

Facing the Cadastral Challenges of Managing Carbon Property Rights to Mitigate Climate Change



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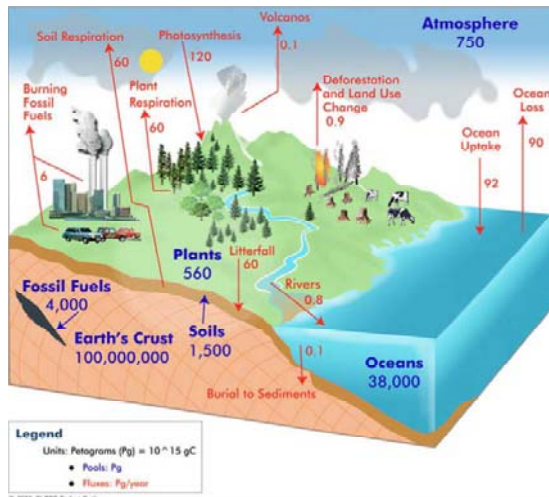
University of Florida

FIG Congress – April 2010

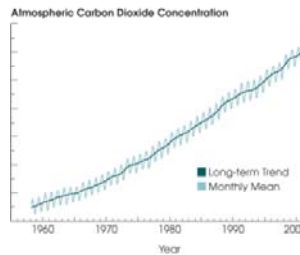
Structure

- Carbon Cycle
- Global Climate Change
- REDD
- Carbon Property Rights
- Redd Governance and Cadastral Challenges
- Carbon Cadastre/Registry

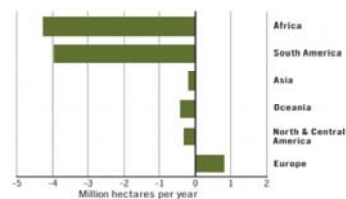
Carbon Pools and Dynamics



Atmospheric CO2 Concentration



Deforestation Rates



[<http://www.globe.gov/fsl/html/templ.cgi?carboncycleDia&lang=es&nav=1>]

The Carbon Cycle and Human Influence

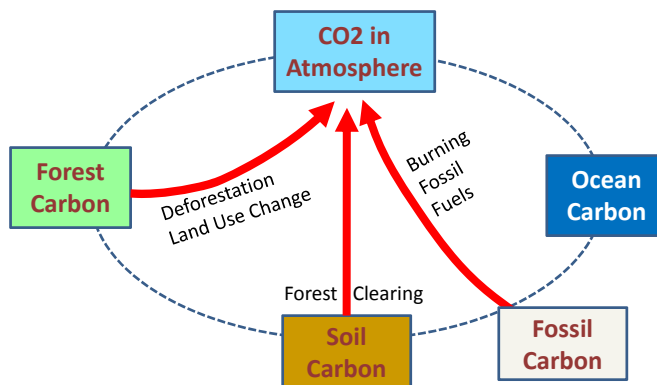
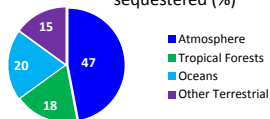


Figure 1. Where is human produced C sequestered (%)



[Lewis 2009]

"... an estimated 20 billion tons of carbon could be released into the atmosphere over the next 20 years under a 'business as usual' scenario in the Brazilian Amazon alone." (Nepstad et al 2007)

REDD – Reducing Emissions from Deforestation and Forest Degradation

Rationale:

- Retaining forest carbon in the forest prevents this C from entering the atmosphere
- Retaining forest maintains the C **sequestration** functions of those forests
- Forest 'stewards' should be paid for the **environmental services** provided by these forests

Resources:

- UN-REDD Programme (\$52 Million)
- World Bank (>\$100 Million)
- Amazon Fund – Norway (\$1 Billion)

Challenges:

- Develop a **governance** structure that links global to local
- Identify who 'owns' the forest carbon
- Link REDD to poverty reduction
- Secure the rights of forest communities



Technical Challenges of REDD

- Defining the **BASELINE** which serves as the reference year/period
- Measuring **ADDITIONALITY** – the positive gains of a REDD programme
- Preventing **LEAKAGE** into surrounding areas
- Determine the amount and form of **PAYMENT** to REDD beneficiaries



Property Lenses

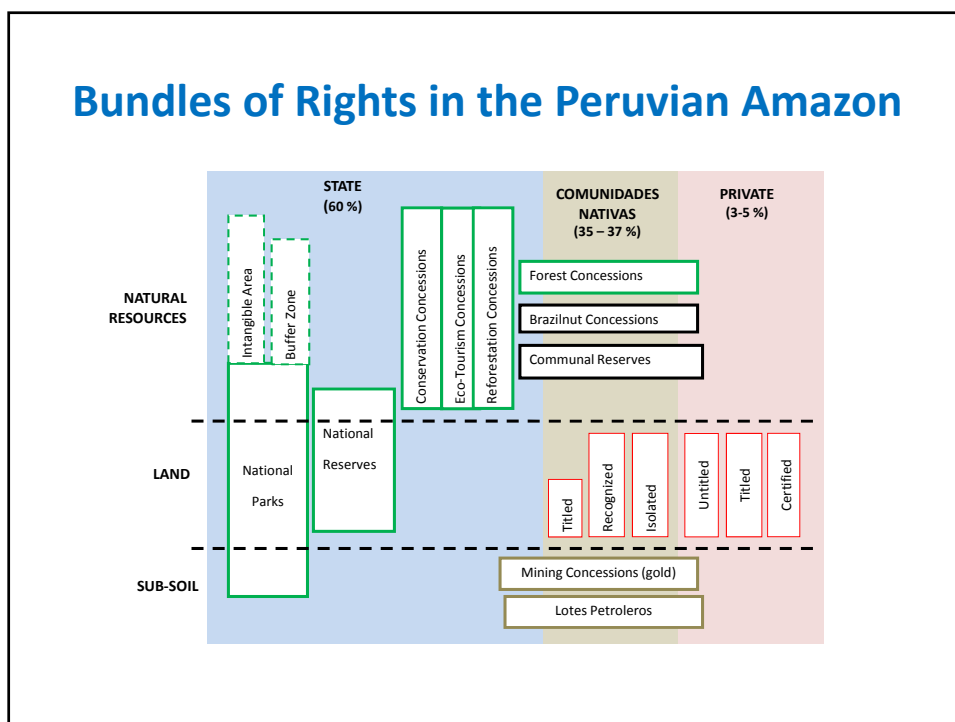
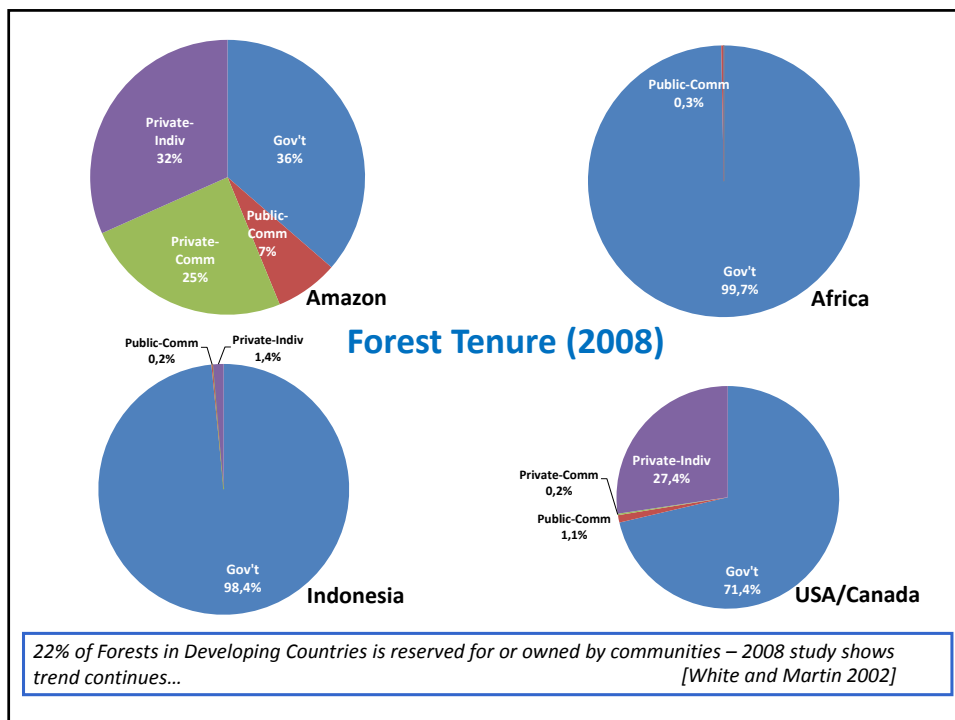
- Conventional western views – Locke, Blackstone et al
- Roman Law – the basis for civil law
- Common Property Resources
- ‘Bundle’ of Property Rights paradigm
- Web of interests
- Layers of Rights and Interests

• Civil Law
 • Common Law
 • Customary Law
 • Religious Law
 • Common and Civil Law
 • Islamic Law

Roman Law Classification of Property

Tenure Regime	Definition	Examples
<i>Res Communes</i>	Things open to all by their inherent nature (CO ₂)	Air, sea, atmosphere? (open access)
<i>Res Publicae</i>	Things belonging to the public and open to the public by law (sub-soil C; forest C?)	Roads, navigable rivers (public property)
<i>Res (Terra) Nullius</i>	Things belonging to no-one (CO ₂)	Unclaimed land, fish or game
<i>Res Universitatis</i>	Property belonging to a private or public group in its corporate capacity (forest C in communities)	Private university, condominium (community property)
<i>Res in Patrimonium</i>	Things that could be privately owned by an individual (forest C on private land)	Land under private ownership



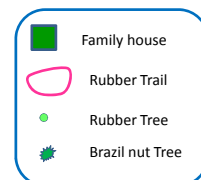
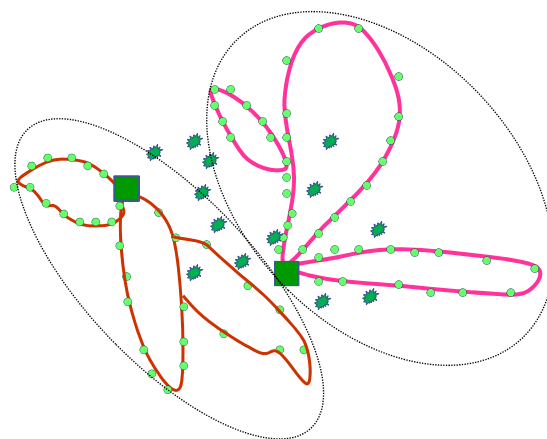


Extractive Reserve - Brazil



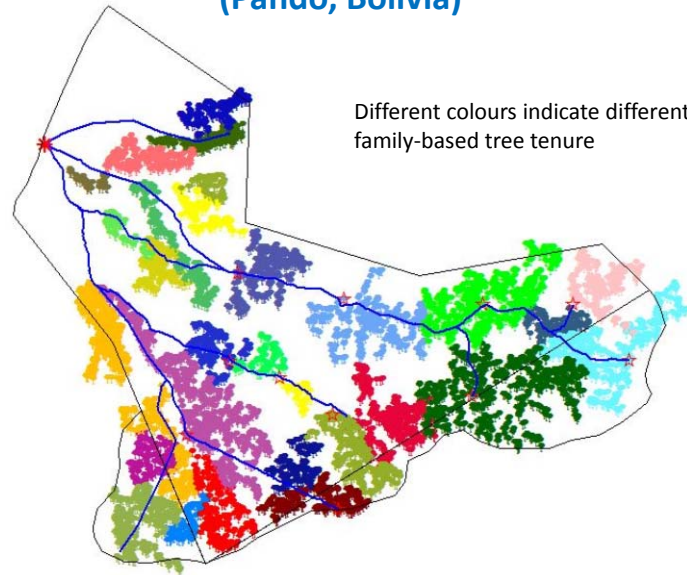
- Emerged in 1985 from Rubber Tapper Movement
- Built on former rubber estates (seringals)
- Federal or state government owns land
- Joint usufruct rights granted to community
- Transfer usufruct rights by inheritance only
- 10% deforestation restriction

Extractive Reserve Brazil (Colocação)



Unity of concession – family trails – individual tree tenure – spatial extent varies by resource

TREE TENURE VERSUS LAND TENURE (Pando, Bolivia)

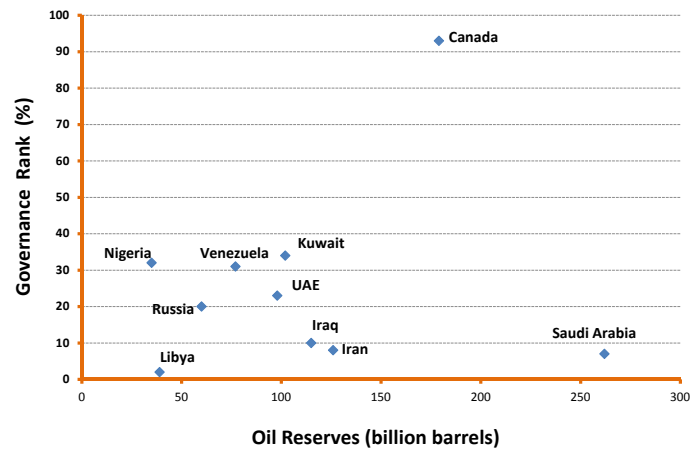


[Source: Cronkleton and Albornoz 2007]

How do we avoid a Tragedy of the Global Carbon Commons?

- Tragedy of the commons occurs in **open access** situations
- Many of the commons situations envisaged by Hardin are in fact subject to **rules** – local, communal and national
- What are the **rules and structures** that exist to govern Carbon?
- **Governance** = structure and processes that link the **macro-** with the **meso-** and **micro-**levels of NRM

Governance in Countries with 10 largest oil reserves (The Resource Curse)



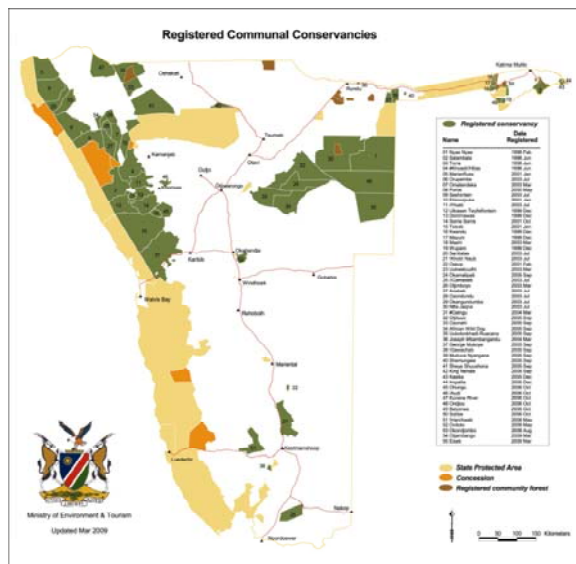
90% of these countries ranked in the lowest 1/3 in terms of Governance

Oil Reserve Data from: http://internationaltrade.suite101.com/article.cfm/top_ten_oil_countries
Governance Indicator Data from: <http://info.worldbank.org/governance/wgi/index.asp>

Cadastral Challenges

- How to define rights to carbon
- Value of carbon rights (opportunity cost, market...)
- Risk of wealthy/speculators buying out poor as forest value increases
- How would carbon rights be registered and transferred
- Monitoring leakage
- Matching scale of resource to scale of governance institution
- Need for meso-level institutions

Conservancies in Botswana



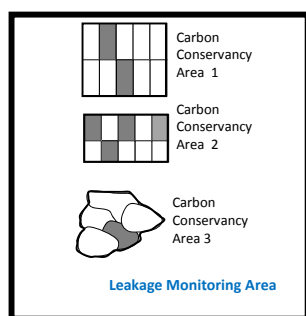
Example of meso-level institution

- Customary or Private land
- rights to wildlife devolved
- quota set by government
- benefits accrue to community

To create a conservancy, communities have to:

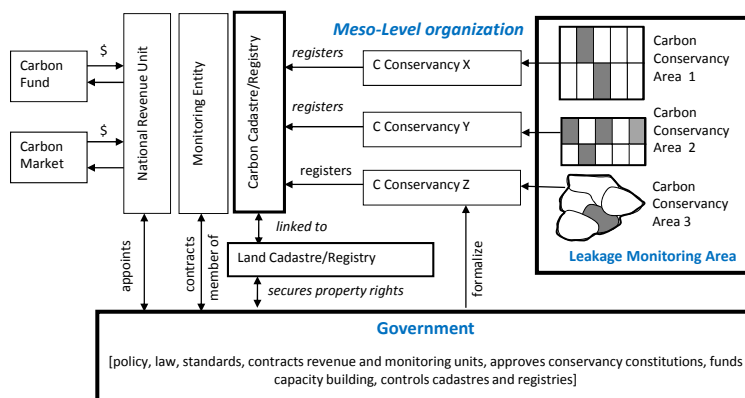
- define the conservancy boundary
- formulate a constitution
- elect a conservancy committee
- design a plan for the equitable distribution of benefits
- demonstrate the ability to manage funds.

Carbon Conservancy?



- Economies of scale
- Accommodate untitled parcels
- Voluntary formation
- Modelled on wildlife conservancies
- Leakage monitored by external non-profit entity (e.g. Global Witness)

Proposed Governance Structure for REDD and Carbon Property Rights



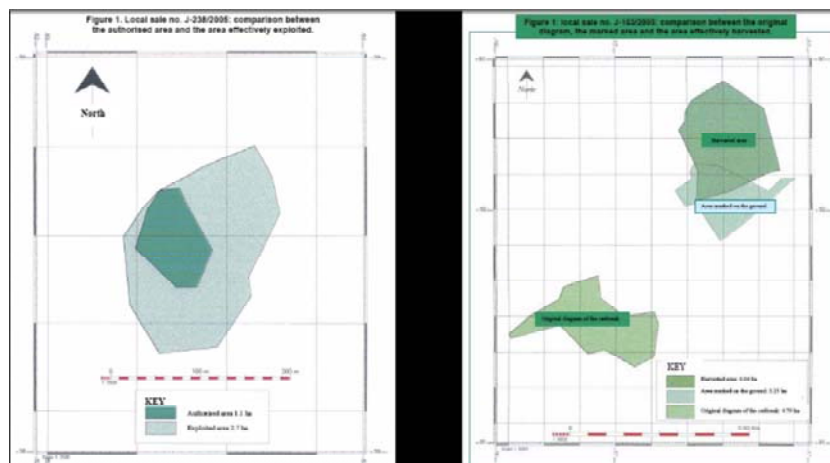
Cadastral Information Needs

At a minimum, the following information is required to secure carbon property rights and support the REDD process:

- Definition and description of boundary of carbon conservancy perimeter
- Unique identity of conservancy and names of members
- Constitution of conservancy, including how payments will be shared
- Legal status of underlying land and linkage to land cadastre if applicable
- Other secondary rights (e.g. concessions) over the land or resources
- Restrictions on forest/carbon use
- Carbon stocks and their spatial distribution
- Linkage to leakage monitoring area

Conclusion

- ❑ Existing tenure situation is complex (land vs resources)
- ❑ REDD presents a new opportunity for innovative cadastral solutions
- ❑ Getting benefits to forest stewards is critical
- ❑ Meso-level entities that promote economies of scale and match of resource and governance scale
- ❑ Risk of elite (including government) capture a major concern given past experience
- ❑ Keep it simple principle important



Source: Global Witness Independent Forest Monitoring

<http://www.un-redd.org/Portals/15/SBSTA/5%5B1%5D.%20Independent%20Forest%20Monitoring%20-%20Laura%20Furones,%20Global%20Witness.pdf>