Block 1
Land Sparing: Can Intensification of Agriculture Save Forests?

Silvopastoral Approaches, PES & Ecosystem Management in cattle ranching in Colombia

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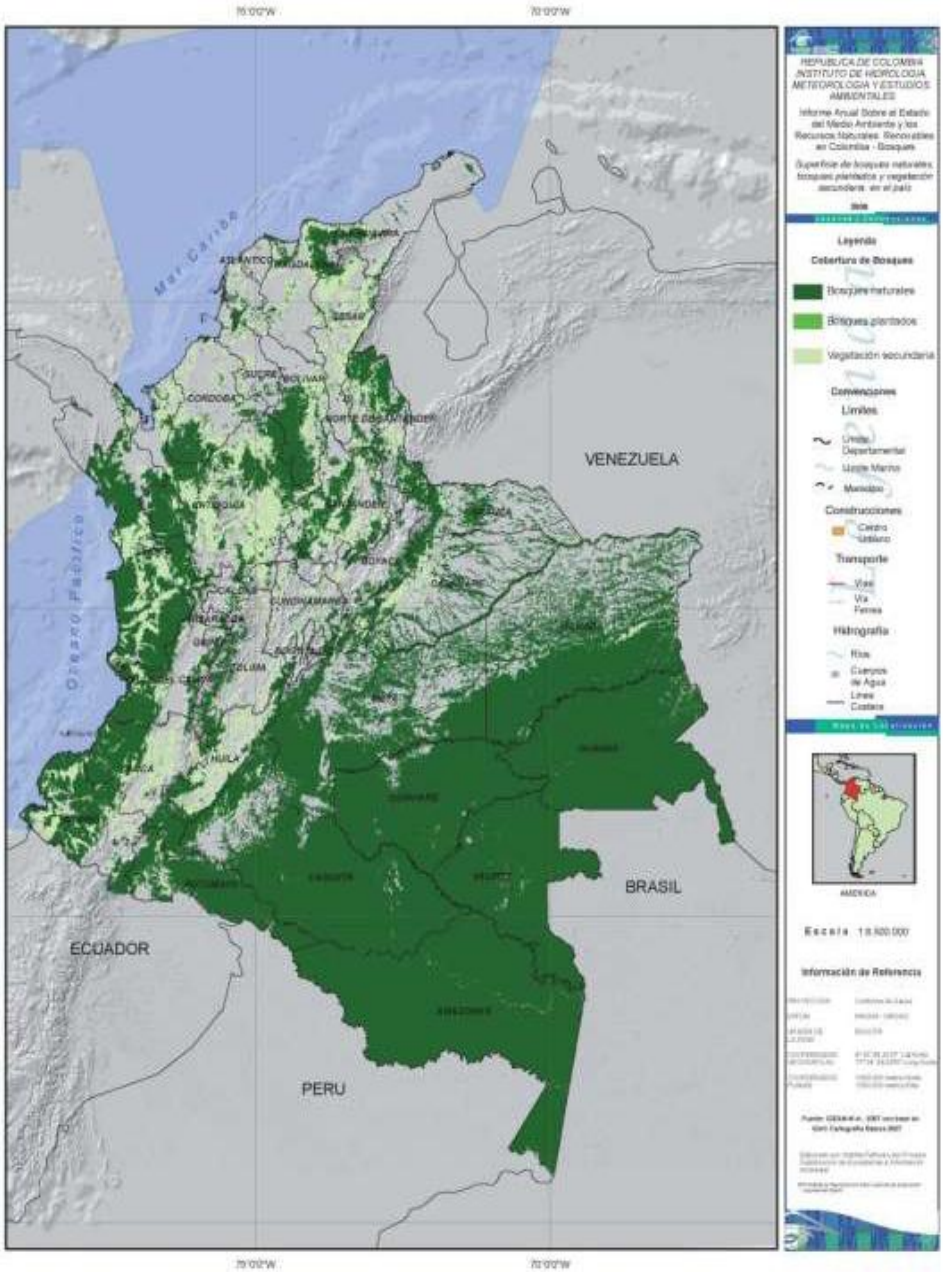
The Role of Commodity Roundtables & Avoided Forest Conversion in Subnational REDD+



Forest Lands Colombia (2005)

	Has	%
Forests	56.941.179	50%
Non forests	49.195.786	43%
NA	7.781.178	7%
TOTAL	**113.918.143**	**100%**

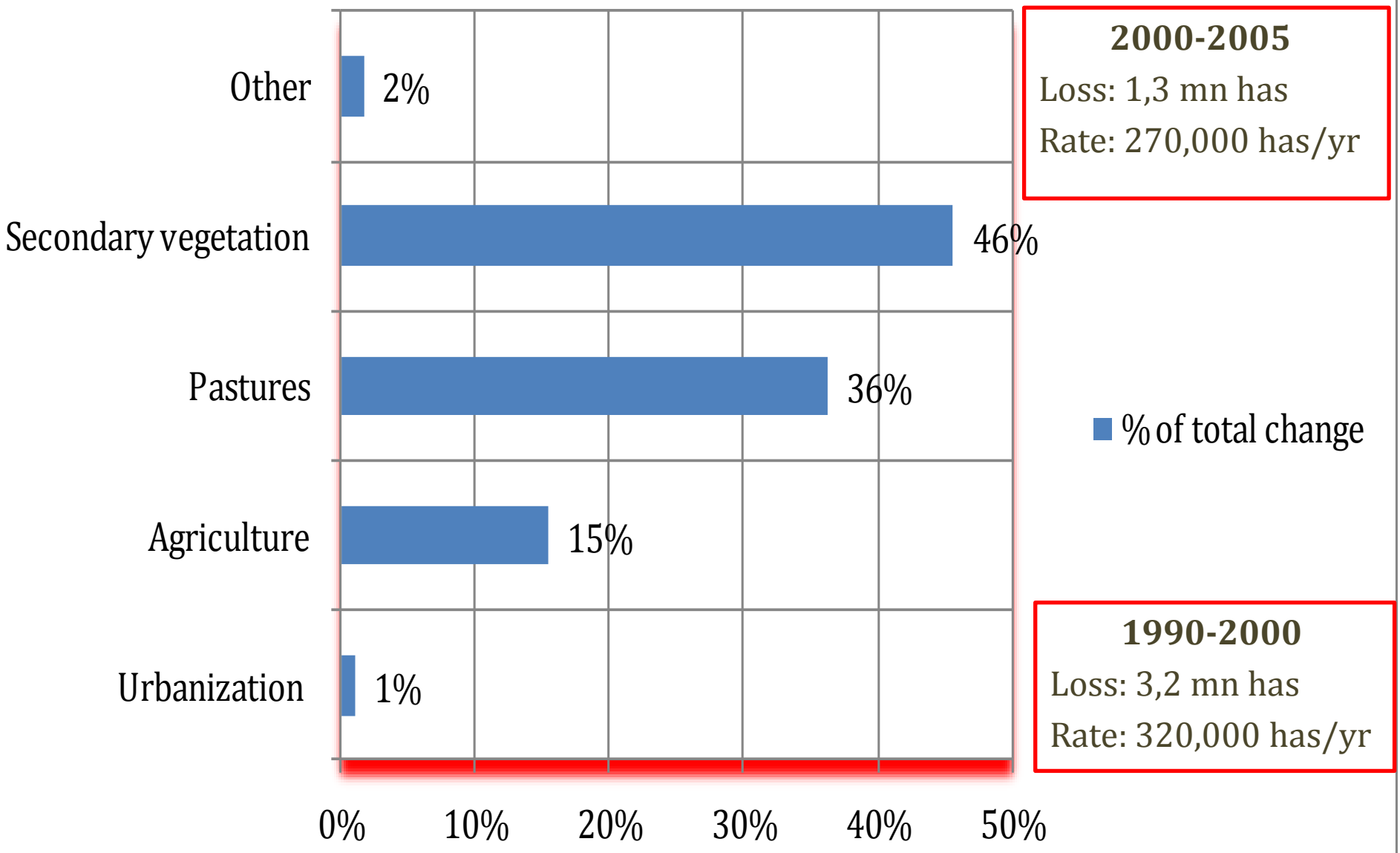
Forest lands in Colombia/region - 2005 (mn has)

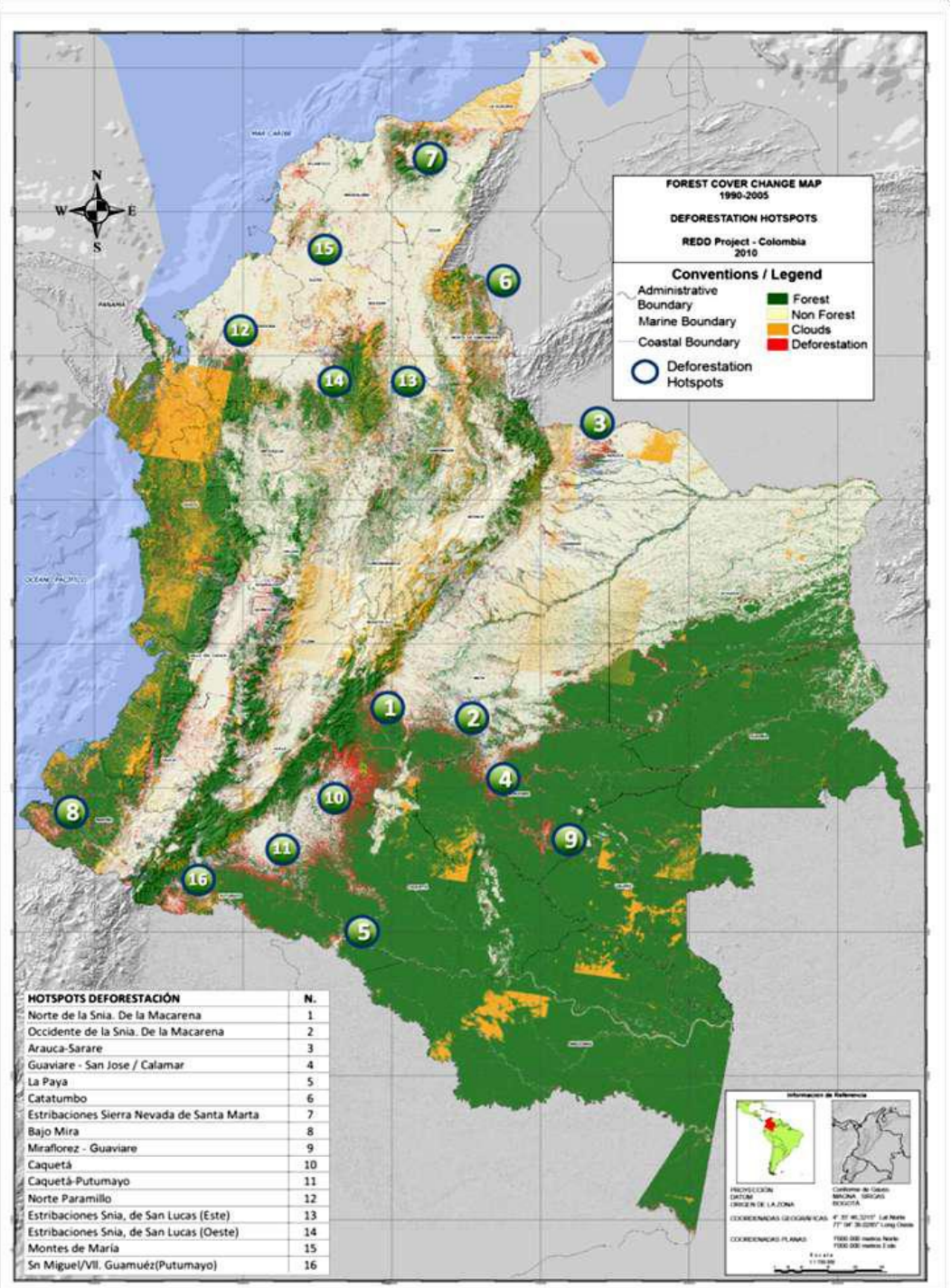
Caribbean	Andes	Pacific	Orinoco	Amazon
1,7	10,3	4,0	2,1	38,8
3%	18%	7%	4%	68%

Source: IDEAM, Min Env, Natura, Moore Foundation, 2010

Colombia - Changes in forest cover (2000-2005)

Source: IDEAM, Min Env, Natura, G&B Moore





- **Expansion of agro & cattle frontier:** Namely in Amazon (foothills & Northwestern Caquetá; 190,000 has) and Andes (105,000 has); southern Pacific region; San Lucas mountains (Caribbean)
  - Cattle ranching: land use conflict (38 mn has vs 19 mn)

- **Secondary vegetation** concentrated in Andes and Amazon, reveals a significant process of forest degradation and disturbance

Integrated Silvopastoral Approaches to Ecosystem Management

(US$ 7.5 million, US$3.8 million GEF; 2003-2007)

Objective. Pilot test & measure effects of PES mechanism on:

- ✓ Technological change/intensification (Silvopastoral Systems-SpS) in degraded pasture lands (Costa Rica, Nicaragua & Colombia; Implementing agency in Colombia: CIPAV)

- ✓ Control of livestock-induced deforestation with improved profitability, global environmental benefits and local ecosystem functions

Components

- **Capacity Building**. Trained/assisted farmers on SpS, management of sustainable livestock production systems & ecosystems

- **Systematic Monitoring.** Land use changes, carbon sequestration, productivity, income, biodiversity & water quality

- **Eco-services payments.** Incentives for land use changes for improved biodiversity and carbon sequestration (300 livestock farms)

- **Policy.** Sustainable intensification guidelines; sector policies on land use, ecosystem services & financing; replication & scaling up.

Main lessons and results

- Successful introduction of environmentally friendly SP practices with PES support: 3,670 has (target: 4,000 has)
- Farmers respond to PES: Land use change induced + area in forests remained undisturbed/unaltered

Land use type	% of total has per land use type		Change %
	2003	2007	
Degraded Pastures	17,5	5,6	-12,0
Natural Pastures	8,9	2,9	-6,1
Improved Pastures	12,9	10,4	-2,5
Improved Pastures + Trees	9,1	30,7	21,6
Fodder banks	1,1	3,1	2,1
Forests	21,7	22,4	0,7
Intensive SPS	0,1	1,4	1,3
Live fences (km)	354	1.341	278

Main lessons and outcomes

Economic & cultural changes	Baseline	Result
Net income per hectare (US$)	$237.7	$888.5
Mean soil erosion (tons/ha)	80.9	44.1
Avg. milk production (daily liters/cow; dry season)	5.0	6.1
Avg. Stocking rate (animals per ha)	1.8	2.5
Fire (% farms that use fire)	38%	2.3%
Use of herbicides (liters)	13,913.6	7,899.9

Main lessons and outcomes

- ✓ 12,260 hectares with improved biodiversity (bird, butterfly & mollusk species index) and carbon sequestration indices (target: 12,000 has)
- ✓ Use of improved fodder banks associated with significant reductions (>35%) in methane and nitrous oxide emissions
- ✓ Water quality (Colombia): drop in turbidity, Biochemical Oxygen Demand and coliform counts

PES + PSP: refining the formula

Strategies differ according to profitability of land use change & environmental services:

- High profitability, positive biodiversity & Carbon sequestration but lower contributions to environmental services: **TA + credit (improved pastures + high density fodder species).**
- Moderate, short-term impact on productivity, economic returns in mid-to-long term: **Short term PES to compensate for initial investments**
- Changes represent high opportunity cost for farmers (short term) – farm land withdrawn from cattle ranching for provision of high value environmental services: **Mid-to-long term PES (watershed protection), non-reversible sources.**

Policy issues: Phase 2: Mainstreaming & Scaling up

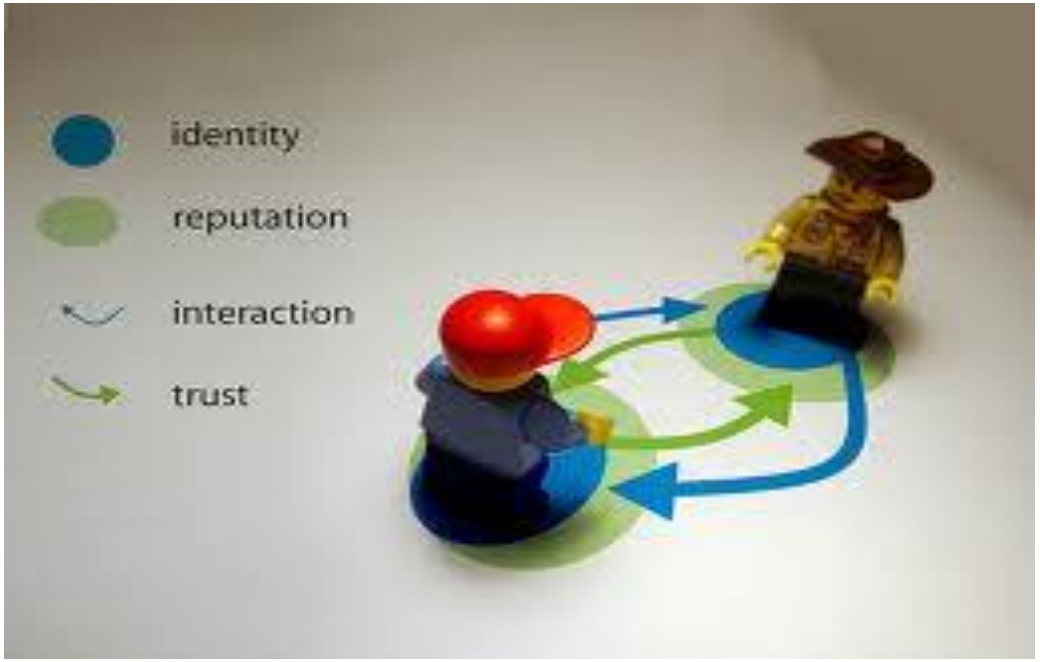
- Colombian Ministry of Agriculture + FINAGRO (sector finance): special credit line & incentive for SpS
- Ministry Environment + Ministry of Agriculture: getting closer
- ***Phase 2: Mainstreaming Biodiversity in Cattle Ranching in Colombia** (2011-2015)*
  - Ministry Environment + National Planning Department + Ministry Agriculture + FINAGRO: Public Policy Committee
  - Project lead by FEDEGAN (National Cattle Ranchers Federation)
  - Based on CIPAV´s technical expertise + TNC + Fondo Acción
  - Fedegan's Extension Service fully involved & retraining
  - Ag Sector R&D system (CORPOICA) involved
  - Biodiversity Research Institute (A. von Humboldt) interested

FEDEGAN

CIPAV

FONDO PARA LA ACCIÓN AMBIENTAL Y LA NIÑEZ

The Nature Conservancy
Conservando la naturaleza.
Protegiendo la vida.



New technologies are not enough.

Design and implement:

- new rules
- interplay: technologies that enforce rules effectively
- interactions among people