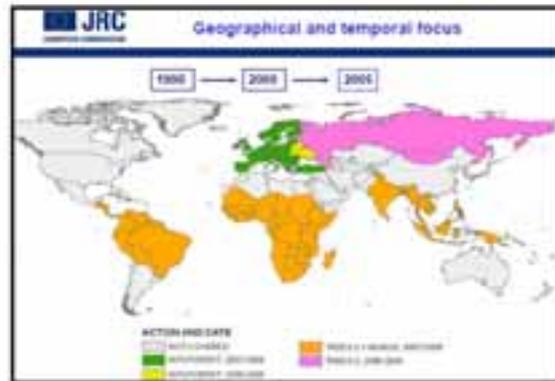
Natural Resources Assessment and Management (NRCE)

## Annex 6.6: Global activities of the Joint Research Centre in support to FRA 2010 Global Remote Sensing Survey

**JRC** LCS

Global activities of the Joint Research Centre  
(within its Framework Programme)  
in support to FRA 2010 Global Remote Sensing Survey

1. Geographical and temporal focus
2. Objectives and methodological approach
3. Outputs



**JRC**

**Objectives**

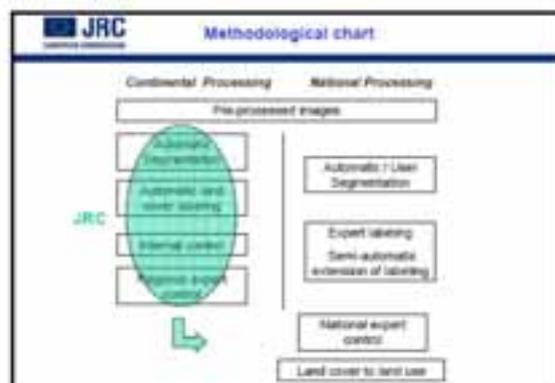
- To produce estimates by region & biome of
  - Tree cover
  - Tree cover change with change matrix
- Not a national monitoring – but can link to the national level or be intensified
- Method:
  - A sample of sites across the globe for which satellite data are collected



**JRC**

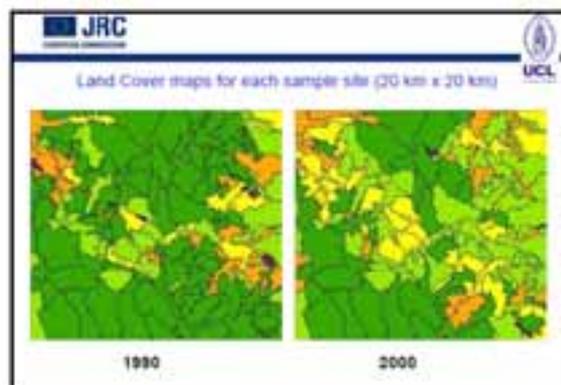
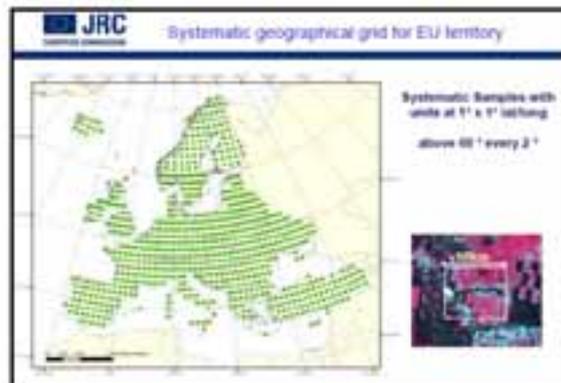
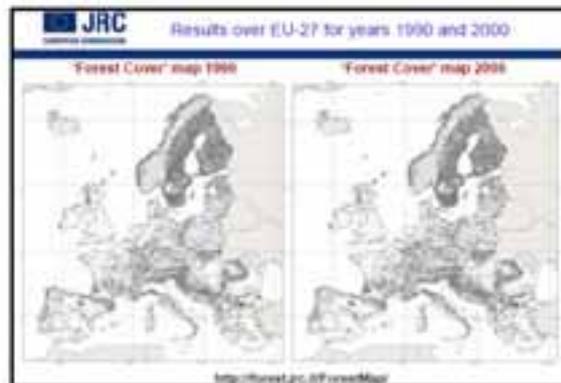
**Satellite data for each sample site (20 km x 20 km)**

1990                      2000



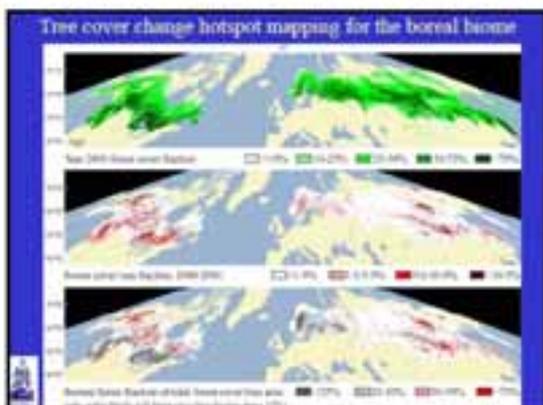
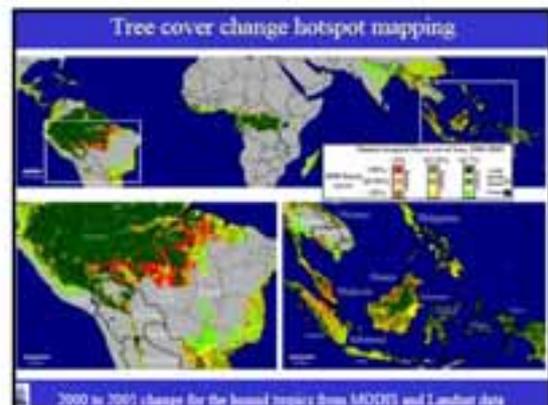
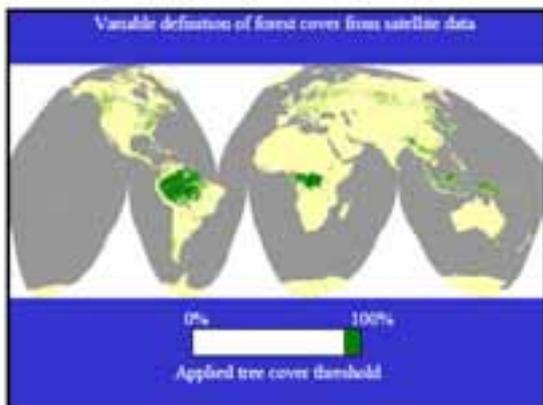
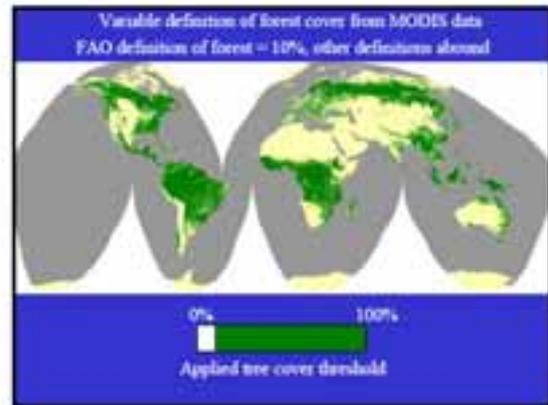
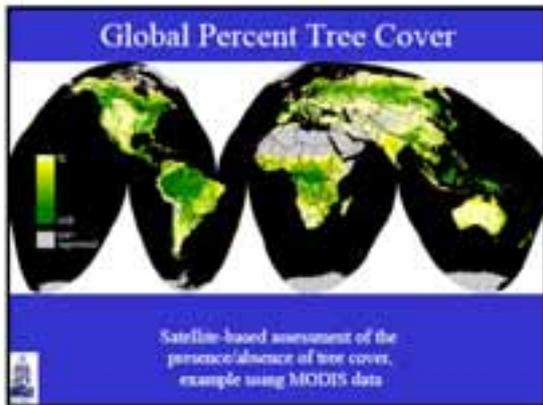
**JRC** What has been achieved so far

- Produced image data base and Forest Cover maps for European Union territory (1990 & 2000)
- Tested the methods over the Congo basin to produce Land Cover change statistics from 1990 to 2000
- Tested the sampling scheme with respect to full coverage as provided by INPE
- Tested an intensified sampling scheme with respect to a classical forest inventory (French Guiana)
- Created an image data base and screened the images for the Tropics

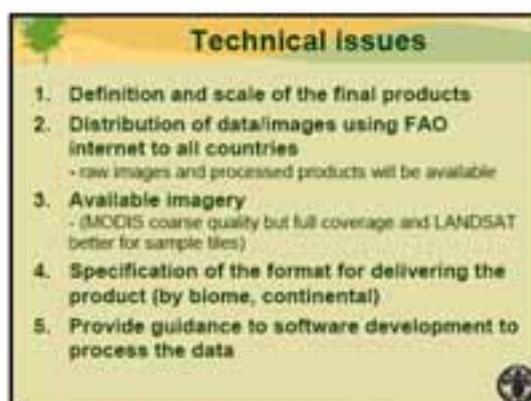
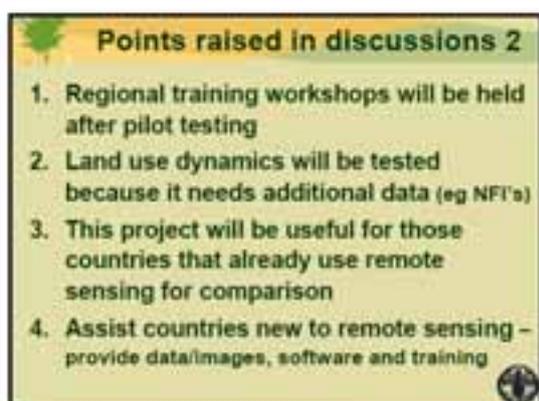
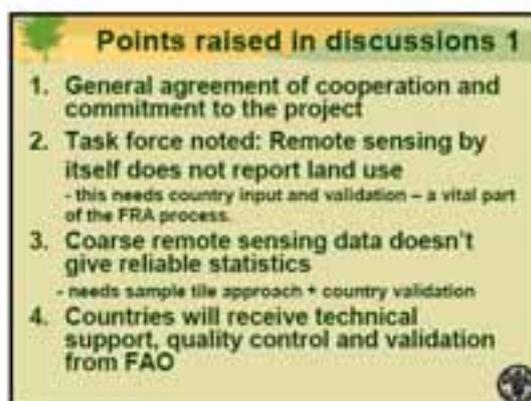
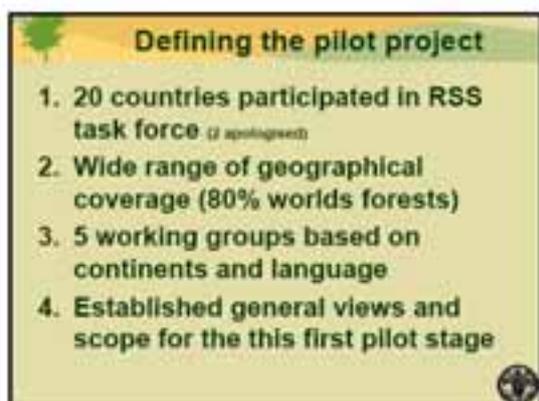
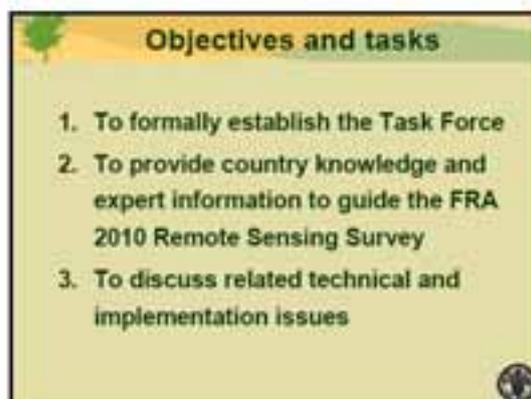


1. Screened preprocessed image dataset
2. Processed imagery
  - 2- levels segmentation
  - Preliminary Land Cover class labels
  - Change layer
3. Visually validated Land Cover products

## Annex 6.7: New technology for forest cover mapping



## Annex 6.8: FRA 2010 Remote Sensing Survey Task Force Report





### Conclusion - product outputs

1. Global tree cover map (trees, non-trees, water bodies) –not in FRA tables
2. Tree cover area and change (+/-) for  
1975?(will be evaluated)  
1990, 2000  
2005 (when ready, late 2008)
3. Task force countries will test and refine the FRA RSS methods before available for all other countries to use

