

Comisión Nacional Forestal



RL WORK IN MEXICO



**GOBIERNO
FEDERAL**

SEMARNAT



COMISIÓN NACIONAL FORESTAL



AÑO INTERNACIONAL
DE LOS BOSQUES • 2011

TECHNICAL WORKSHOP ON RL
FOR REDD+
WASHINGTON, 9 NOV 2011



Vivir Mejor

Design elements



GOBIERNO
FEDERAL

SEMARNAT



COMISIÓN NACIONAL FORESTAL



AÑO INTERNACIONAL
DE LOS BOSQUES - 2011

Element	Status
Forest definition	Two distinct definitions: legal (Canopy \geq 10%, Height \geq 5m, Area \geq 0.5.ha), Marrakesh Accord (Canopy \geq 30%, Height \geq 4m, Area \geq 1.0.ha), practical (minimum mapping units of 25m). To be reviewed.
Historic period	INEGI map dates: 1993, 2002, 2007 Next national mappings: 2012, 2017 Aspirational target to 2020
Key ingredients	NFI data (aprox. 4K permanent plots per year), 1.5 cycles Landsat data Forest management data NALCMS
Key features (incl. scale)	Allow for consistent subnational reporting (common criteria before proceeding on zoning and ingredients) Allow plot level enhancement projects and wide-area D&D reductions <i>Transparency and conservativeness</i> Enable policy feedback



Vivir Mejor

Deforestation trends (net)



GOBIERNO FEDERAL

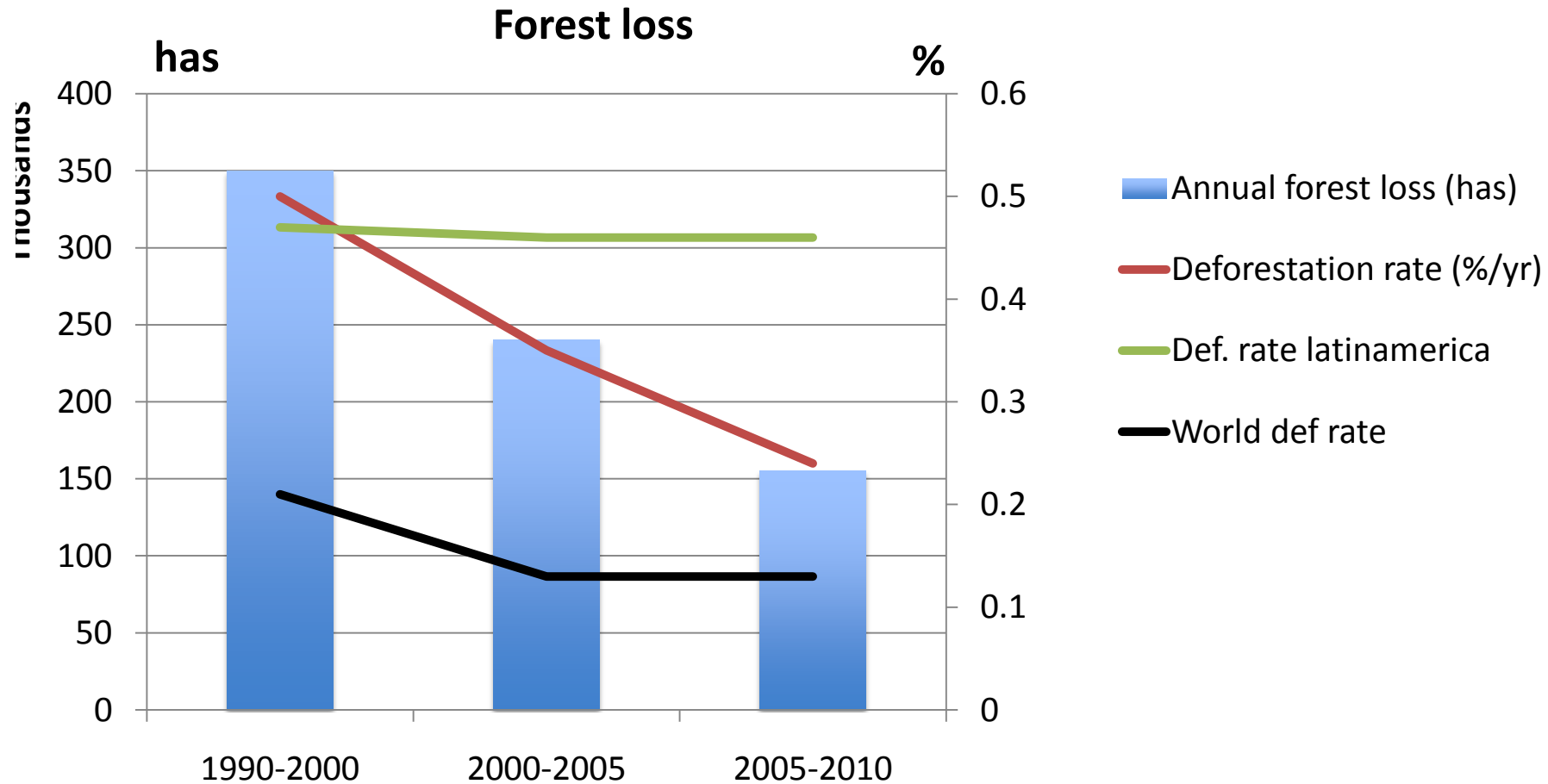
SEMARNAT



COMISIÓN NACIONAL FORESTAL



AÑO INTERNACIONAL DE LA BIODIVERSIDAD 2010



Vivir Mejor

Spatial distribution of net deforestation trends & emissions



GOBIERNO FEDERAL

SEMARNAT

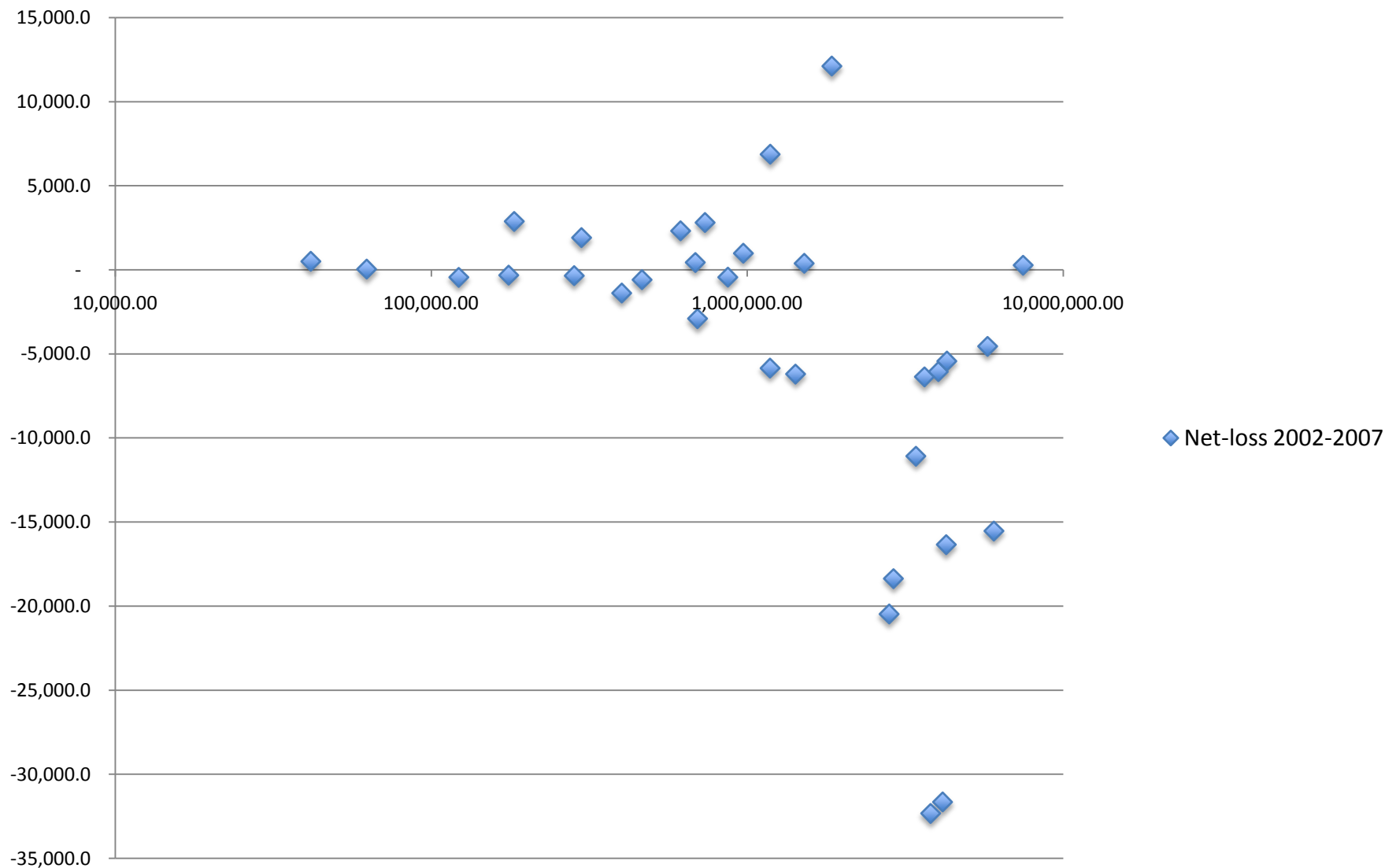


COMISIÓN NACIONAL FORESTAL



AÑO INTERNACIONAL DE LOS BOSQUES - 2011

Net-forest loss and forest area by State 2002-2007



Vivir Mejor

Spatial distribution of net deforestation trends & emissions



GOBIERNO FEDERAL

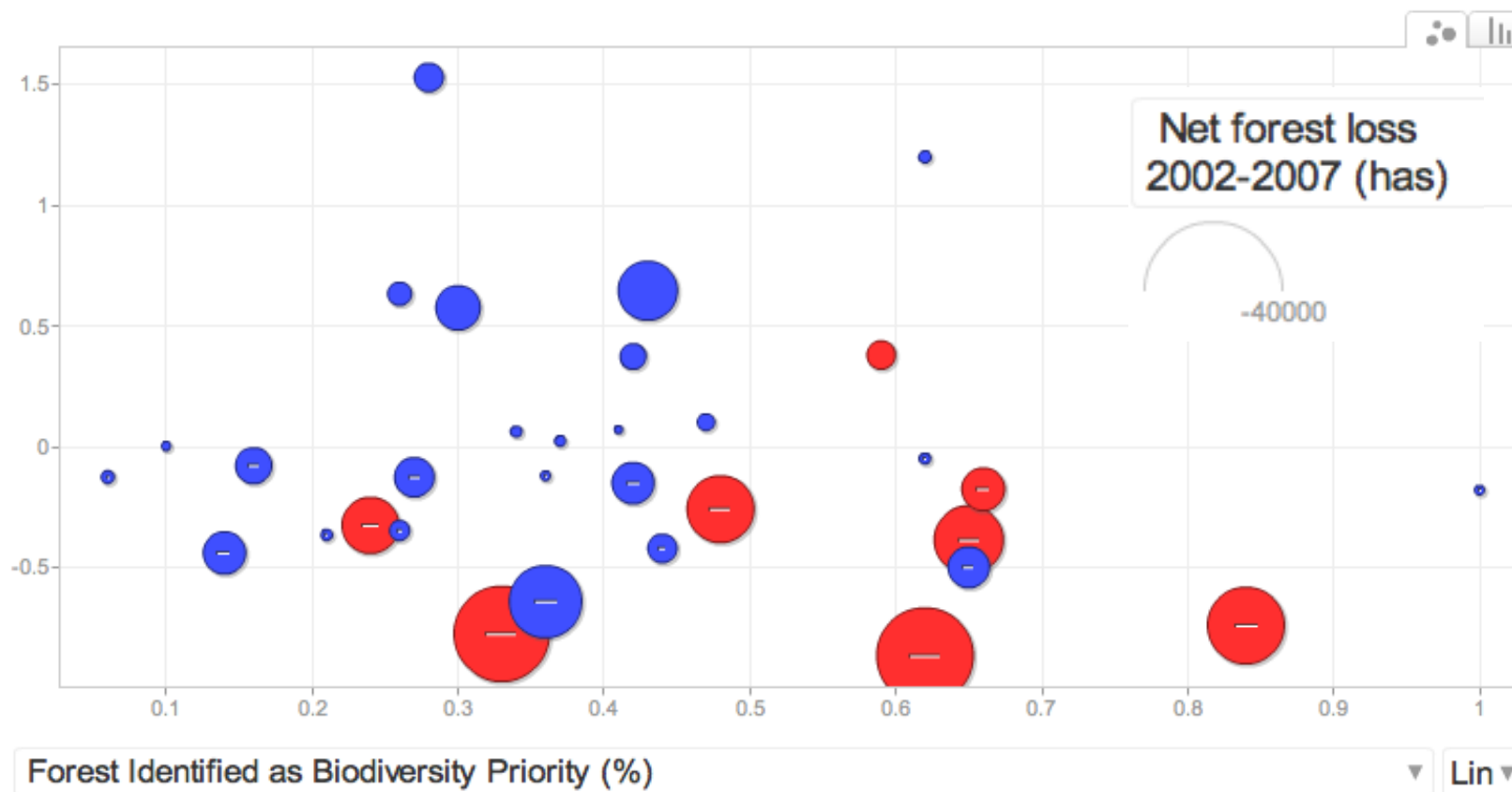
SEMARNAT



COMISIÓN NACIONAL FORESTAL



AÑO INTERNACIONAL DE LOS BOSQUES 2011



- Significant variation in deforestation rates across States
- Most important losses also in high biodiversity areas
- Socially also areas of high social need



Vivir Mejor

Territorial Focus



GOBIERNO FEDERAL

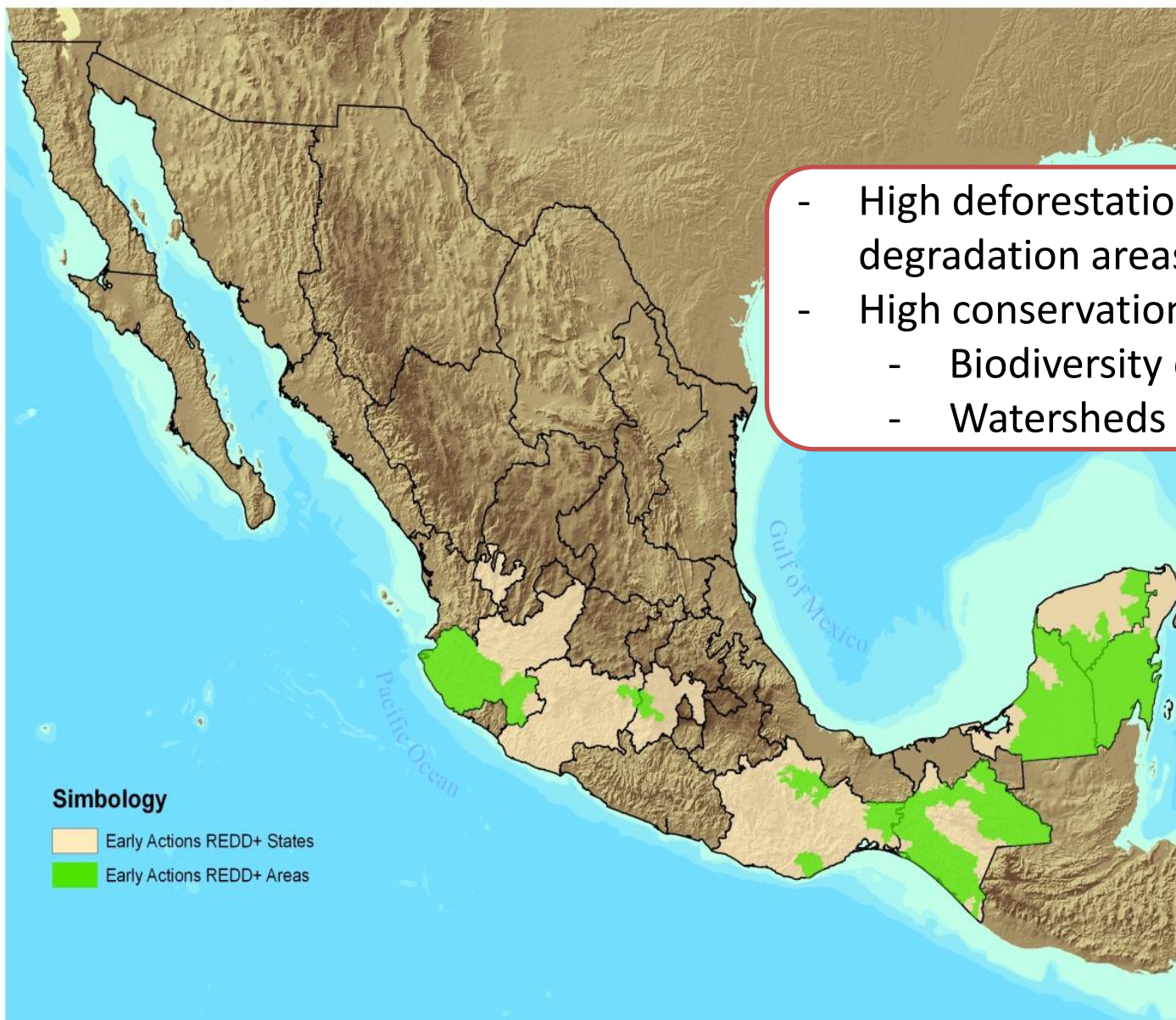
SEMARNAT



COMISIÓN NACIONAL FORESTAL

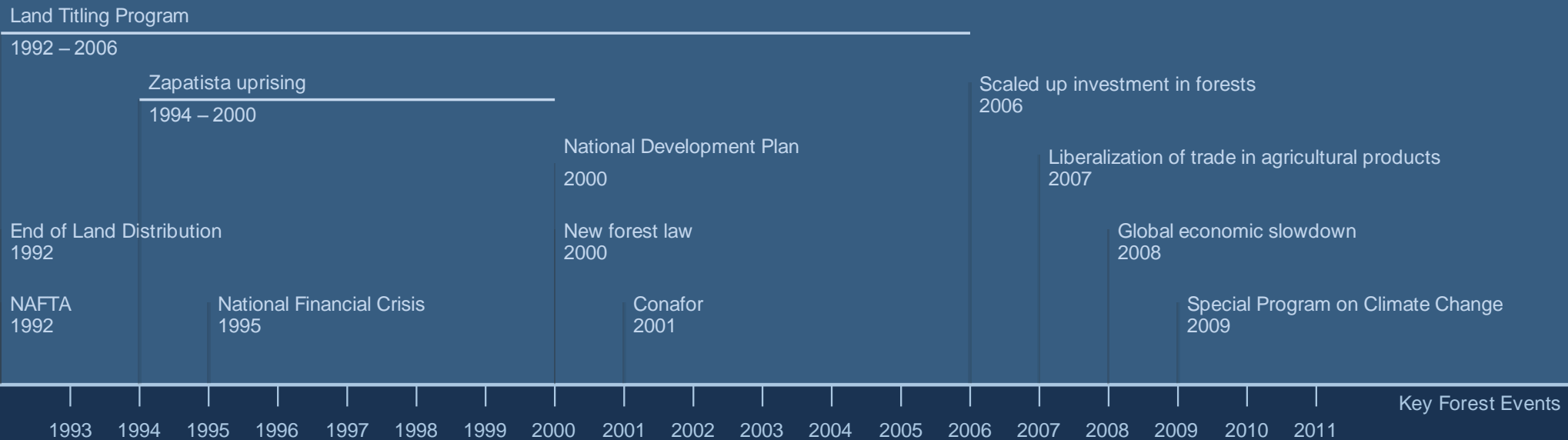
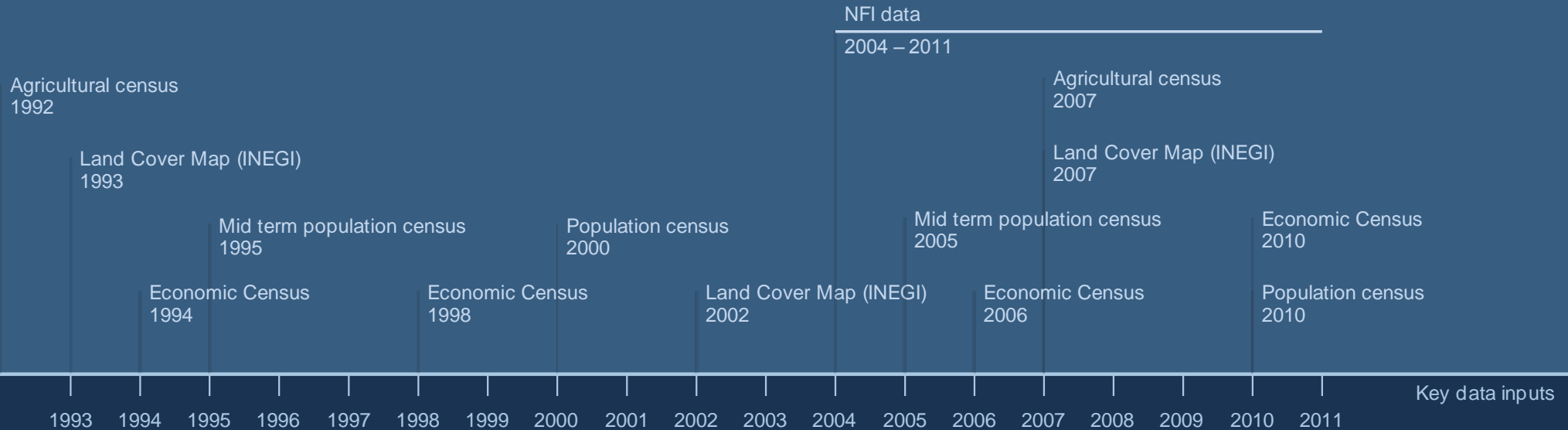


AÑO INTERNACIONAL DE LOS BOSQUES 2011

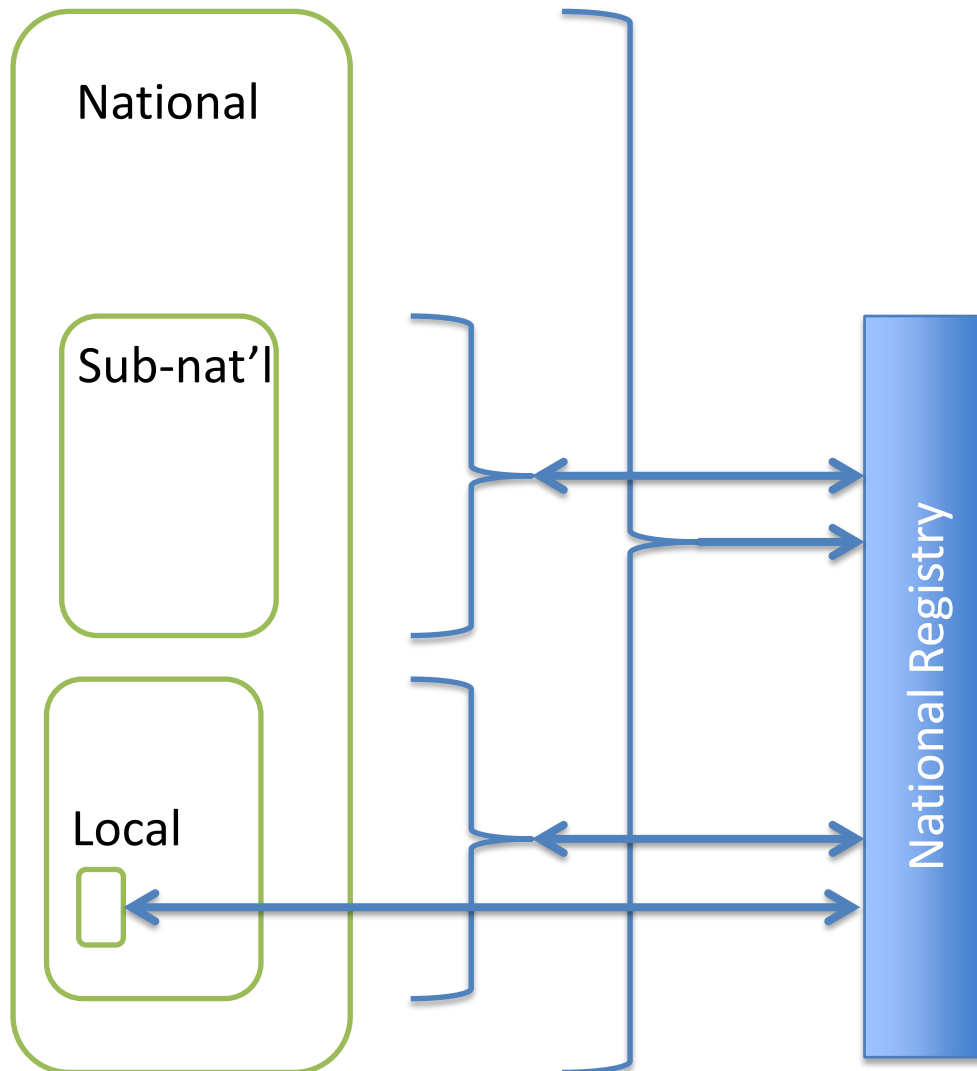


Vivir Mejor

Data challenges for projected RLs



Potential model



**GOBIERNO
FEDERAL**

SEMARNAT



COMISIÓN NACIONAL FORESTAL



AÑO INTERNACIONAL
DE LOS BOSQUES - 2011



Vivir Mejor



**GOBIERNO
FEDERAL**

SEMARNAT



COMISIÓN NACIONAL FORESTAL



AÑO INTERNACIONAL
DE LOS BOSQUES - 2011

Outline.

Historical and/or future projections

Drivers of change

Carbon densities

Up and down-scaling



Vivir Mejor

Historical and future predictions

1. Without taken into consideration forest policies
2. Impact of forest management and conservation on deforestation



**GOBIERNO
FEDERAL**

SEMARNAT



COMISIÓN NACIONAL FORESTAL



AÑO INTERNACIONAL
DE LOS RECURSOS HÍDRICOS - 2011



Vivir Mejor

Historical rate of Deforestation and Forest Degradation, based on LU/LC Maps of 1993, 2002, 2007.

(Gross deforestation calculated independently)
Note: Include a forest and other forest lands

Net

1993-2002

287,083

372,552

2002-2007

194,646

255,686

1993-2007

226,925

300,251

Gross

1993-2002

675,493

527,879

2002-2007

643,130

368,320

1993-2007

658,542

423,287

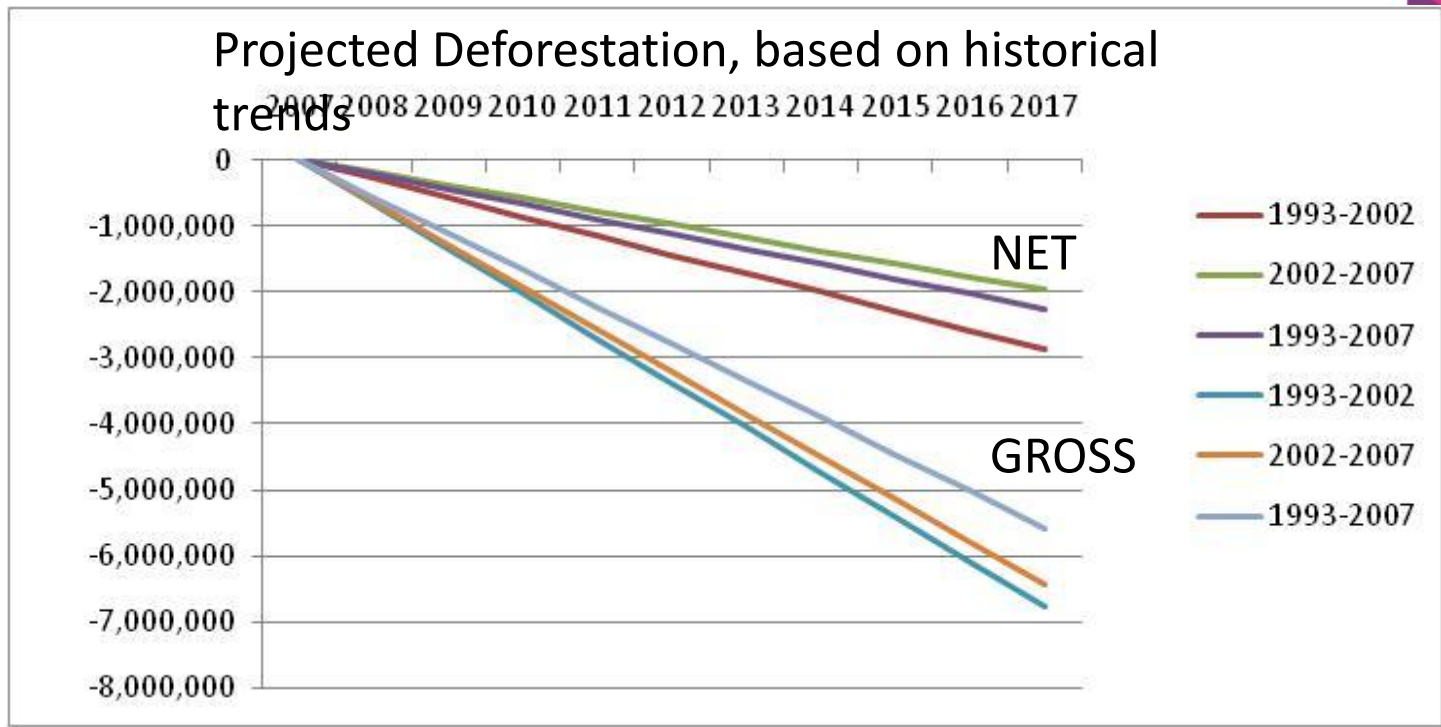


GOBIERNO FEDERAL

SEMARNAT



COMISIÓN NACIONAL FORESTAL



Vivir Mejor



GOBIERNO FEDERAL

SEMARNAT

- Gross deforestation between 1993 and 2002: **675,500 ha/yr**
- Degradation between 1993 and 2002: **527,900 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



Vivir Mejor

Impact of forest management and conservation on deforestation



**GOBIERNO
FEDERAL**

SEMARNAT



Deforestation rates between 1993 and 2002

Area changed from forest to non-forest (in %)	14.0%
Change forest-nonforest without mgmt	15.4%
Change forest-nonforest with mgmt	10.4%
Change forest-nonforest without cons	14.5%
Change forest-nonforest with cons	8.6%
Change forest-nonforest with cons without mgmt	10.1%
Change forest-nonforest with cons with mgmt	5.0%

Preliminary results of possible impact of forest policies on DD

180 has forest with mgmt
 150 has with conservation
 1 ha reduction in deforestation/year

Expected reduction in deforestation

Programs	2007-2012 (1000 ha)	Estimated reduction in Deforestation (per year)
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

Need improvements with analysis of satellite Imagery



**GOBIERNO
FEDERAL**

SEMARNAT



COMISIÓN NACIONAL FORESTAL



AÑO INTERNACIONAL
DE LOS BOSQUES - 2011



14
Vivir Mejor

Drivers



GOBIERNO FEDERAL

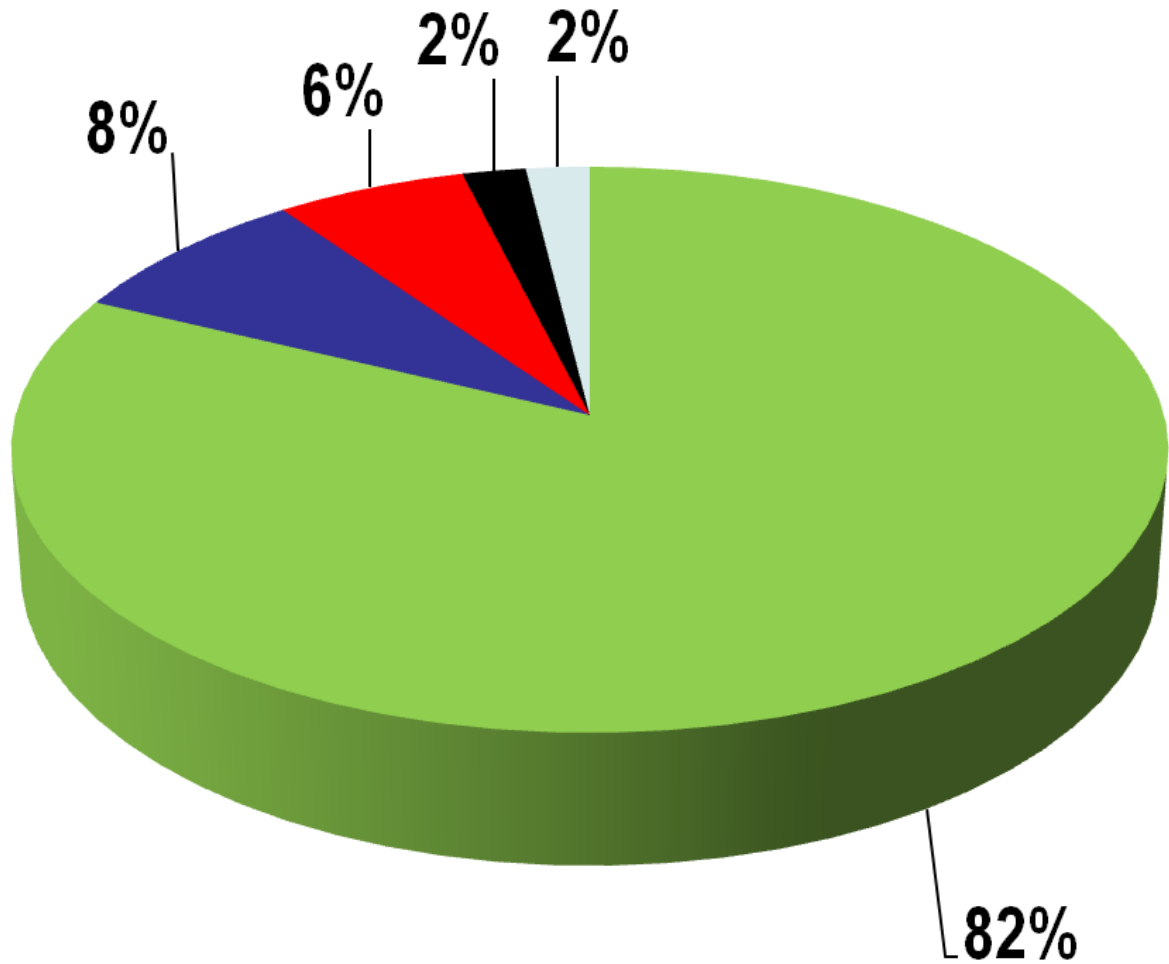
SEMARNAT



COMISIÓN NACIONAL FORESTAL



AÑO INTERNACIONAL DE LOS BOSQUES - 2011



- Land use change
- Illegal logging
- Forest fires and pests
- Authorized land use changes
- Others (hurricanes, natural disasters)

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



Vivir Mejor

Where will forest conversion most likely occur?

Test the spatial correlation between a set of indicators and forest conversion observed between 1993 and 2002

Criteria

Indicators:

Access to forests

Distance to settlements

Distance to main roads

Distance to developed areas (urban areas, permanent annual agriculture, permanent grazing lands)

Distance to secondary vegetation (herbaceous and shrub)

Slope

Pressure on forests

Population density of 2000

Population density increase between 1990 and 2000



GOBIERNO
FEDERAL

SEMARNAT



COMISIÓN NACIONAL FORESTAL

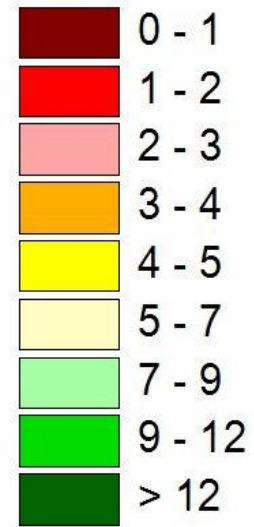


AÑO INTERNACIONAL
DE LOS BOSQUES - 2011

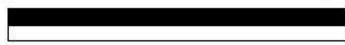


16
Vivir Mejor

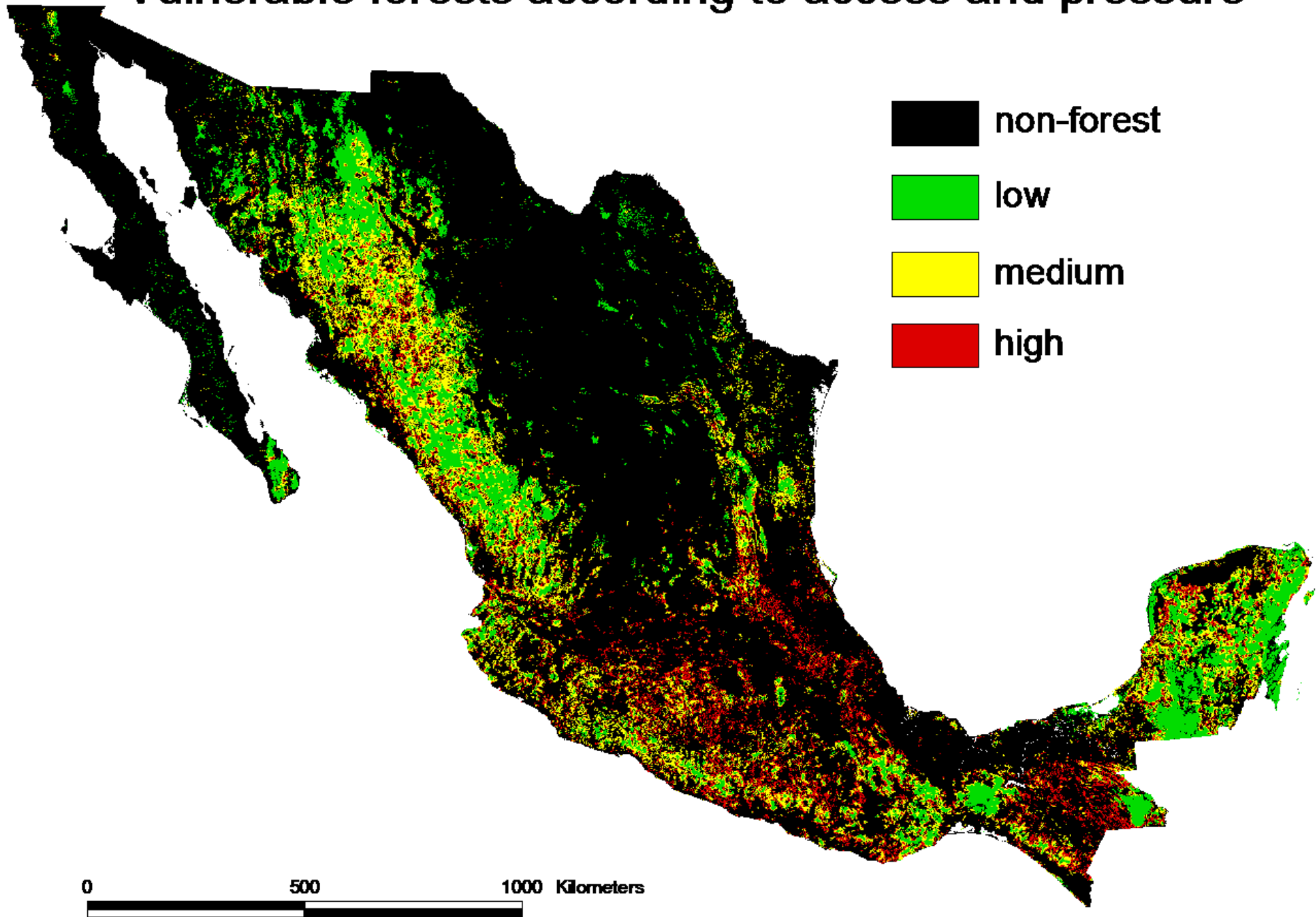
Dist to development in km



0 500 Kilometers



Vulnerable forests according to access and pressure



Carbon densities

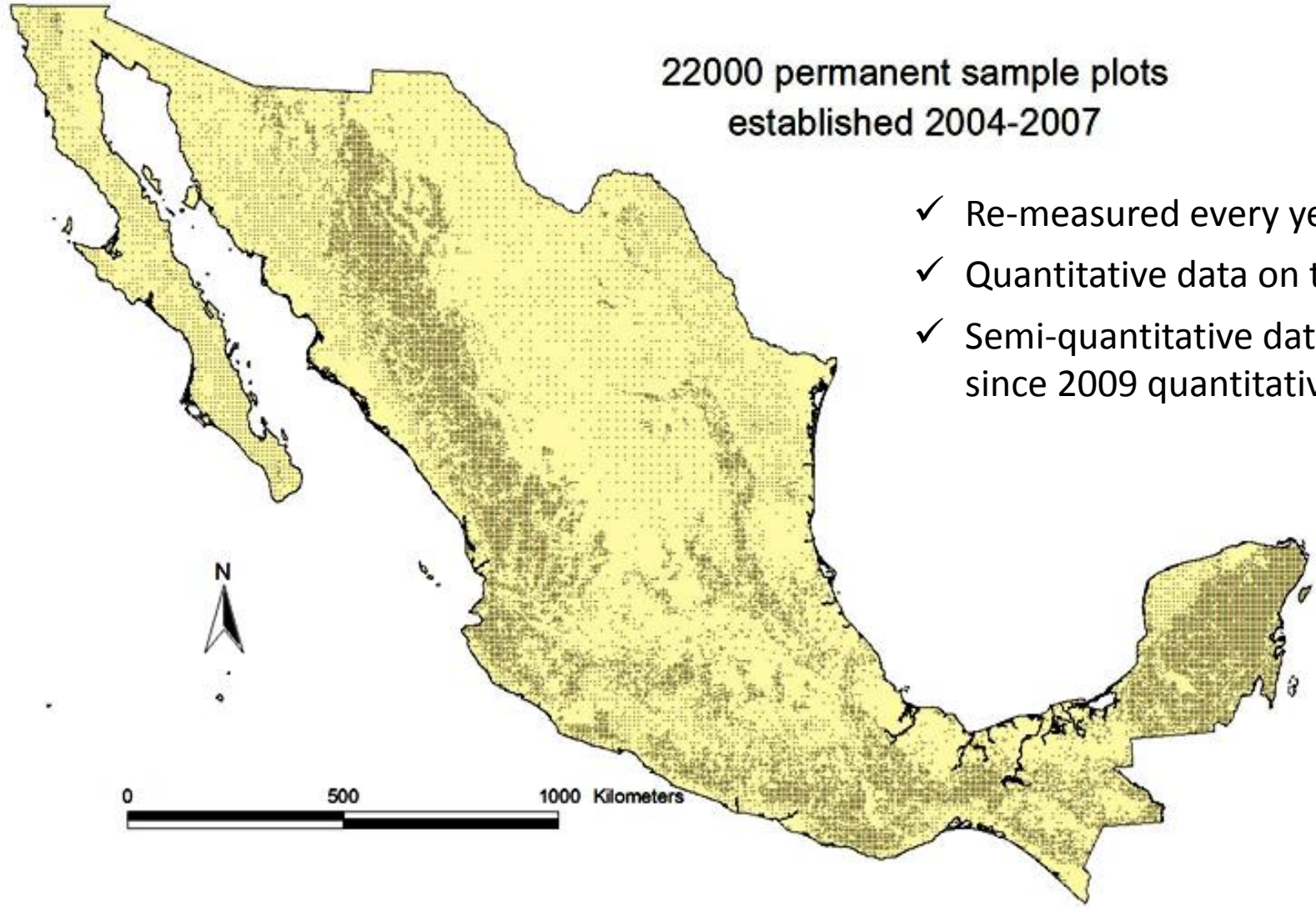


GOBIERNO FEDERAL

SEMARNAT

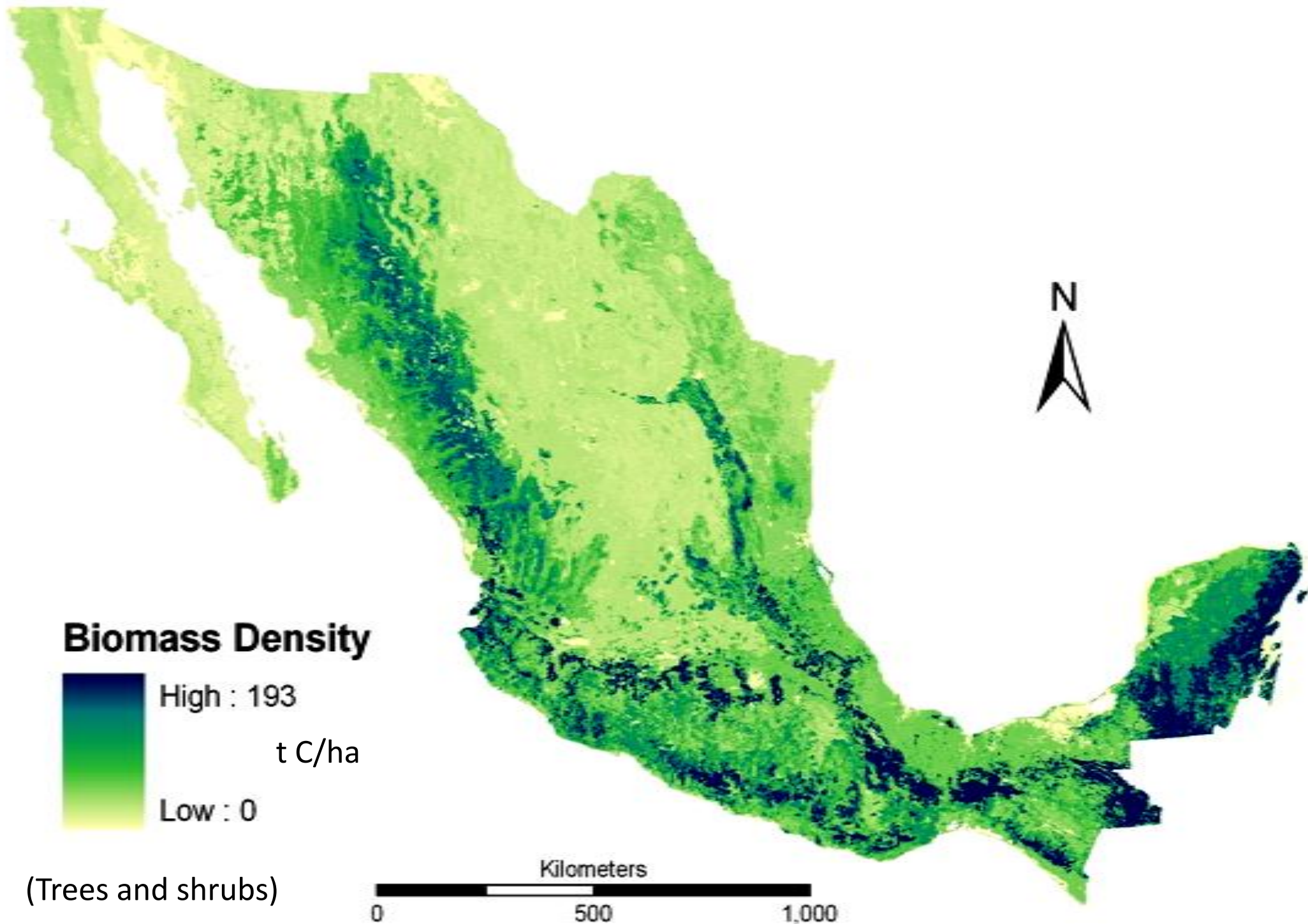


22000 permanent sample plots established 2004-2007



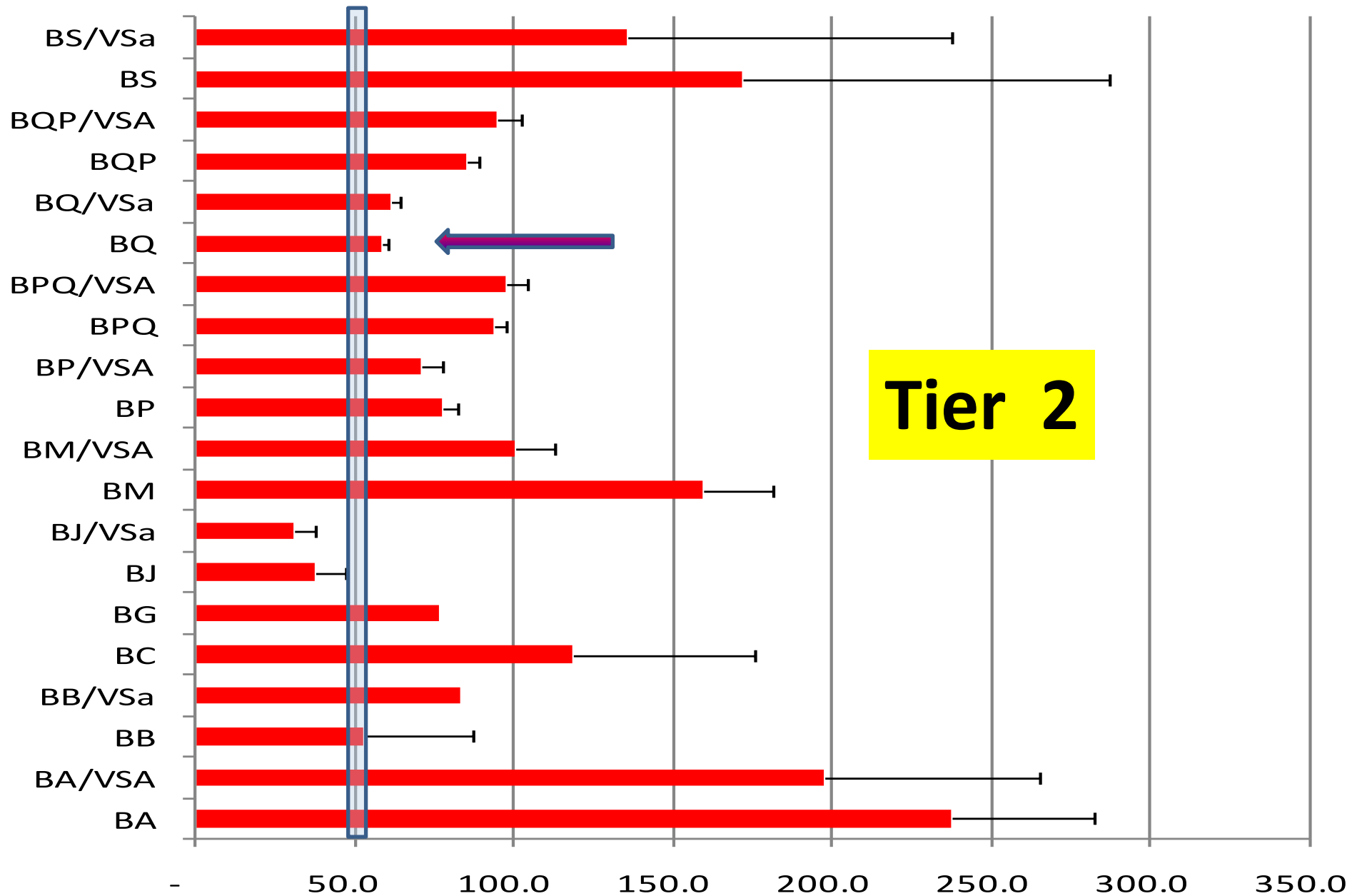
- ✓ Re-measured every year 20%
- ✓ Quantitative data on trees and shrubs
- ✓ Semi-quantitative data on other pools and since 2009 quantitative data on all pools





(Based on de Jong et al, 2006)

Av Biomass and 95% CI



Tier 2

Average biomass, based on 10,300 plots.

Average range from 31 to 237 Mg/ha

95% CI ranges from 4 to 113 %



Vivir Mejor

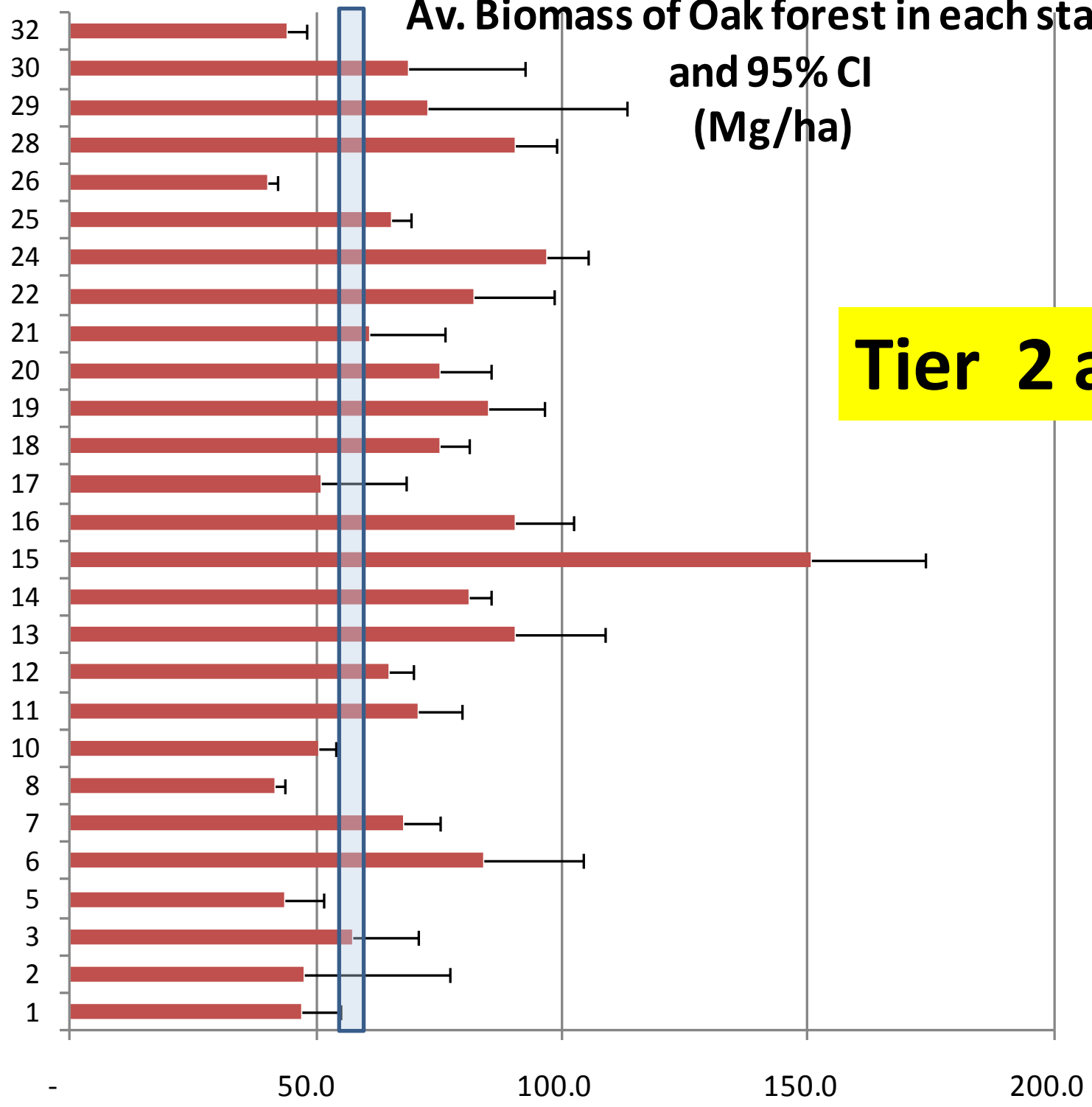


GOBIERNO FEDERAL

SEMARNAT



Av. Biomass of Oak forest in each state and 95% CI (Mg/ha)



Tier 2 and 3

Steps to develop reference scenario that can be used to down-scale to projects:

1. Estimate forest conversion from 4-5 points in time, depending on availability of good-quality satellite imagery (e.g. 1990-1993, 1993-1997, 1997-2000, 2000-2002, 2002-2007) (1.44 has resolution).
2. A spatial correlation analysis of DD in relation to drivers to be carried out to generate a deforestation and forest degradation risk map. (IDRISI)
3. Analyze the impact of land-use programs on deforestation and forest degradation to be used to estimate the impact of PND 2007-2012 and National Forest Strategy on DD.
4. Develop biomass density maps of forests, according to ecoregion, state, forest type, level of degradation, based on national forest inventory, state forest inventories and auxiliary data sources.
4. Develop a spatially-specific reference emission scenario, based on the integration of the results of the activities 1-3.
5. A priority index to be developed that identifies the key areas for future actions, according to indicators selected through stakeholder consultation. Some of the selection criteria: Risk, Quantity of carbon, Social importance, Conservation



GOBIERNO
FEDERAL

SEMARNAT



COMISIÓN NACIONAL FORESTAL

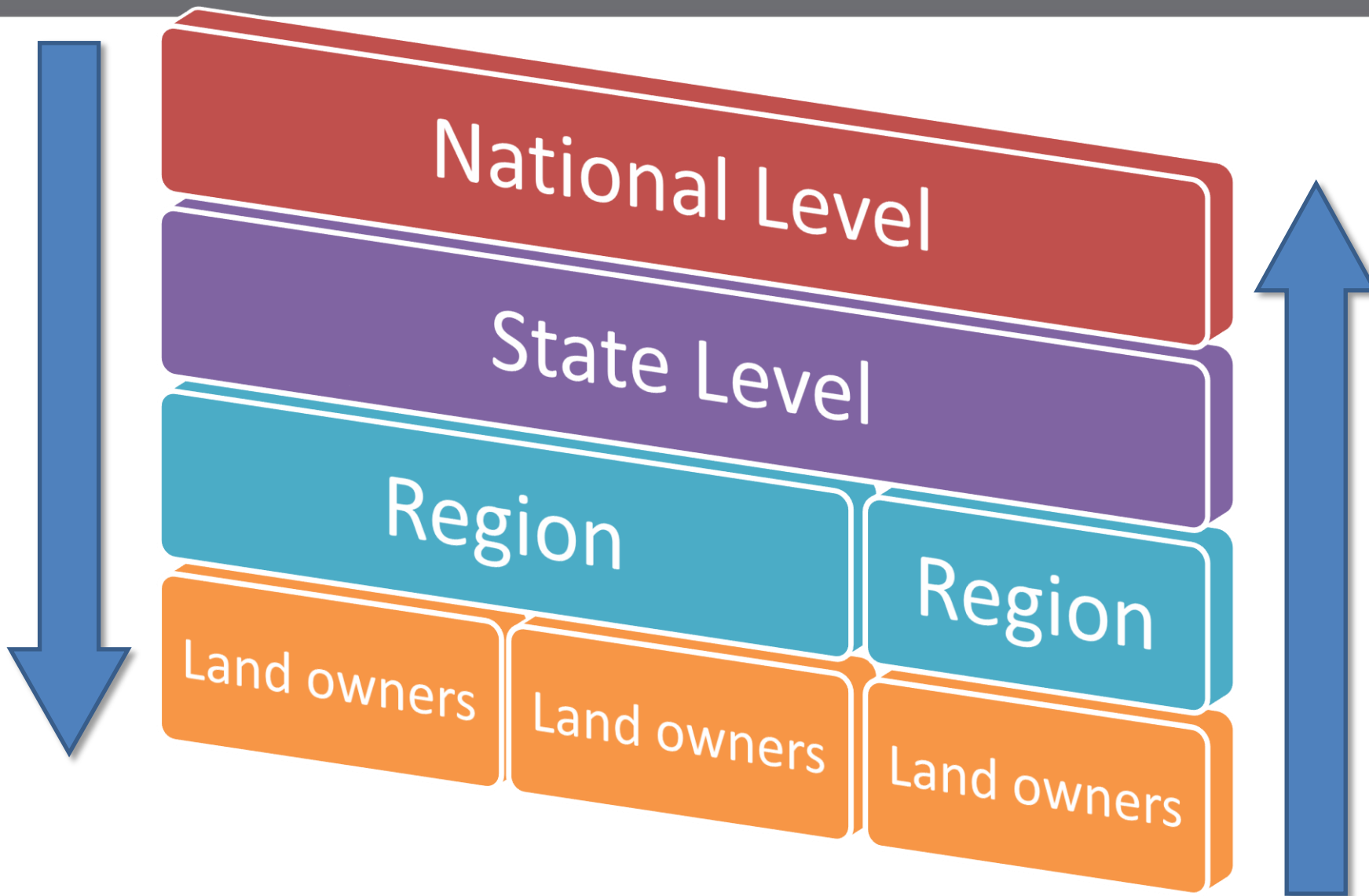


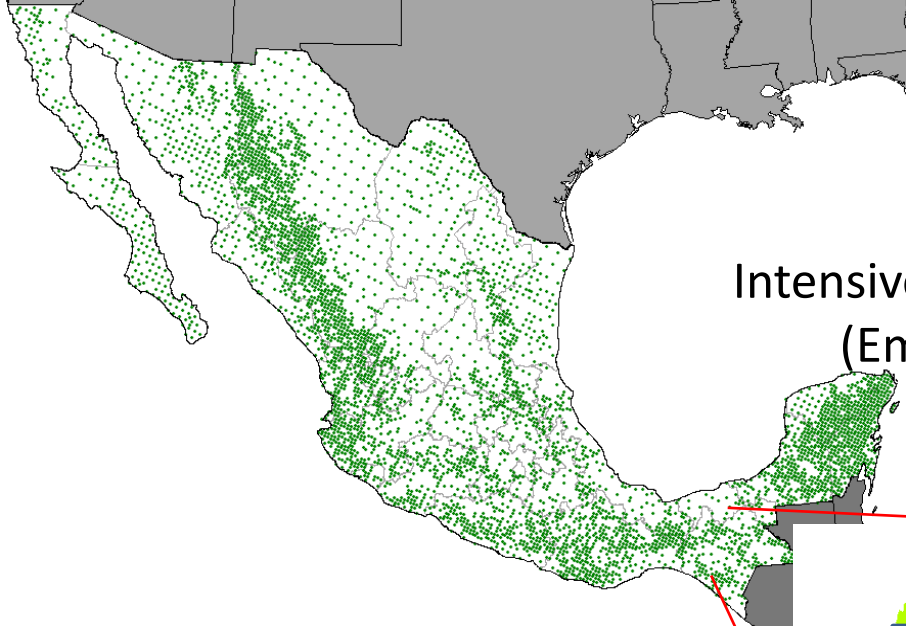
AÑO INTERNACIONAL
DE LOS BOSQUES 2011



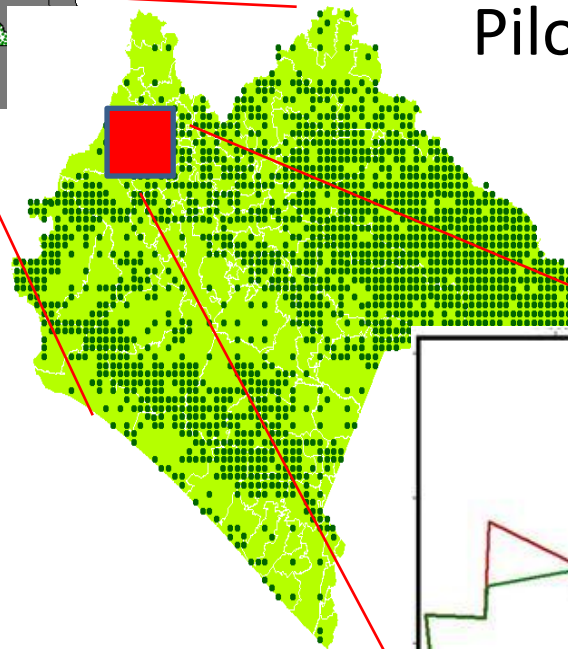
23
Vivir Mejor

Bottom up-Top down Strategy

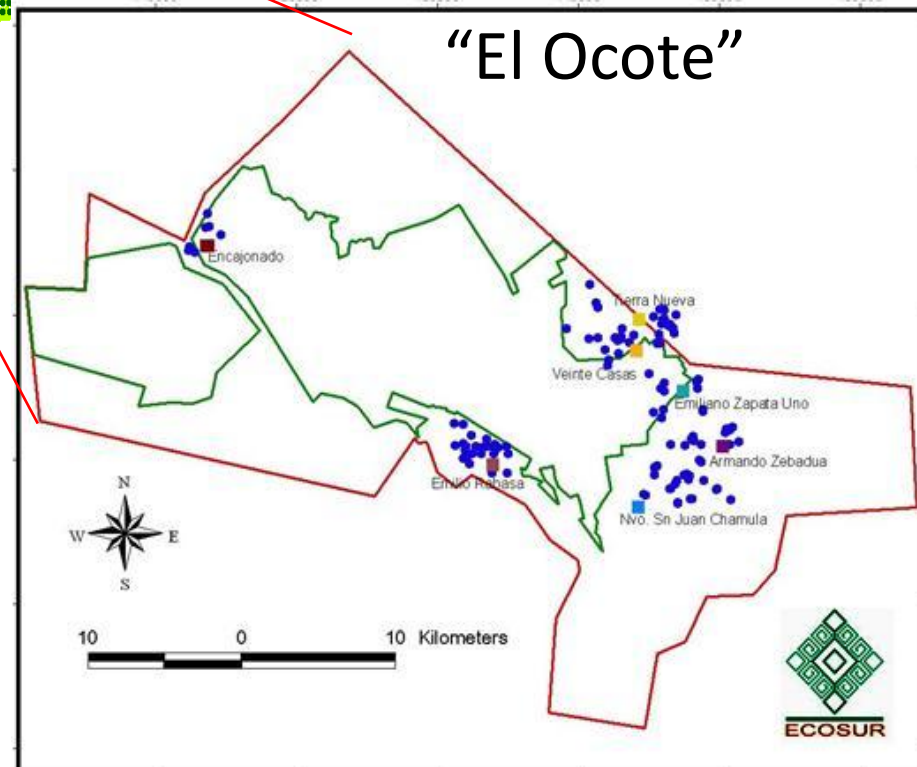




Intensive Forest Inventory Plots
(Emission factors)



Piloto "Chiapas"
Semi-intensive
and rapid Appraisal



**GOBIERNO
FEDERAL**

SEMARNAT



COMISIÓN NACIONAL FORESTAL



AÑO INTERNACIONAL
DE LOS BOSQUES - 2011



ECOSUR

Improvements of national forest inventory:



GOBIERNO FEDERAL

SEMARNAT

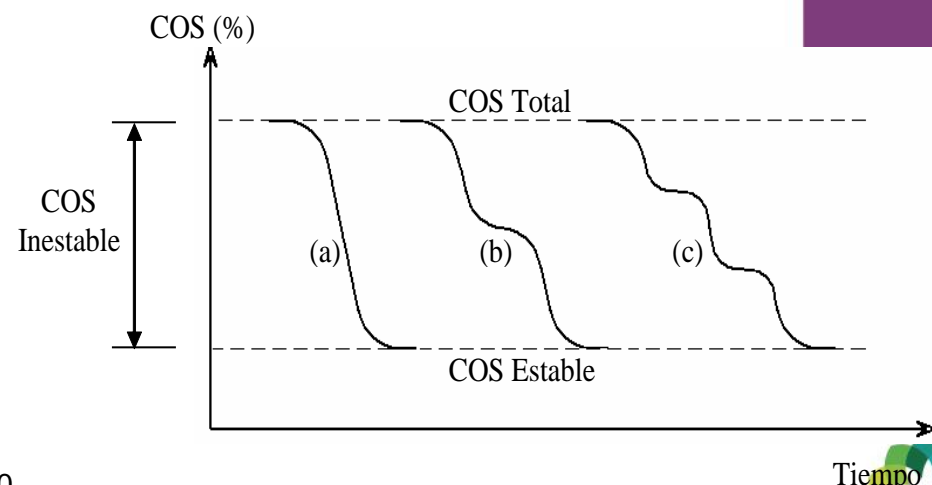
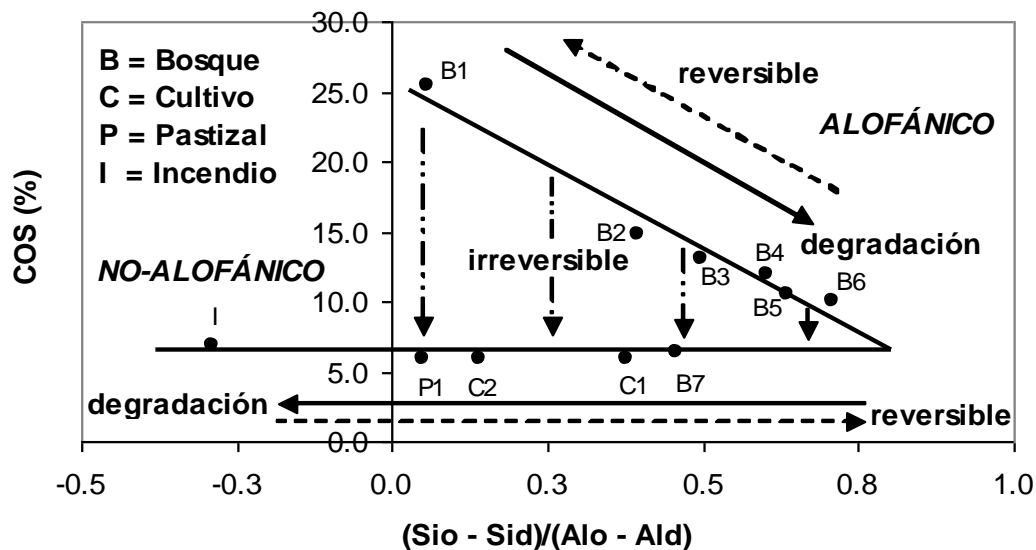


COMISIÓN NACIONAL FORESTAL

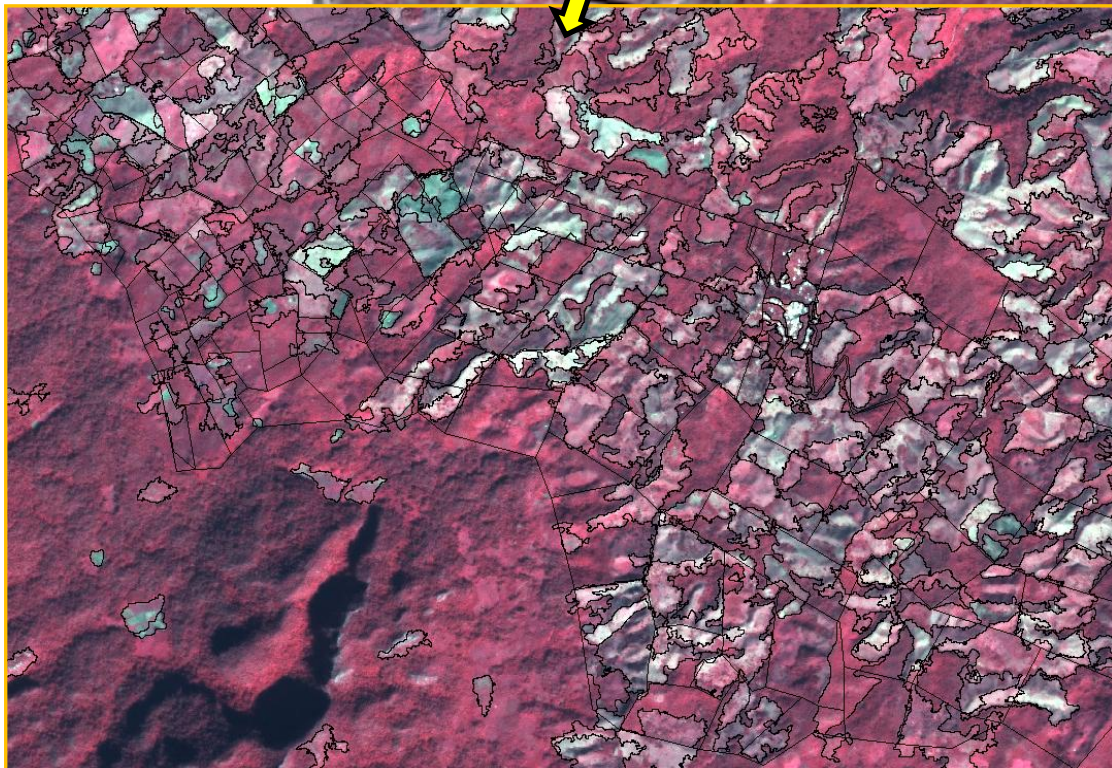
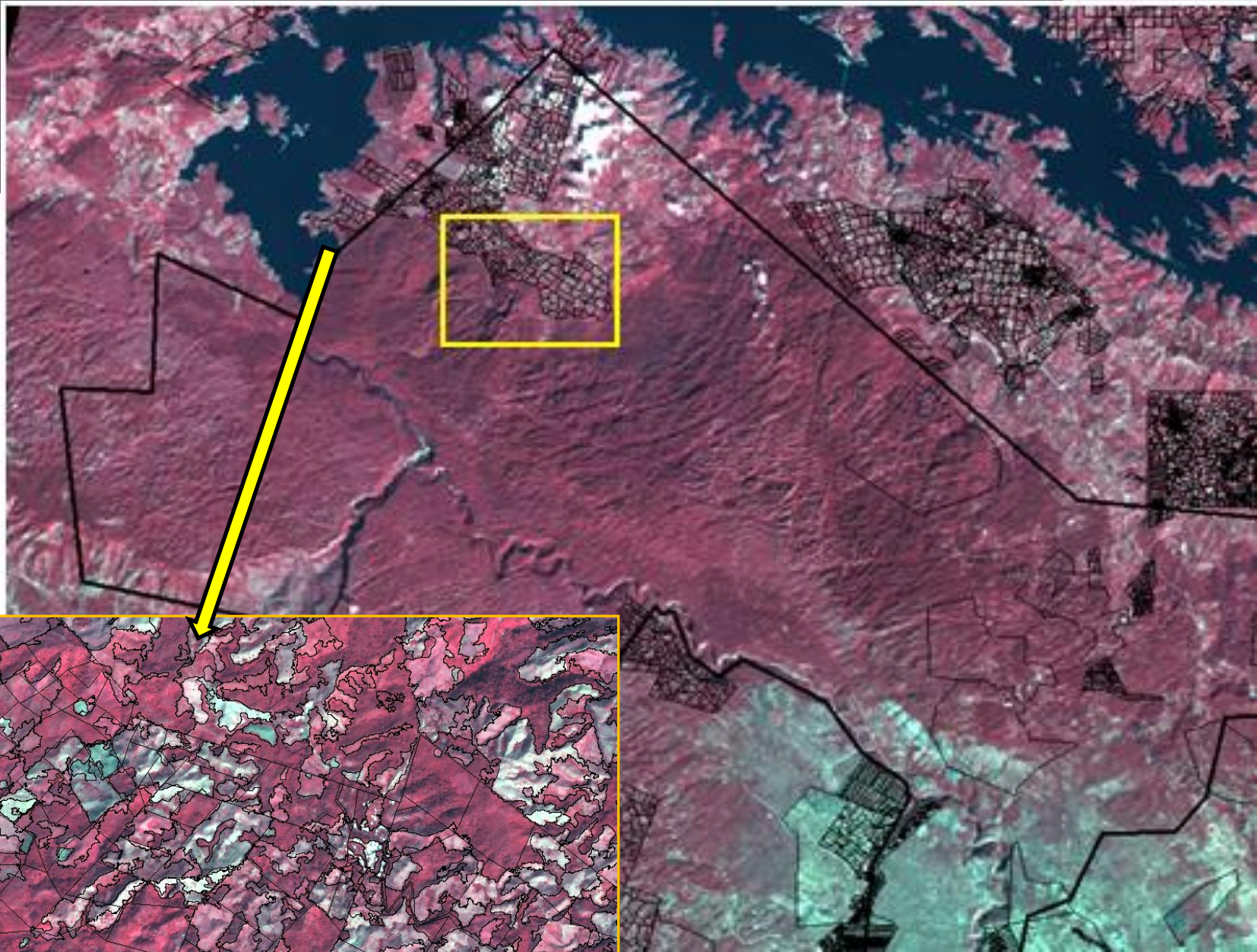


AÑO INTERNACIONAL DE LOS SUELOS - 2015

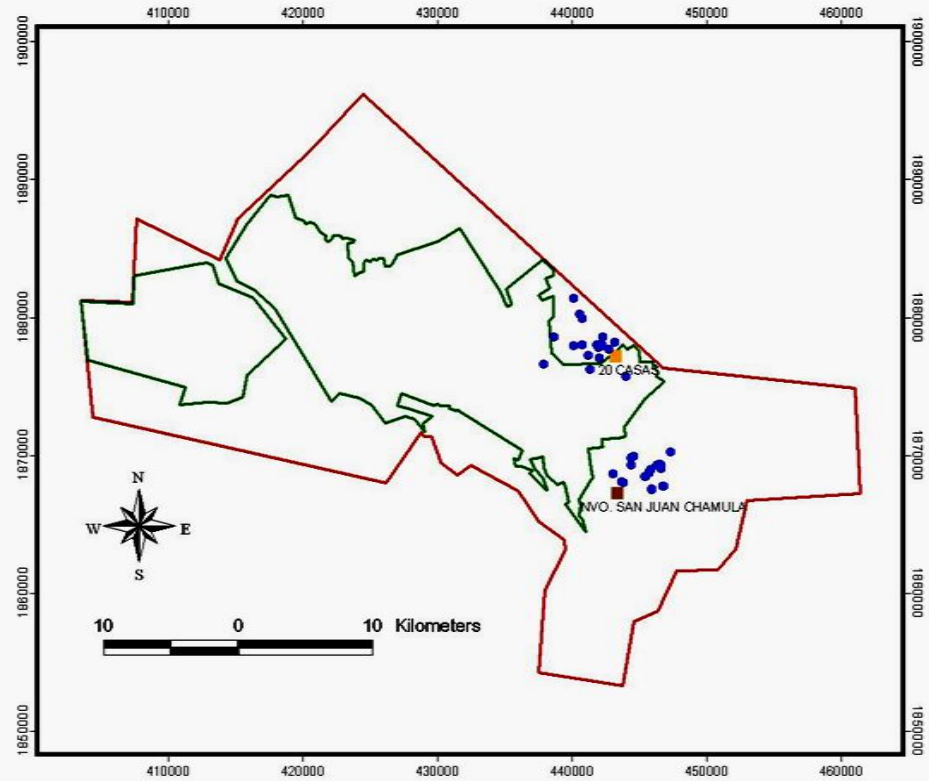
- Measurements of all pools in all forest types
- Direct relationship between biomass and soil carbon
- Estimate of labile SOC fraction
- Fuel load in each forest type and ecoregion



Vivir Mejor



Vivir Mejor



LEYENDA

- RB Selva El Ocote
- Zona Núcleo
- Nvo. Sr. Juan Chamula
- 20 Casas
- Puntos de Parcelas

DATOS CARTOGRÁFICOS

Proyección UTM Zona 15N
 DATUM: D_WGS_1984
 Esferoide de Clark
 Meridiano Centr

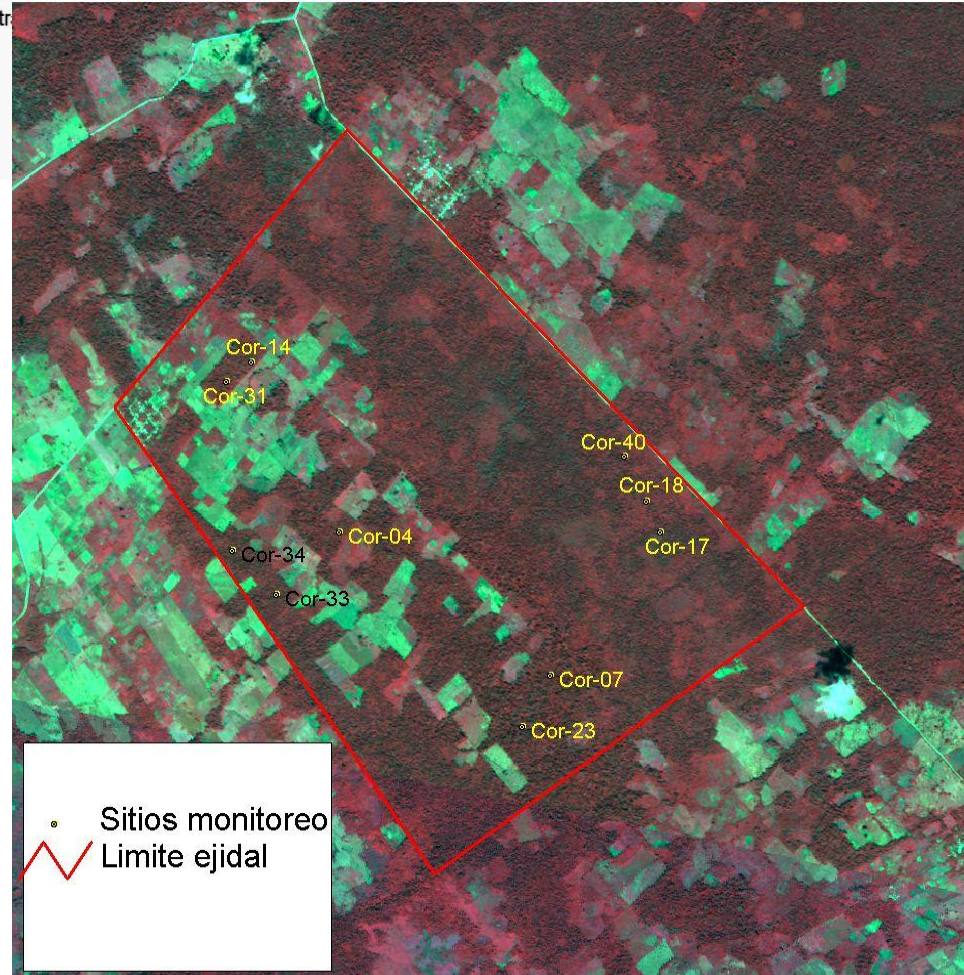


Gobierno FEDERAL

SEMARNAT



Permanent monitoring plots at community level





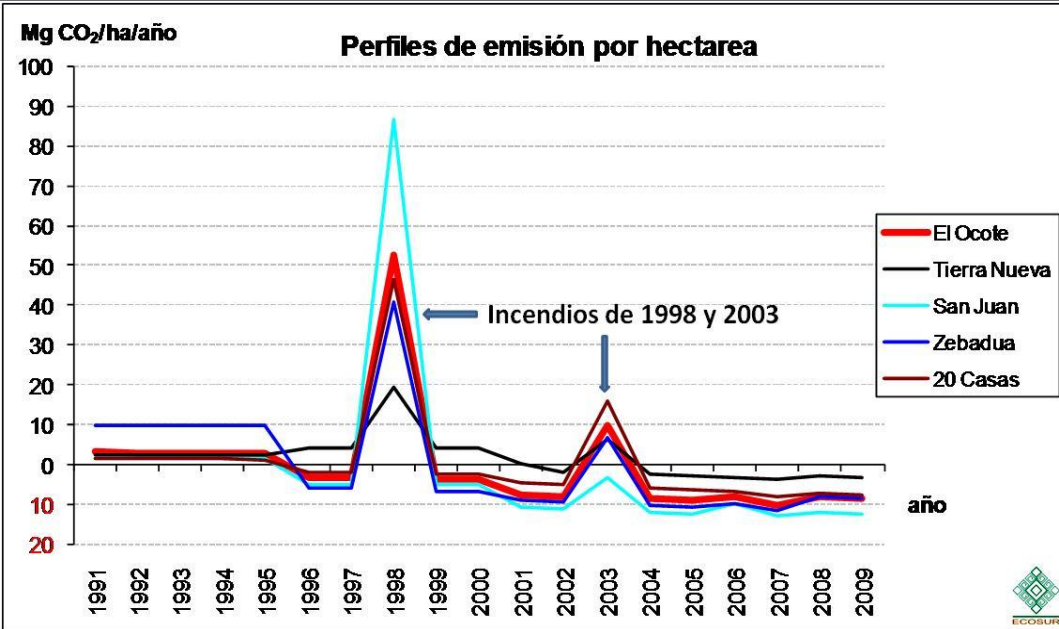
GOBIERNO FEDERAL

SEMARNAT



Vivir Mejor

Reference Emission Scenario



Community REDD+ LU Plan

Uso futuro	Uso actual					
	Acahual	Agrícola	Cafetal	Enriquecido con árboles	Potrero	Selva
Acahual	30.75				2	
Acahual mejorado	1					
Agrícola	43.25	54		0.25		
Agrícola (café abono)	3.5	3.5				0.5
Cafetal	5	1.5	30.31		1	
Enriq. con árboles	0.7			3	1	
Enriq. con chapaya	0.25				3	8
Potrero	1	0.5		1	63.5	
Selva						197.8
Total general	85.45	59.5	30.31	4.25	70.5	206.3

REDD+ compared to Emission scenario

Community	Comm. Reference scenario (ERC)	Regional Reference Scenario (ERR)	Plan Vivo (PV)	ERC-PV	ERR-PV
Tierra Nueva	1.850	-0.273	-0.391	+++	+
San Juan	-1.146	-0.273	-0.715	--	++
Chamula					
Armando	-0.306	-0.273	-0.200	-	-
Zebadua					
Veinte Casas	0.430	-0.273	-0.997	+++	++

Policy considerations

- How to calculate and incorporate uncertainty (national reporting versus crediting).
- Forest definition for REDD (e.g how to treat traditional agroforestry)
- If difference between RL and compensation level, where to make the adjustment?
- How to preserve subnational/national integrity given different scales and uncertainty levels? (sampling not representative at state level for all states)
- How to prevent purely black box approaches to projections?
- LULUCF link
- How to allow for improvement over time... implications for the mechanism



**GOBIERNO
FEDERAL**

SEMARNAT



COMISIÓN NACIONAL FORESTAL



AÑO INTERNACIONAL
DE LOS BOSQUES - 2011



Vivir Mejor

MÉXICO