

# Advances of Mexico in preparing for REDD

UNFCCC Workshop on Methodological Issues relating to Reducing Emissions from  
Deforestation and Forest Degradation in Developing Countries

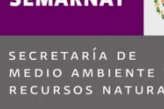
**Bernardus H.J. de Jong**, ECOSUR  
Leonel Iglesias Gutiérrez, CONAFOR  
José Armando Alanís de la Rosa, CONAFOR

**Tokyo, Japan**  
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- Focus
- Sources of information available
- Areal extend of Mexican forests
- LU/LC change
- Carbon densities
- Estimated emissions from LU/LC change
- Drivers
- Estimated impact of forest policy on deforestation
- Pro-Arbol program
- Lessons learned
- Next steps



# Focus



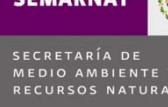
- Mexico is preparing REDD at the national scale.
- System will be set up so that project-type efforts can be developed within a national accounting system.
- Projects can be coordinated by governmental institutions through public calls or by private initiatives, such as NGOs.



# Data available



COMISIÓN NACIONAL FORESTAL



SECRETARÍA DE  
MEDIO AMBIENTE  
RECURSOS NATURALES

## Land Use/ Land Cover maps

- National LU/LC maps (scale 1:250,000) for 1970s, 1993 and 2002
- Gross forest (based on 1993 and 2002 land-use maps): 66 million hectares
- Other maps available but not consistent
- Change detection through MODIS combined with SPOT (2000-2003; 2003-2005; 2003-2006)

## Satellite imagery

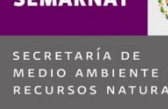
- Landsat imagery of 2000 and 2002, covering the whole country
- SPOT imagery: unlimited through a contract of Secretary of Marine

## National Forest Inventory

- Forest inventory (1992-1994) data of 16,000 non-permanent geo-referenced plots
- More than 22,000 permanent geo-referenced sampling plots established between 2004-2007
- 5-year re-sampling scheme starting 2008



# Data available



- **Emissions factors**
  - Specific for some areas (regional or local level)
  - Default for the rest of the country
- **Auxiliary data sources**
  - Geo-referenced population census maps (1990, 2000, 2005)
  - Climate (precipitation, temperature)
  - Elevation and slope (1:50,000)
  - Soils and soil degradation (1:250,000)
  - 50,000 one-time soil sample points to produce 1:50,000 soil maps; not correlated to forest inventory
  - Forest fire monitoring system since 2000, based on MODIS imagery.

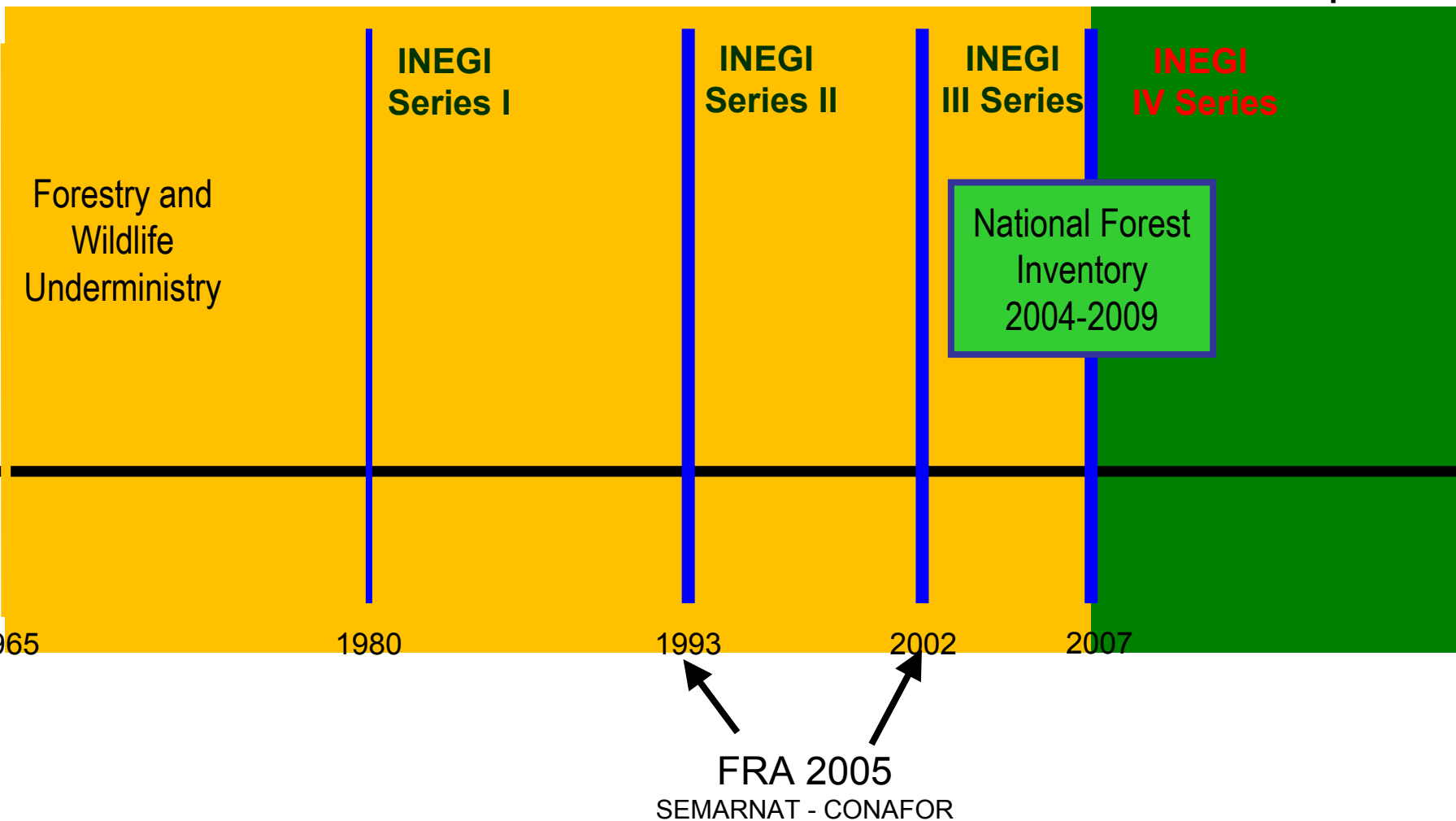


# Updating process of LU/LC map with information from National Forest Inventory (scale 1:250,000)

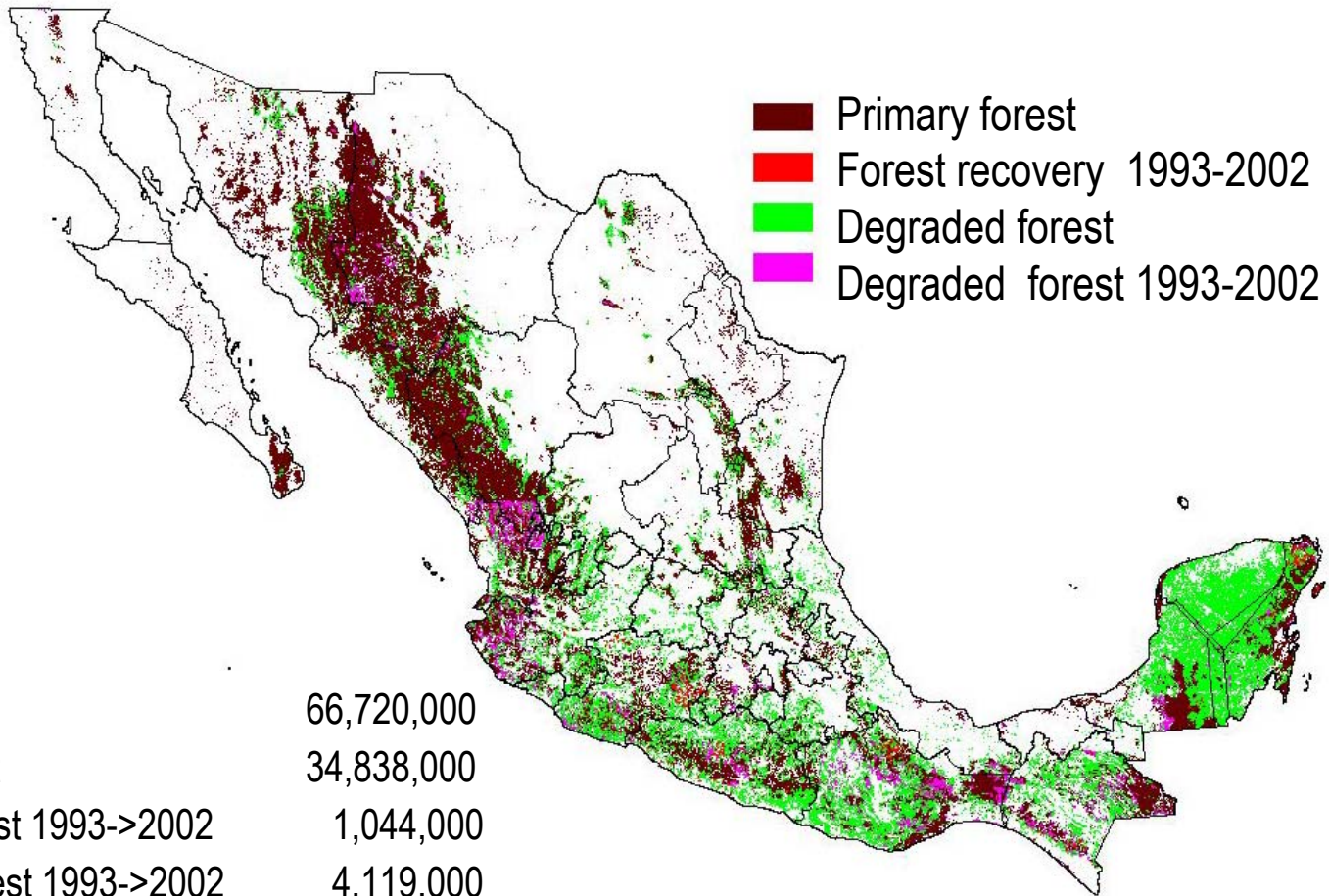


## Available information

## Information in process



# Forested areas in 2002



- Primary forest
- Forest recovery 1993-2002
- Degraded forest
- Degraded forest 1993-2002

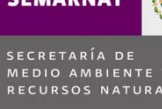
Total Forest	66,720,000
Primary forest	34,838,000
Restored forest 1993->2002	1,044,000
Degraded forest 1993->2002	4,119,000
Degraded forest	26,719,000

- **Defining reference scenario**
  - Information is available to analyze 2 continuous intervals to detect trend/transition in deforestation rates
  - Intervals are within a 10-year period each
- **Analysis of historical trend in deforestation**
  - Between 1993 and 2002 (detailed)
  - Between 2003 and 2006 (only change detection)
  - Updated LU/LC map of 2007 will be available shortly





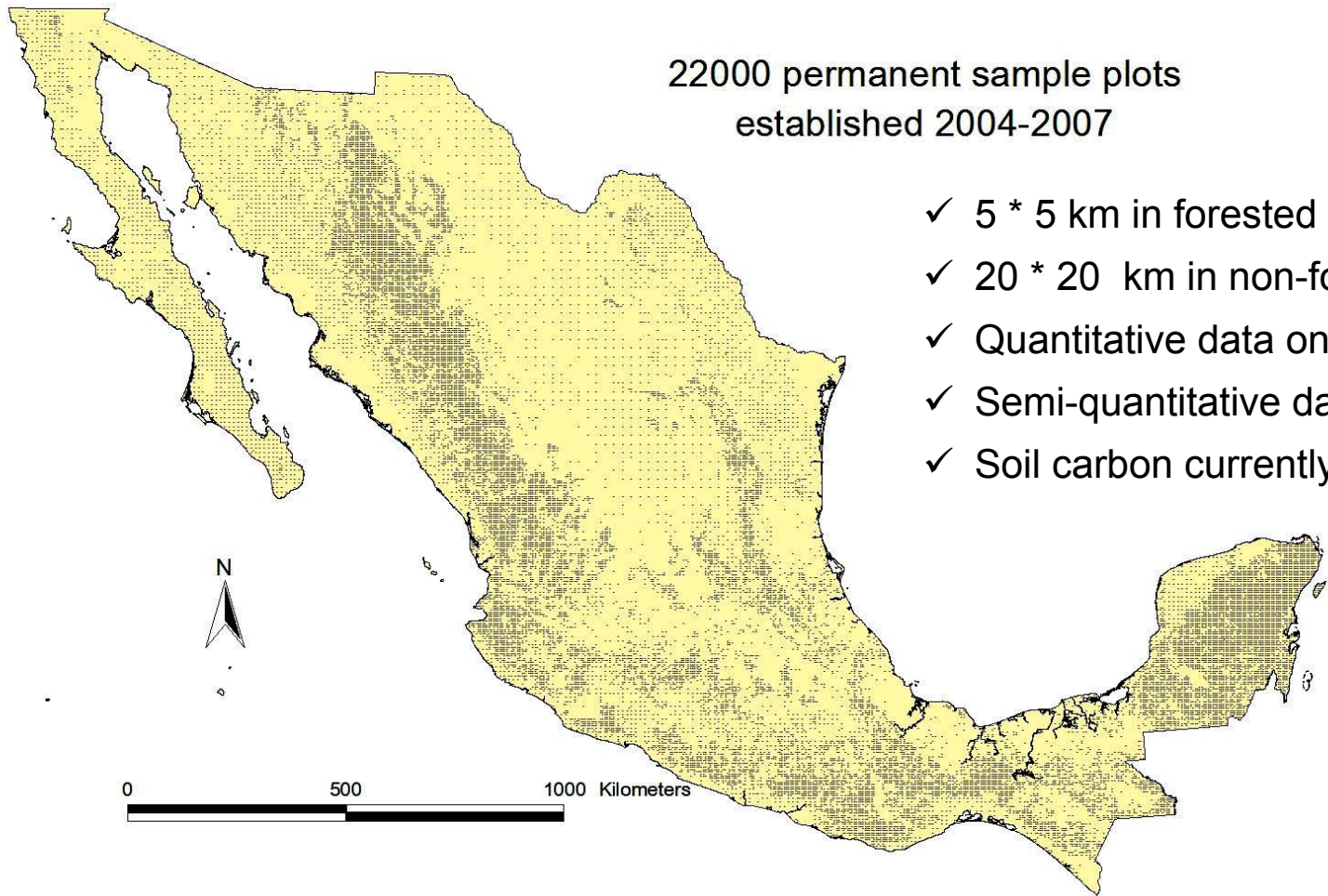
# Land use change



- Deforestation between 1993 and 2002: **512,500 ha/yr**
- Degradation between 1993 and 2002: **457,700 ha/yr**

Forest type	Annual rate of deforestation (%)
Coniferous Forest	0.3
Degraded Coniferous Forest	0.6
Coniferous-Broadleaved Forest	0.2
Degraded Coniferous-Broadleaved Forest	0.7
Broadleaved Forest	0.3
Degraded Broadleaved Forest	0.3
Evergreen Rain Forest	0.3
Degraded Evergreen Rain Forest	1.4
Deciduous Rain Forest	0.7
Degraded Deciduous Rain Forest	1.2

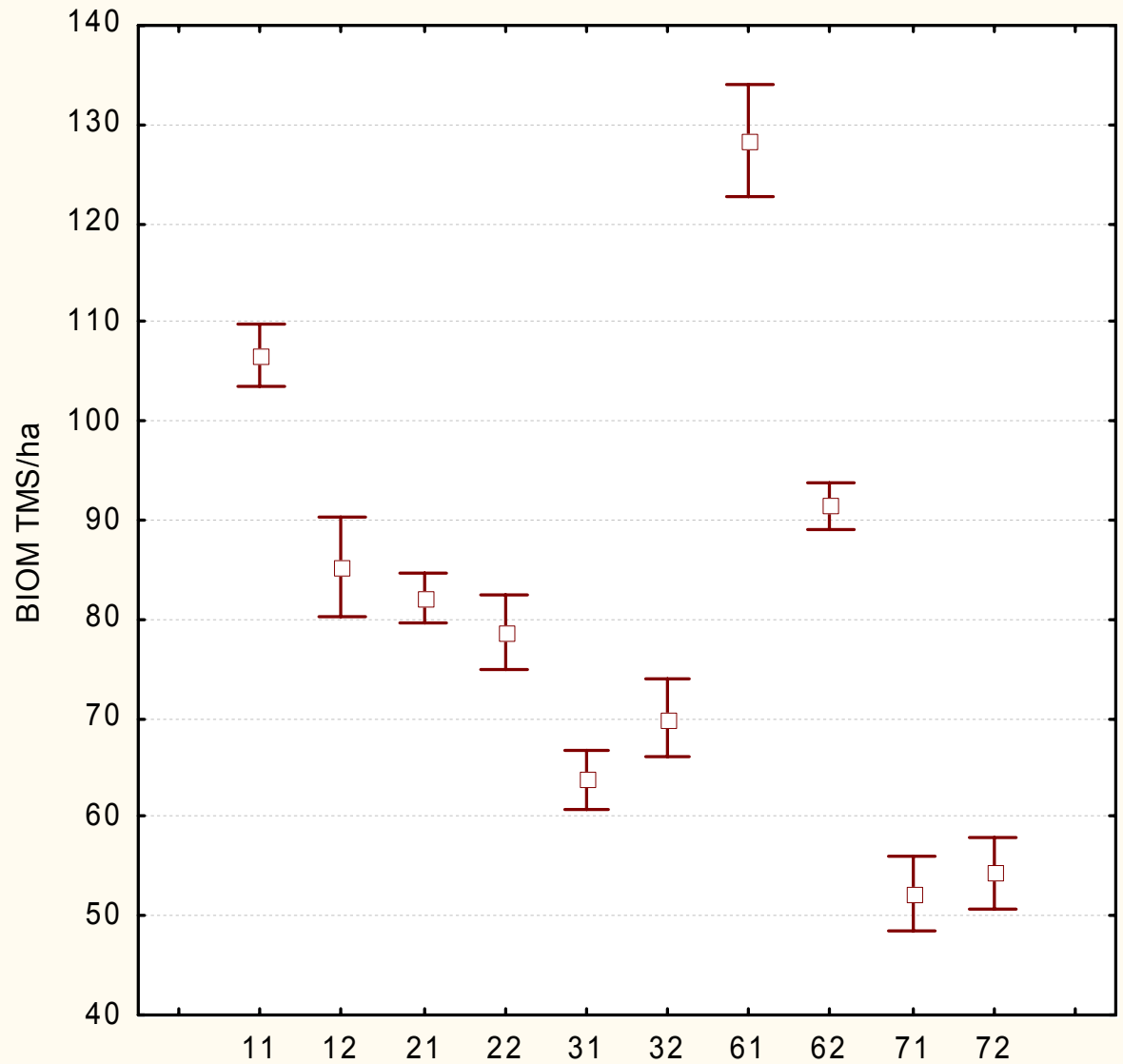
Based on MODIS imagery analysis estimated deforestation between 2003 and 2006 is about **350,000 ha/yr**



- ✓ 5 \* 5 km in forested areas
- ✓ 20 \* 20 km in non-forested areas
- ✓ Quantitative data on trees and shrubs
- ✓ Semi-quantitative data on other pools
- ✓ Soil carbon currently not measured

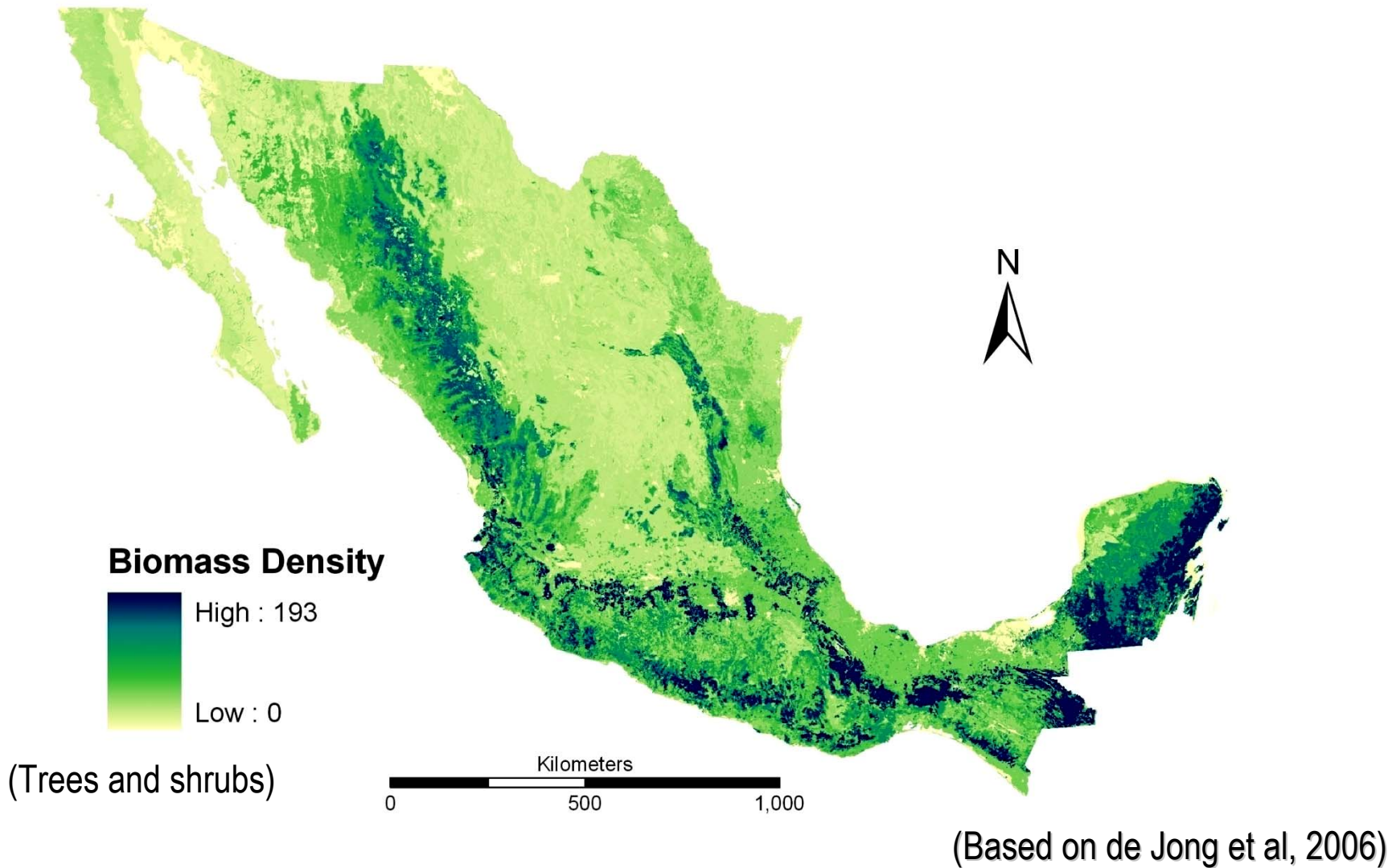


# Carbon densities (2)

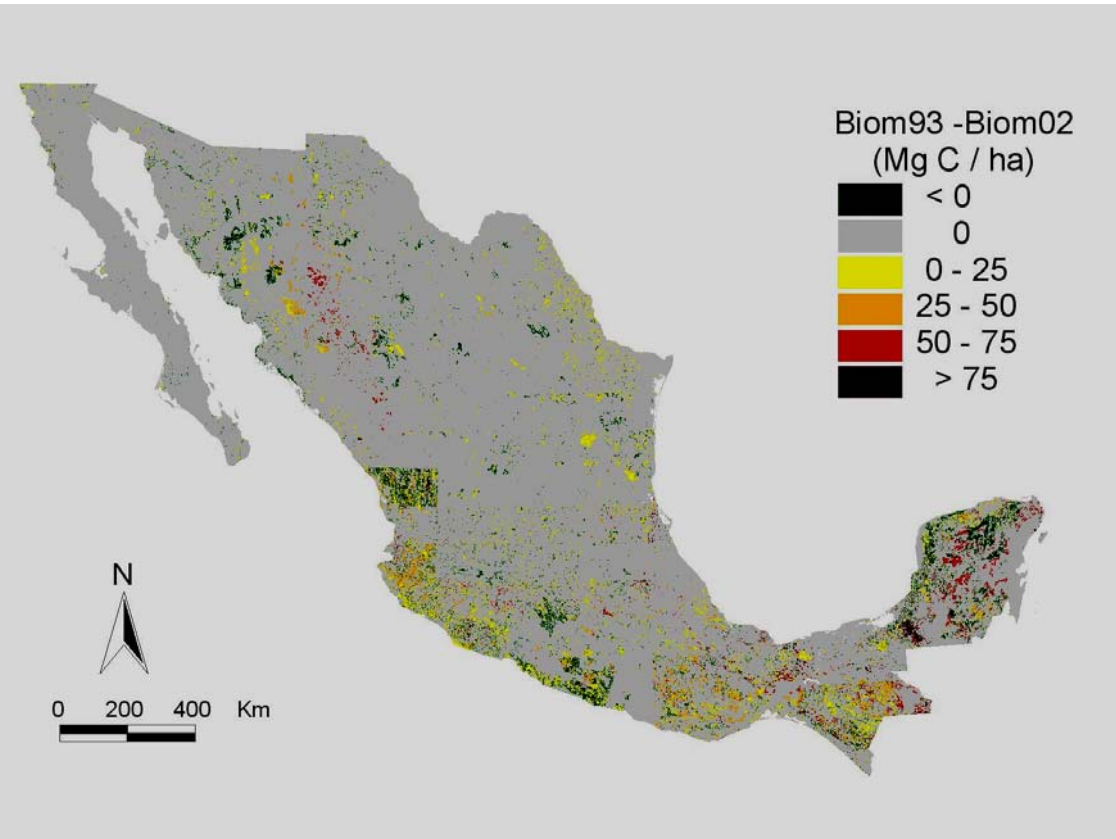


- 11 Pine Forests
- 12 Degraded Pine Forests
- 21 Pine-Oak Forests
- 22 Degraded Pine-Oak Forests
- 31 Oak Forests
- 32 Degraded Oak Forests
- 61 Tropical Evergreen Forest
- 62 Degraded Tropical Evergreen Forest
- 71 Tropical Deciduous Forest
- 72 Degraded Tropical Deciduous Forest

# Carbon densities (3)

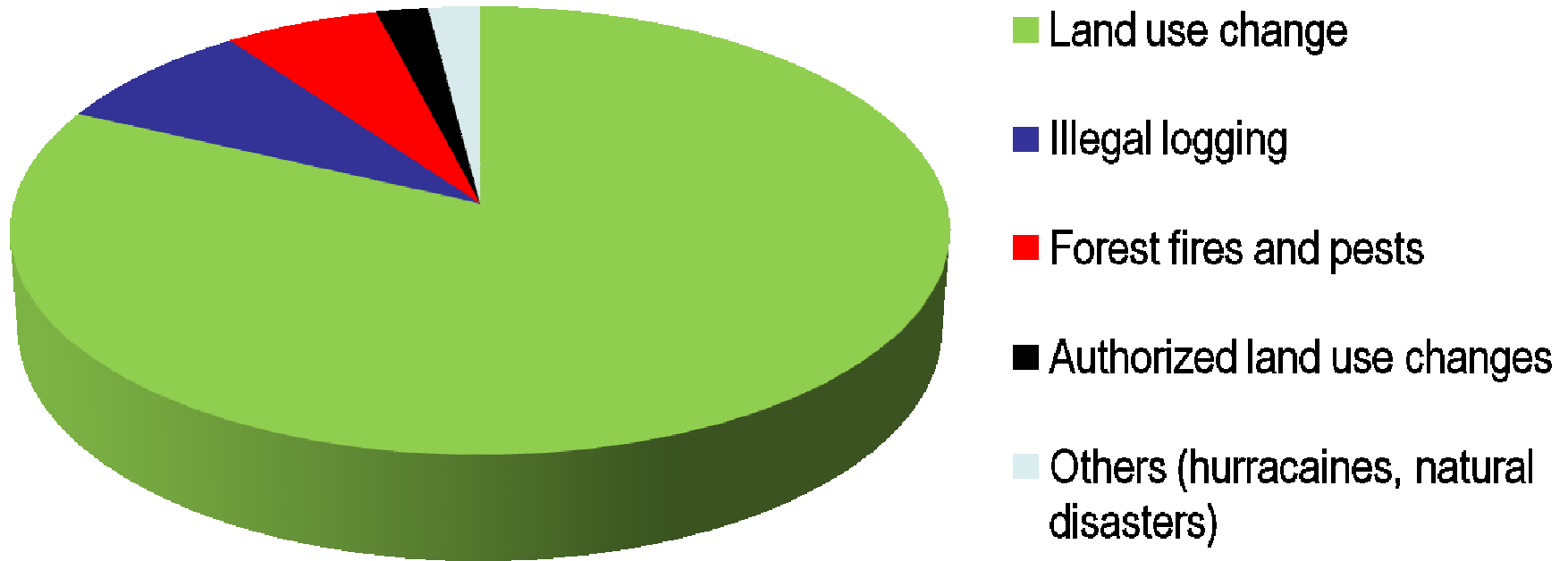


## Changes in tree and shrub biomass due to LU/LC change



## Annual emissions from DD

Source	$10^6 \text{ tCO}_2 / \text{y}$
Deforestation	47.85
Degradation	11.62



Source: INE (2005) cited by CCMSS (2008)

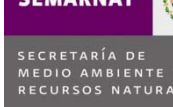
Factors highly correlated with the deforestation are:

Factor	Correlation
Roads	95% of deforestation occurred within 25 km from roads
Settlements	95% of deforestation occurred within 13 km from settlements
Developed areas	95% of deforestation occurred within 10 km from developed areas
Areas with secondary vegetation	95% of deforestation occurred within 17 km from areas with secondary vegetation

- A vulnerability map was developed to identify forests under a threat of deforestation between 2002 and 2010.
- Map was developed based on the correlation between deforestation observed between 1993 and 2002 (comparing land use maps of both dates) and various factors representing access to/or pressure on land.



# Impact of forest policies on DD



preliminary results:

Deforestation in areas with forest management 30% lower than in areas without

Deforestation in areas with conservation 40% lower than in areas without

180 has forest managed

150 has with conservation



1 ha reduction in deforestation

Expected reduction in deforestation from governmental programs

Programs	2007-2012 (1000 ha)	Estimated reduction in Deforestation
National Protected Areas	2,300	15,300
Wildlife Management Units	6,000	33,300
Sustainable Forest Management	8,900	49,500
Payment for Ecological Services	2,175	12,000
Forest Pest Control	200	200,000
<b>Total</b>	<b>19,575</b>	<b>310,100</b>



## Reducing Emissions from Deforestation and Degradation

- ❑ Payment for Environmental Services
- ❑ Sustainable Forest Management
- ❑ Sustainable Communitarian Forestry
- ❑ Soil conservation and restoration
- ❑ Forest fire protection
- ❑ Forest health (pest management)

## Increasing potential for Carbon sequestration

- ❑ Reforestation
- ❑ Commercial plantations
- ❑ Design and implementation of CDM projects

## **PSAH:** Payment for Water Environmental Services

- Direct payments to land owners for forest conservation activities (US \$30 to \$40 per year per ha for 5-year periods).
- Beneficiaries are located in areas where forests have important hydrological functions (infiltration, erosion control, flooding).

## **CABSA:** Program to promote environmental services markets for carbon sequestration, biodiversity conservation and agroforestry.

- Supporting design and implementation of environmental services projects (for biodiversity conservation, CDM projects).
- Strengthening technical and organizational capacities of forest owners and providers of forest professionals.



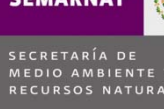
# Improving localization of PSAN to reduce deforestation in areas of high hydrological value



<b>Deforestation risk</b>	<b>2003 (%)</b>	<b>2004 (%)</b>	<b>2005 (%)</b>	<b>2006 (%)</b>	<b>2007 (%)</b>
Very high	3.6	10.9	7.3	5.6	13.8
High	6.7	16.8	11.9	10.4	19.9
Medium	17.3	20.5	20.6	16.1	17.7
Low	30.4	29.9	26.8	24.7	21.7
Very low	41.9	21.8	33.1	42.9	26.8
Total	100	100	100	100	100



# PES and poverty



<b>Marginalization Index</b>	<b>2003 (%)</b>	<b>2004 (%)</b>	<b>2005 (%)</b>	<b>2006 (%)</b>	<b>2007 (%)</b>
Very high	25.0	21.5	26.4	35.9	<b>49.9</b>
High	46.9	61.4	52.9	46.9	<b>41.5</b>
Medium	18.1	7.9	13.6	12.0	5.2
Low	7.9	5.7	6.2	4.2	2.9
Very low	2.1	3.4	0.7	1.0	0.5
Total	100	100	100	100	100

ProÁbol's PROCYMAF is aimed to:

- ✓ Build capacity of “ejidos” and indigenous communities for implementing sustainable forest management
- ✓ Promote communitarian participation in forestry and forest conservation through rural participatory planning processes
- ✓ Improve forest governance and share of benefits inside “ejidos” and indigenous communities
- ✓ Increase livelihood conditions and income sources

- ✓ In the last 2 years an increased interest in REDD can be observed.
- ✓ Although REDD was recognized by the academic sector as a key mitigation option for Mexico already in the 1990s, governmental institutions have picked-up the issue, especially in the last 2 years.
- ✓ As forestry and climate change are considered as factors of national security, the federal government is preparing an intersectoral program to address climate change, in which REDD will be integrated.
- ✓ **Institutional programs and experiences:** Early programs and projects have been contributing to develop key concepts and tools related to using forests as carbon sinks
  - ProÁrbol: Payment for Environmental Services program (PSAH), Communitarian Forestry (PROCYMAF)
  - Scolel-Te voluntary carbon project
  - National Forest Inventory

- ✓ Government of Mexico is committed to a zero deforestation target
  - Strengthening environmental institutions (SEMARNAT, CONAFOR, INE, CONANP, CONABIO, PROFEPA)
  - Improving targeting of successful programs (PSAH) and/or expanding its coverage (PROCYMAF)
  - Seeking new financing mechanisms to address climate change (carbon finance) with an impact on biodiversity conservation and poverty alleviation.

## ✓ Institutional

- CONAFOR is organizing a workshop on REDD in July, to discuss methodological and policy issues.
- Government of Mexico sent its application to FCPC's readiness fund to get financing for preparing a REDD strategy

## ✓ Methodological issues

- Negotiations are underway to set up a nation-wide LU/LC change monitoring system , based on MODIS, Landsat and Spot imagery.
- Data on other carbon pools will be incorporated in the National Forest Inventory, from 2009 onward.
- A network of monitoring plots in the northern scrublands will be established (comprising about 58'000,000 has) by the Secretary of Agriculture and Animal Husbandry.



# Thank you!

Contact information

**Bernardus H.J. de Jong**

[bjong@ecosur.mx](mailto:bjong@ecosur.mx)

**Leonel Iglesias Gutiérrez**

[liglesias@conafor.gob.mx](mailto:liglesias@conafor.gob.mx)

**José Armando Alanís de la Rosa**

[jalanis@conafor.gob.mx](mailto:jalanis@conafor.gob.mx)



**ProÁrbol**

[www.conafor.gob.mx](http://www.conafor.gob.mx)