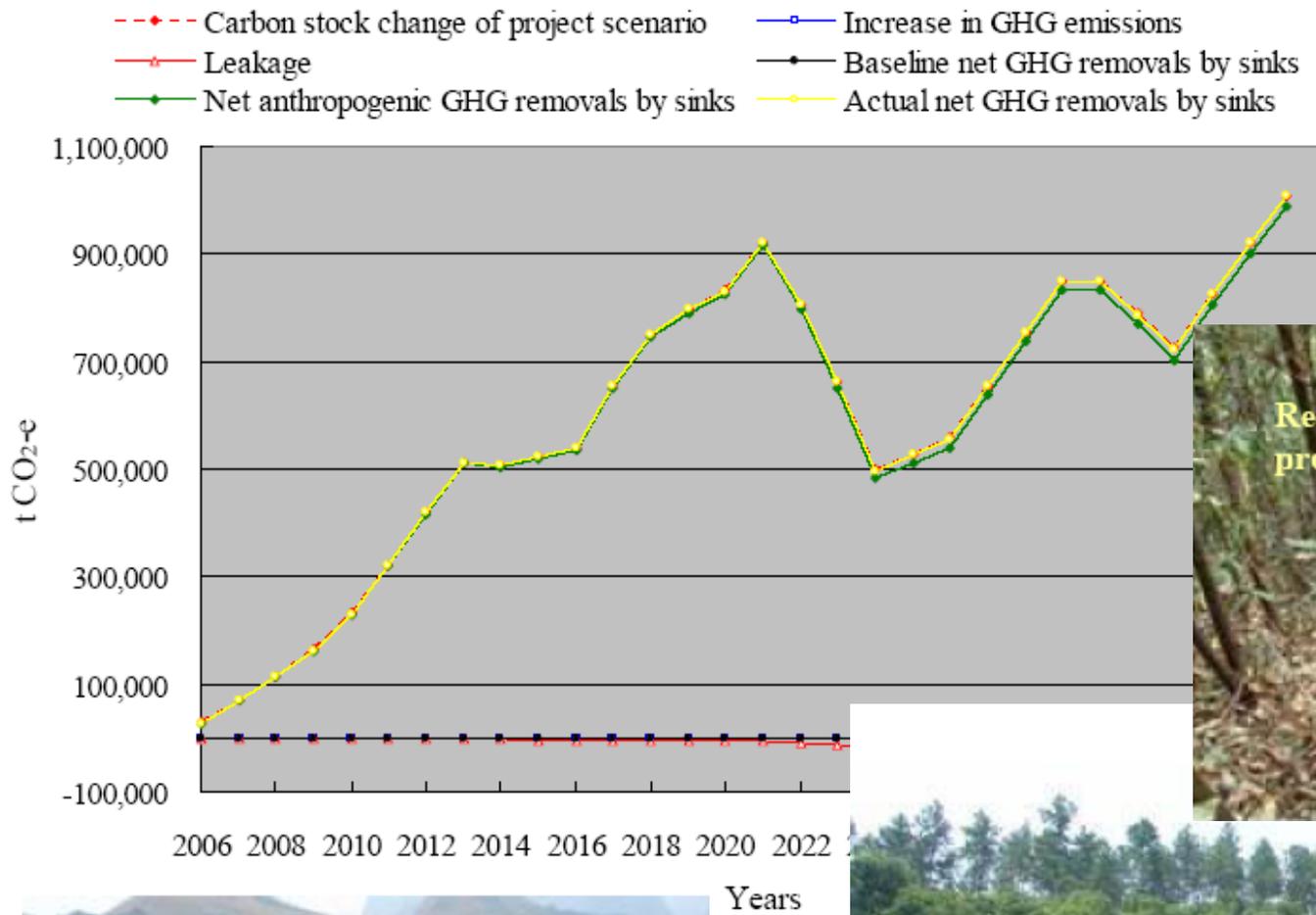


Baseline Methodology  
 ARNMB0010  
 Xiaoquan Zhang and  
 Bernhard Schlamadinger



# Reforestation of degraded land

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- Scope:

Restoration of natural forest and plantation (with harvesting) on (tropical) degraded and degrading land by tree planting. Aboveground and belowground biomass are the only carbon pools considered.

# Conditions

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- Lands will be reforested by **direct planting and/or seeding** in a proposed A/R CDM project activity.
- Lands to be reforested are **severely degraded** with the vegetation indicators below thresholds for defining forests, and the lands are still degrading. A few pieces of lands may have trees growing on them.
- The **baseline land uses are economically unattractive**, because social demand for the land is low.
- Both national and local government may be enthusiastic to restore forests, but apparent **financial and other barriers** can be identified.
- Environmental conditions and human-caused degradation **do not permit the encroachment of natural forest vegetation**.
- The project can justify that **baseline approach 22(a)** (existing or historical changes in carbon stocks in the carbon pools with the project boundary) is the most appropriate choice for determination of the baseline scenario, and uses this approach.

# Other features

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- Carbon pools: above-ground and below-ground biomass
- Uses conservative assumptions in several places
- Allows for individual trees on the site at start of project
- Stratification
- Preferably land use / cover maps; or satellite images
- Baseline approach (a): Existing or historical, as applicable, changes in carbon stocks in the carbon pools within the project boundary
- Standard additionality tool is used

# Justification of Baseline approach (a)

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- degraded, abandoned barren land resulting from human degradation and unfavorable environment. Without significant change of social-economic and environmental regimes, their status will not change.
- Agricultural land use, commercial timber plantations and other land uses are economically unattractive.
- **Financial barriers** (no funds, commercial loans available), **technical barriers** (e.g., lack of capacity of successful planting and management), inadequate **institutional** arrangement, and/or **market risks** also prevent use of land for economic revenue.

## (b), (c) were not used because

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- status of degraded land is economically unattractive
- No economically attractive alternative exists  
(... except for reforestation with CDM funding)
- (c) is similar to (a) and could have been used

# Baseline scenario: steps

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- Demonstrate that project site meets conditions of methodology, and conditions of baseline method (a)
- Stratify the project area
  - Soil
  - Climate
  - previous land use
  - existing vegetation
  - tree species to be planted
  - year to be planted
  - anthropogenic influence, etc.
- Determine baseline scenario (focus on possible encroachment)
- Determine baseline carbon stock changes
  - Sites with trees: yield data, allometric equations ...

# Land eligibility

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- Historical land use / cover maps
- Or Satellite images
- Plus Interviews with landowners
- Around 1990 + before the project starts
- Specific focus on bare lands that could reach thresholds under continuation of current land use

# Additionality test

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- Step 1: Alternatives to the project scenario
  - Modification: only continuation of degraded status is considered
- Step 2: Investment analysis
  - Modification: Investment comparison analysis (option II) not applicable, as baseline has no economic use.
  - China project uses benchmark (III), but simple cost (I) also possible
  - WB financial analysis tool is recommended
- Step 3: Barrier analysis
  - China specific: Remote area, timber markets uncertain, ERs create certainty of income
- Step 4: Common practice test (not in AR add. tool)
- Step 5: Impact of CDM registration

# Baseline / project GHG estimation

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- Standard IPCC GPG methodologies
- Local data for biomass, GPG or national default data for GHG emissions
- Carbon in biomass (baseline and project):
  - Method 1: Gains – losses
  - Method 2: Stock-change method
- GHG emissions (project):
  - Fossil fuel use
  - GHGs from site prep (e.g., burning)
  - GHGs from fertilizer
- Leakage:
  - Fossil fuels outside project boundary
  - No other leakage: degraded lands not used

# Uncertainties

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- List sources of uncertainty and risks
- Conduct sensitivity analysis
- Identify key parameters and use local values for those as much as possible
- Reduce uncertainties through:
  - Stratification
  - Appropriate sampling framework
  - Omitting pools with high spatial variability (e.g., soil carbon)
  - Conservative assumptions

# Feedback from desk reviewers / AR WG

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- Generally positive
- NMM: hardly any changes
- NMB:
  - Improve demonstration of state of degradation, and “no natural regeneration”
  - Stratification: describe procedures for combining maps, satellite images for describing variables that affect C stock changes (cook-book type approach)
  - Ensure internal homogeneity of strata
  - Improve consideration of data uncertainties
  - Demand to add other carbon pools does not have to be addressed

# Main comment: degraded lands

- Zero baseline should only apply to biomass  
→ omission of soil/litter/dead wood must not inflate credits.
- Purpose of arguing “degraded lands”:
  - Omission of pools
  - No natural regeneration
  - No activity displacement
- Demonstrate that (bold: italics to term *degradation*):
  1. *the land was forest at some point in time*
  2. *no conversion to the natural forest state of the land would happen*
  3. *no productive state of the land would be reached*
  4. *any other kind of natural forest establishment would not occur (as demonstrated by our air seeding example).*
  5. There is no intensive site prep (would release of carbon from soils).
- Propose indicators for vegetation and soils degradation

# Outlook: this project

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- Draft B rating
- Resubmit by 20 September
- If AR WG accepts → generalized by consultant
- Accepted by CDM EB
- Amend PDD and submit for validation
- Planting in spring 2006

## Outlook: other projects that want to use this methodology

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- wait for revised version (20 Sept)
- could then use as is if “conditions” are met,
- or could expand scope by adding further “modules” such as:
  - Soil, dead wood, and/or litter
  - Emissions from grazing within the project boundary
  - Activity displacement (leakage) if minor land uses occur in the baseline
  - Decision tree (different scenarios of data availability)