



2nd GOFC-GOLD Workshop
on reducing emissions from deforestation
17-19 April 2007, Santa Cruz (Bolivia)



World Bank perspectives and methodology

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* **WB** The World Bank – Carbon Finance Unit

* **CATIE** Tropical Agricultural Research and Higher Education Center



World Bank Carbon Funds & Facilities

Total funds pledged = US\$ 2.02 billion (16 governments, 65 firms)

-  1 **Prototype Carbon Fund. \$180 million (closed). Multi-shareholder. Multi-purpose.**
-  2 **Netherlands Clean Development Mechanism Facility. \$268.3 million (closed). Netherlands Ministry of Environment. CDM energy, infrastructure and industry projects.**
-  3 **Community Development Carbon Fund. \$128.6 million (closed). Multi-shareholder. Small-scale CDM energy projects.**
-  4 **BioCarbon Fund. \$77.4 million (Tranche 1 closed @ \$53.8 million; tranche 2 open). Multi-shareholder. CDM and JI LULUCF projects.**
-  5 **Italian Carbon Fund. \$155.6 million (closed). Multi-shareholder (from Italy only). Multipurpose.**
-  6 **Netherlands European Carbon Facility. \$56.6 million (closed). Netherlands Ministry of Economic affairs. JI projects.**
-  7 **Spanish Carbon Fund. \$282.4 million (closed). Multi-shareholder (from Spain only). Multipurpose.**
-  8 **Danish Carbon Fund. \$69.4 million (closed). Multi-shareholder (from Denmark only). Multipurpose.**
-  9 **Umbrella Carbon Facility. \$737.6 million (Tranche 1 closed – 2 HFC-23 destruction projects in China).**
-  10 **Carbon Fund for Europe. \$65 million. Multi-shareholder. Multi-purpose. Managed with EIB.**

Two Windows

First Window

- Meet Kyoto obligations
- “Kyoto-grade” credits (tCERs, ICERs, ERUs)
- CDM: Afforestation & Reforestation
- JI: All LULUCF

Second Window

- No Kyoto credits
- Exploration & demonstration. Rules may change after 2012
- CDM: Revegetation, Forest management, Forest conservation
Soil management

The
BioCarbon
Fund



Two Tranches

Tranche one

- **US\$ 53.8 million**
- **Operational since May 2004 - closed**
- **Okinawa Electric, Government of Canada, Government of Italy, Tokyo Electric, Eco-Carbone, Agence Française de Développement, Government of Spain, Government of Luxembourg, Idemitsu Kosan, Sumitomo Joint Electric Power Co., Sumitomo Chemicals, Japan Petroleum Exploration, Japan Iron and Steel Federation, Suntory**

Tranche two

- **US\$ ~\$23.6 million**
- **Operational since March 13, 2007 - open**
- **Government of Ireland, Government of Spain, Syngenta Foundation, ZeroEmissions Carbon Trust**
- **Several prospects from Europe and Japan**

The
BioCarbon
Fund





REDD Context

- “Avoided deforestation” excluded from the CDM
- SBSTA discussions on REDD
- Stern Review: need for action in REDD
- World Bank has long history of involvement in forestry sector
- World Bank has experience in piloting the carbon market
 - ✓ Prototype Carbon Fund: global pioneer since 1999
 - ✓ BioCarbon Fund: LULUCF pioneer since 2004
- Several developing countries have expressed interest in a World Bank initiative to provide financial incentives for REDD
- Industrialized countries interested in REDD
 - ✓ Germany, France, Italy, UK support Bank’s proposal
 - ✓ Australia, Belgium interested
 - ✓ Need for action + learning
- World Bank preparing “Global Forest Alliance”
 - ✓ More coherent partnership framework for forest sector
 - ✓ One pillar is new financing mechanisms for the forest sector



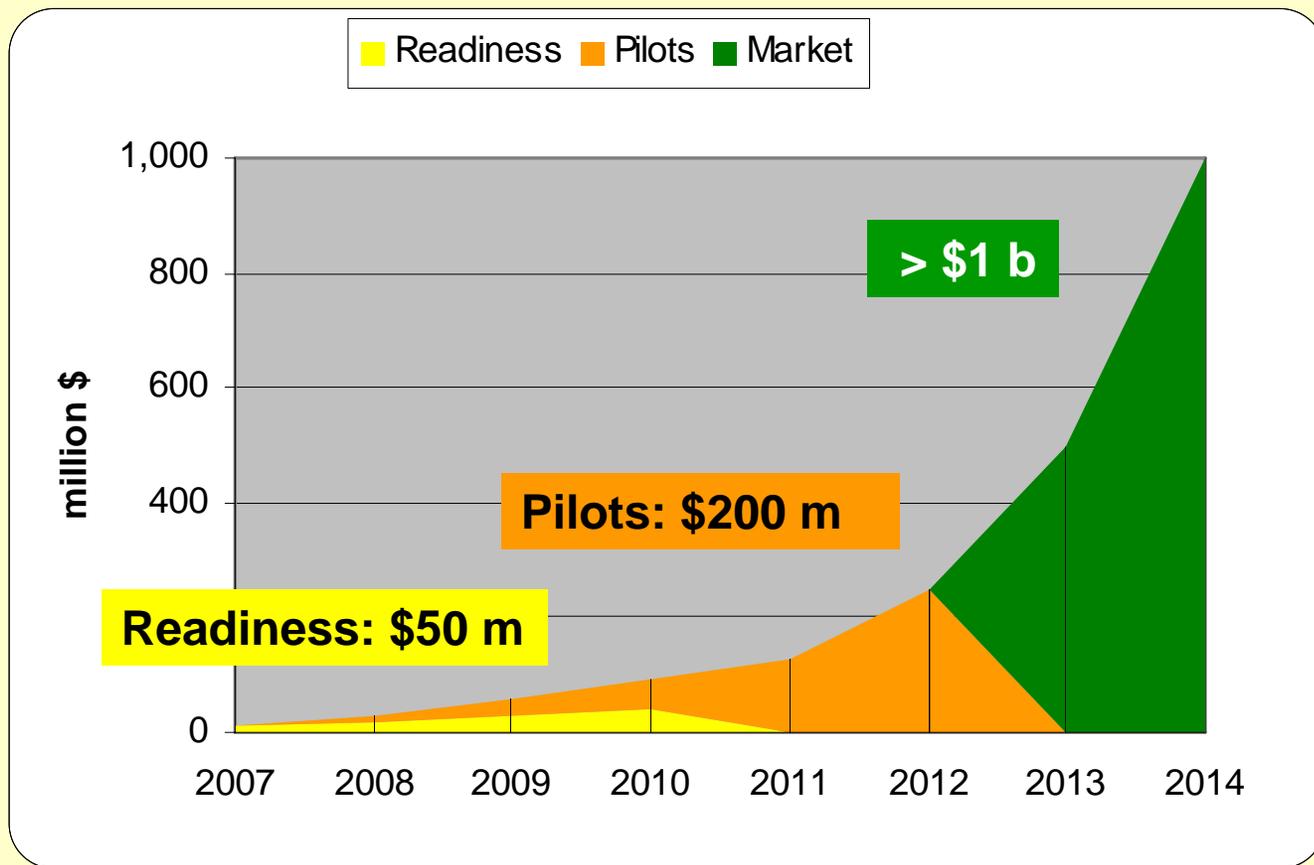


Prepare for a system of positive incentives post-2012 that includes REDD through

- ✓ Capacity building: readiness for a future system
- ✓ Pilot performance-based payments

**Proposed
Response:**

***“Forest
Carbon
Partnership
Facility”***



Launch at/after CoP13?



Why a WB methodology for project-based REDD activities?

- Purpose of the methodology is to facilitate the design and monitoring of project-based REDD activities (BioCF Window 2, but not not only).
- Idea: Start with a simple methodology, add later “modules” if there is a demand from the field.
- Methodology is in preparation – Comments are welcome!
- Methodology will be peer-reviewed later this year.

**Methodology
for project-
based REDD
activities**





Applicability

Methodology for project- based REDD activities

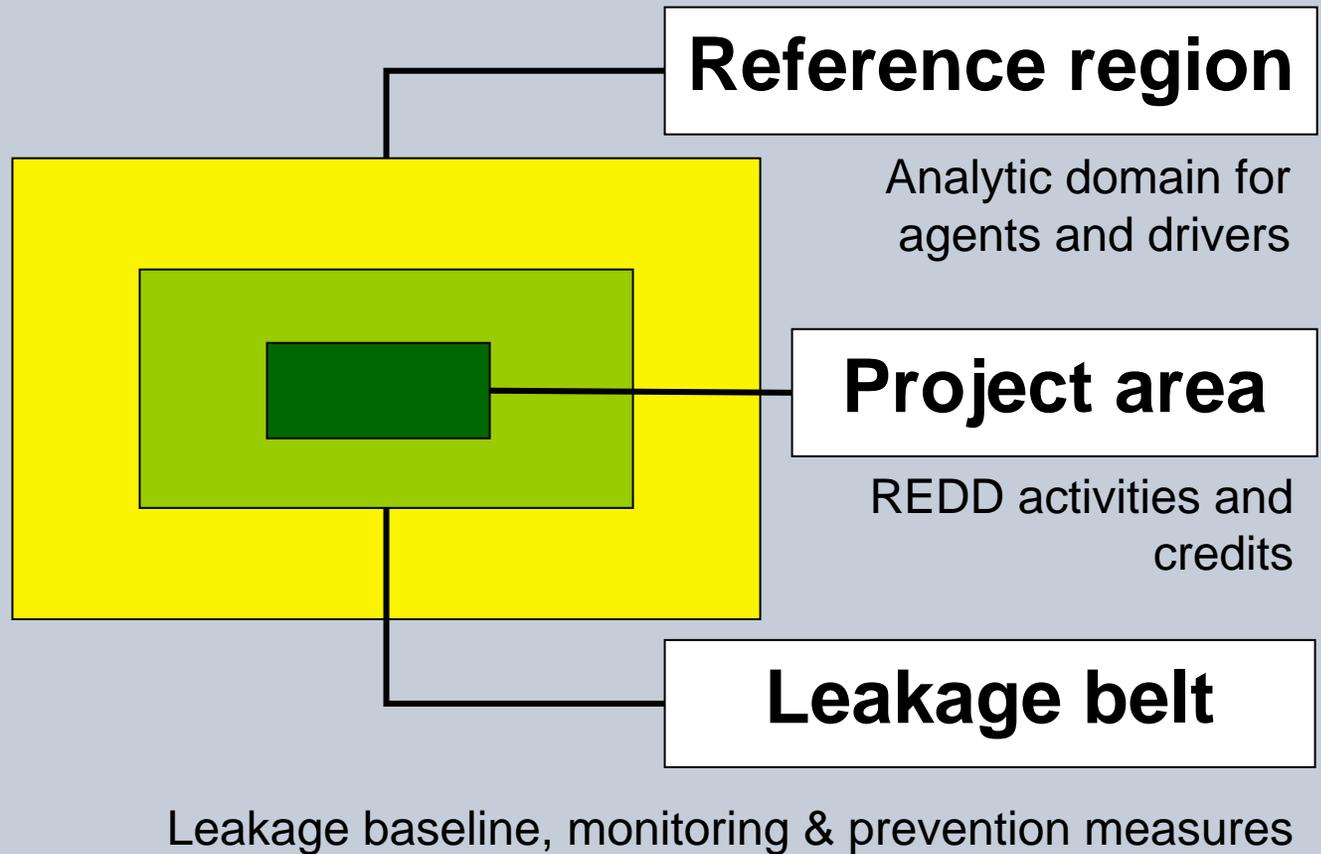


- a) Deforestation agents are bound to a certain region, so that potential leakage areas can be identified (*leakage belt*).
- b) Data on current and historical forest cover are available.
- c) Forest area comply with the definition of forest since 31.12.1989.
- d) Forest recovery on land deforested after project start is excluded in the project scenario.



Spatial boundaries

Methodology for project-based REDD activities



- Deforestation observed in the *reference region* will be used to periodically adjust the baseline in the *project area* and *leakage belt*.
- In this way changes in national and sectoral policies and circumstances are incorporated in the baseline.



Carbon pools, sources and gases

Methodology for project- based REDD activities



Potentially eligible carbon pools:

- Above-ground biomass
- Below-ground biomass
- Dead wood
- Litter
- Soil organic carbon

Potential sources of emissions and gases that are avoided:

- Biomass burning (N_2O , CH_4)
- Cattle (CH_4 , N_2O)
- Transport (CO_2)
- Fertilization (N_2O)

Before project implementation

1. Definition of boundaries:
 - spatial
 - temporal
 - carbon pools
 - sources and gases
2. Analysis of historical land-use and land-cover change (LULCC):
 - Land-use transition matrix
3. Analysis of agents and drivers:
 - Who is deforesting and why?
 - Projection of future deforestation (quantity)
4. Spatial modeling of deforestation “suitability”:
 - Where will deforestation most likely occur in future periods?
 - Multi-criteria analysis using driver maps (e.g. GEOMOD).
 - Good practice to use a calibration and a validation period.

Basic methodology steps

Methodology for project-based REDD activities





Before project implementation

5. Definition of the LULCC component of the baseline:
 - Where and how much will be deforested in the future? (Step 2+3+4)
 - What would be the future land-use after deforestation?
 - a) Assume proportions of the historical land-use change matrix will remain similar or change at the historical speed.
 - b) Model suitability for each LULCC category.
6. Stratification in carbon density classes.
 - Forests: Average carbon density.
 - Land-use categories after deforestation:
 - a) Agricultural and pastoral uses, including shifting cultivation: maximum carbon density of the production cycle.
 - b) Reforestation: carbon density per age classes.

**Basic
methodology
steps**

**Methodology
for project-
based REDD
activities**



Before project implementation

7. Sampling in carbon density strata

- Sampling in forest strata (F): areas with high and medium deforestation “suitability”.
- Sampling in land-use categories established after deforestation (D) + modeling in case of reforestation

8. Definition of the carbon component of the baseline

- $\sum \text{Area}_i \times \text{CDF}_i - \sum \text{Area}_j \times \text{CDD}_j$

Where:

CDF = Carbon density in forest type i

CDD = Carbon density in land use type j

- Avoided GHG emissions from land uses after deforestation can (***or should, should not?***) be added.



**Basic
methodology
steps**

**Methodology
for project-
based REDD
activities**





After project implementation

- ✓ For each monitoring and verification period (e.g. 5 years).
- ✓ For each combination of Deforestation Suitability x LUCC category in the reference region and (project area + leakage belt)

Basic methodology steps

Methodology for project-based REDD activities



9. Monitoring of actual LULCC:

- How much area has been deforested?
- What has been the actual land-use transition matrix?

10. *Ex post* adjustment of the baseline:

- Compare speed of LULCC observed in the monitoring period with the one of the previous period.
- Adjust the baseline:
 - a) The **ex ante** baseline for the next monitoring period (by redoing Steps 2-8)
 - b) The **ex post** baseline of the current monitoring period.



Project scenario

Ex ante:

- Project scenario = Baseline deforestation * (100%-X%)
- X% = Project goal

Ex post:

- Project scenario = Actual deforestation in the project area
- Actual = observed during the monitoring period



Methodology
for project-
based REDD
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**Hopefully
we are
doing the
right thing!**





Thank you!

Comments welcome!

Please send comments on the
“Forest Carbon Partnership Facility”

also to:

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Werner Kornexl: wkornexl@worldbank.org





Readiness

“Forest Carbon Partnership Facility”



“Readiness”: capacity building

- ✓ Update forest data and reporting methodologies
- ✓ Assess current forest carbon emissions
- ✓ Project emissions (reference scenario)
- ✓ Conduct economic analysis: what is the cost of REDD?
- ✓ Design strategy for REDD:
 - Define intervention
 - Establish/reinforce institution
 - Design payment channel
- ✓ Monitor emission reductions, including leakage



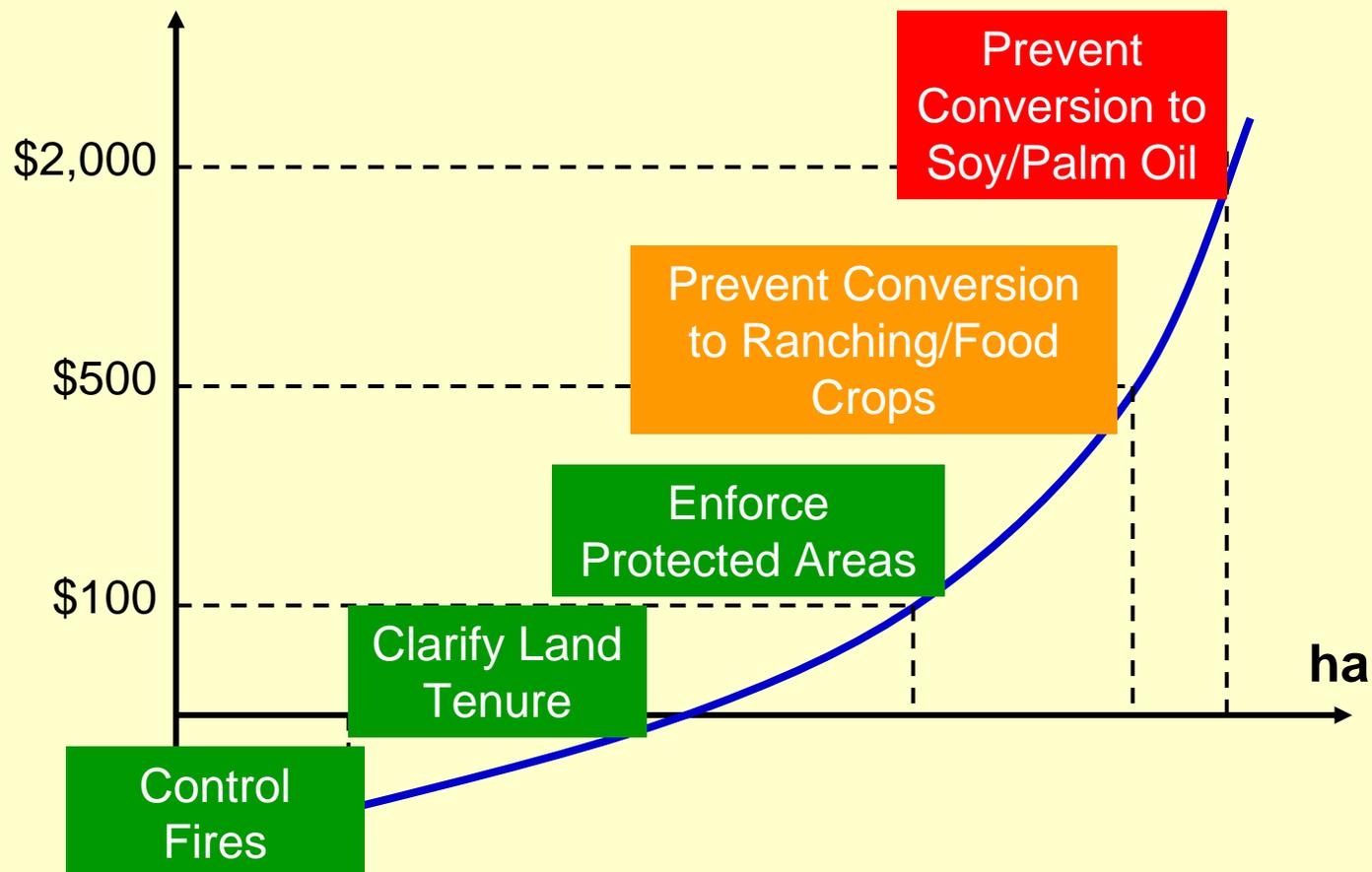
Pilot purchases

“Forest Carbon Partnership Facility”



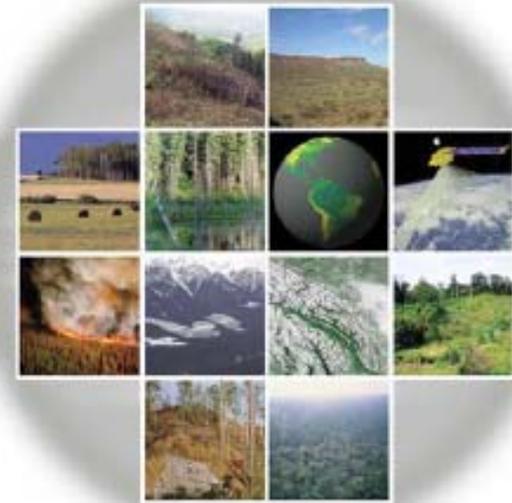
Price Carbon \geq Opportunity cost of land
Pick low-hanging fruit first

Cost per ha of forest saved



GOFC-GOLD

Global Observation of Forest and Land Cover Dynamics



2nd GOFC-GOLD Workshop on reducing emissions from deforestation

“Measuring and monitoring greenhouse gas emissions from deforestation in developing countries: from case studies to implementation guidelines”

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