



CarboEurope-GHG Concerted Action
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Scientific and Technical Issues in the Clean Development Mechanism

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1. Definitions of 'Forest, Afforestation, Reforestation'
2. Non-permanence
3. Additionality and Baselines
4. Leakage and project boundaries
5. Pools and fluxes
6. Monitoring and verification of carbon stock changes and Non-CO₂ GHGs

1. Definitions of 'Forest, Afforestation, Reforestation'

Forest definition as in Art. 3.3, 3.4 of KP

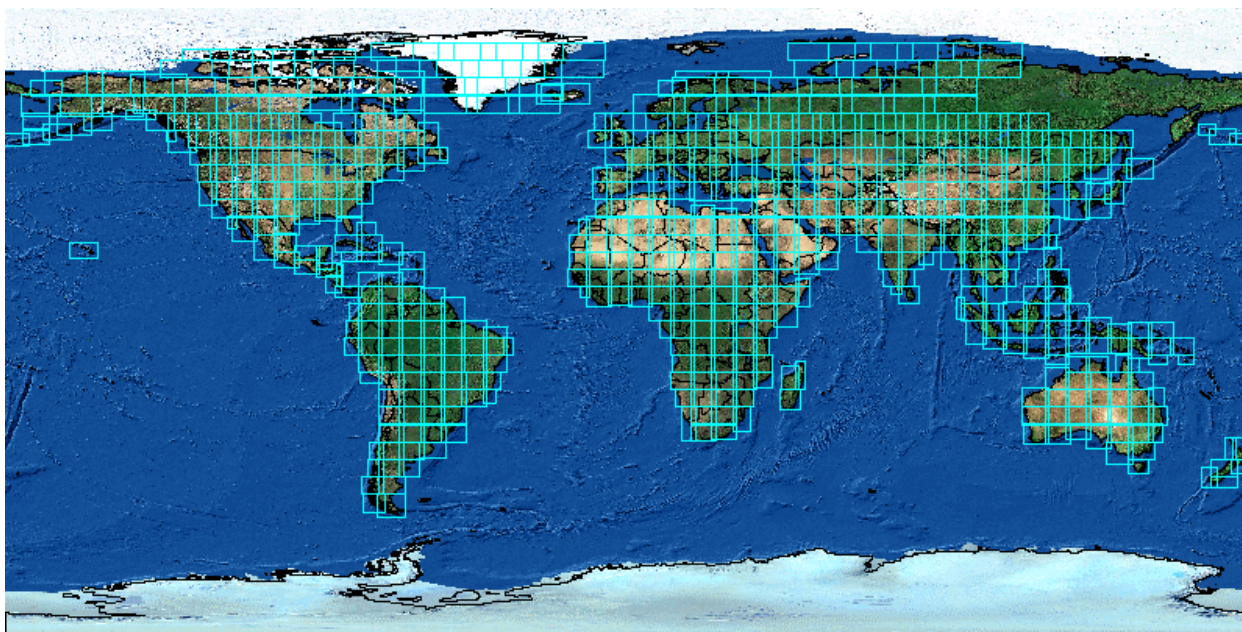
- is transparent, feasible, consistent with domestic sink activities.
- allows inclusion of agroforestry projects
- may create disincentives to invest in dry or degraded areas

1. Definitions of 'Forest, Afforestation, Reforestation'

Forest definition as in Art. 3.3, 3.4 of KP

Reference date 31 December 1989

- enough land for projects available
- avoids perverse late rewards for recent deforestations
- is feasible: global coverage of freely-available remotely sensed land cover images (1990 LANDSAT) allows to determine forest/non-forest within six months around the base date

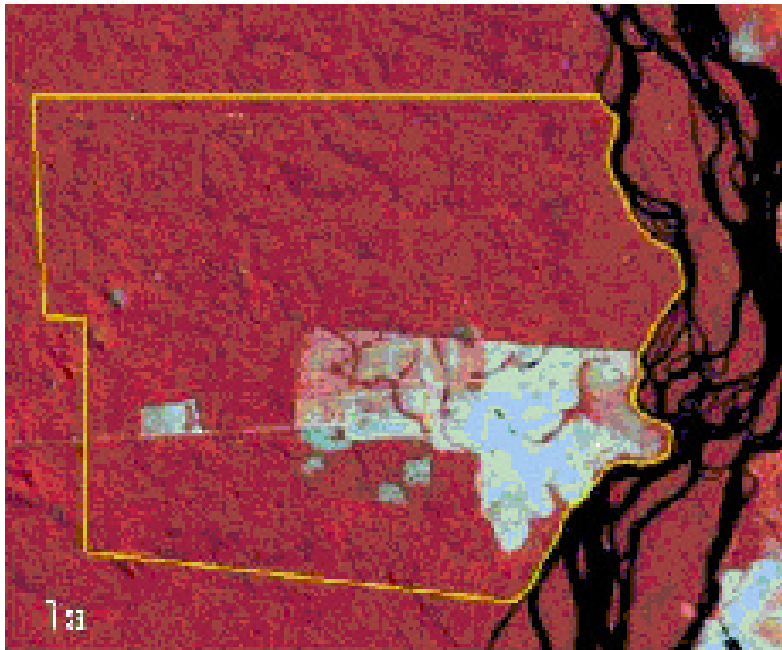


1. Definitions of 'Forest, Afforestation, Reforestation'

Forest definition as in Art. 3.3, 3.4 of KP

Reference date 31 December 1989

Example: False color composite Landsat TM and ETM+ satellite images from July 3, 1992, of the Sao Nicolou Facenda, Mato Grosso, Brazil



Schulze et al., Science 299, 2003
<http://www.bsrsi.msu.edu/trfic/>



2. Non-permanence

The beauty and practicality of the tCER concept

Michael Dutschke

**Evaluation criteria for project eligibility:
Strengthening permanence by project framework
and project design.**

Rebecca Carr

3. Additionality and Baselines

Definition

OECD (Ellis, 2003):

An afforestation or reforestation project activity is additional

- if the net enhancement of sinks is higher than those that would have occurred in the absence of the registered CDM project activity,*
- if the project activity itself is not a likely baseline scenario,*
- and the project activity is governed by the principle that its undertaking contributes to the conservation of biodiversity and sustainable use of natural resources.*



3. Additionality and Baselines

Definition

Strong evaluation criteria for project eligibility:

Securing additionality through assessment of project framework and project goals.

Rebecca Carr

3. Additionality and Baselines

Definition

Strong evaluation criteria for project eligibility

Baselines should best be part of the project monitoring

Spatial concept for Baseline monitoring

(Michael Dutschke)



RA helps to define the baseline
on a standardised basis and
reflects local and regional conditions



4. Leakage and project boundaries

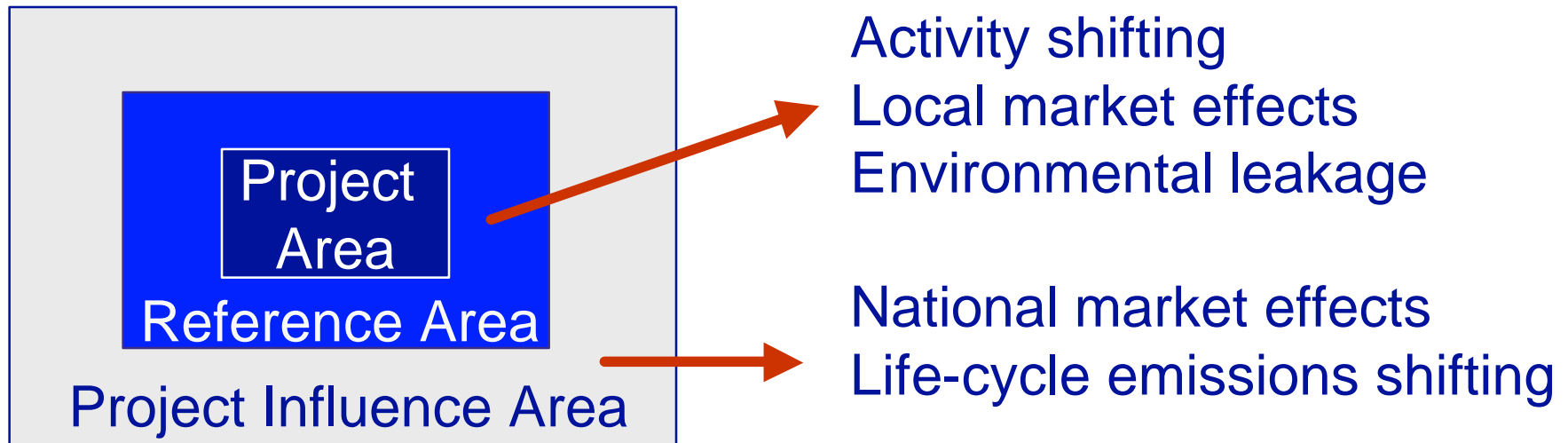
Minimising risk of leakage by project framework and project design.

Rebecca Carr

4. Leakage and project boundaries

Minimising risk of leakage by project framework and project design.

Spatial concept for Leakage monitoring
(Michael Dutschke)

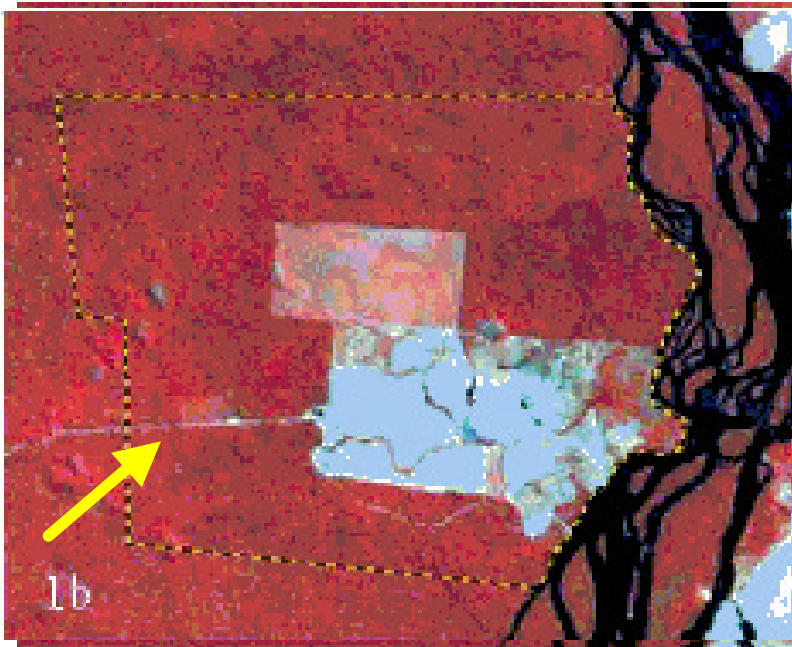


4. Leakage and project boundaries

Minimising risk of leakage by project framework and project design.

Monitoring leakage by activity shifting by remote sensing

Example: Sao Nicolou Facenda, Mato Grosso, Brazil



1999

Schulze et al., Science 299, 2003
<http://www.bsrsi.msu.edu/trfic/>

5. Pools and fluxes

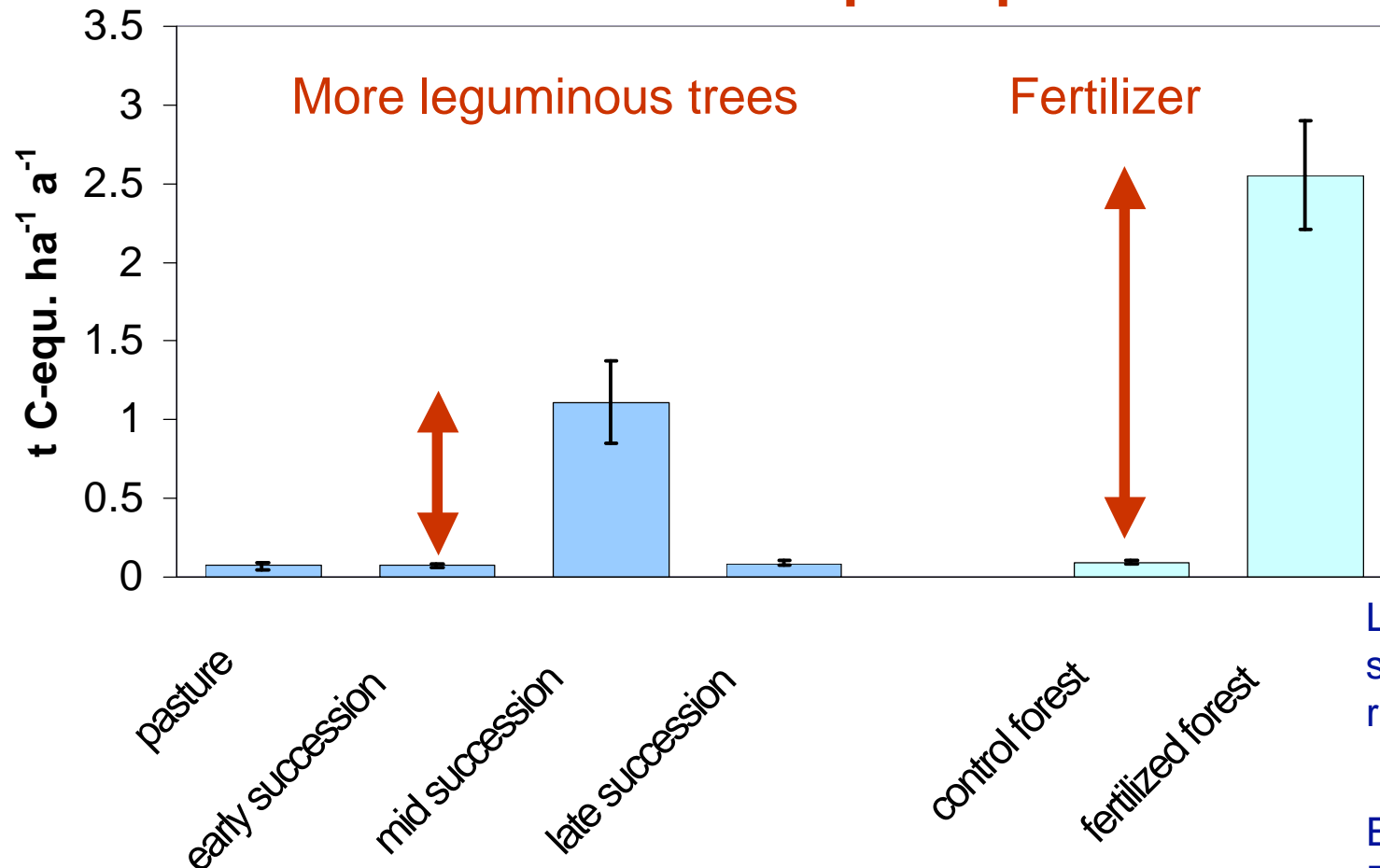
Environmental integrity of CDM projects not always ensured if additionality, leakage and monitoring requirements are limited to carbon stock changes only

- Drainage of temporally waterlogged soils: N_2O , CH_4
Additional source of $1 \text{ t C-equ. ha}^{-1} \text{ a}^{-1}$ or more?
(IPCC GPG LUCF)**
- N_2O emissions may compensate carbon sink**

5. Pools and fluxes

- N₂O emissions may compensate carbon sink

10-60% of C sink in tropical plantations



Lower montane,
subtropical wet
region of Puerto Rico

Erickson et al., 2001.
Ecosystems 4:67-84

5. Pools and fluxes

Risk classes for environmental integrity of CDM projects

- Low-input AR projects on well-drained upland soils, without leguminous trees or fertilization
- AR projects including leguminous trees or fertilization: Environmental integrity must be proven by careful monitoring of N₂O emissions against a baseline.
- AR projects on areas which are wet for at least part of the year, especially on organic soils (peat soils): GHG emissions from soil overcompensate C sink. Projects should be avoided.

6. Monitoring and verification of carbon stock changes and Non-CO₂ GHGs

Minimum requirements for monitoring

Remote sensing

1) Forest/ non-forest map of project area in 1990

2) Boundary of the project

On-site measurements

3) Land use/cover of project area

4) C stock changes and non-CO₂ GHGs in the project

5) C stock changes and non-CO₂ GHGs in the baseline

6) Land-use patterns in the vicinity

7) Timber and agricultural outputs of project site in the baseline and project cases

8) Indicators for environmental and socio-economic effects.

Statistics,...



Synthesis

1. **Definitions:** Base date 31 Dec 1989 is globally feasible
2. **Non-permanence:** tCERs and project design
3. **Additionality and Baselines:** project design and monitoring
4. **Leakage:** project design and monitoring
5. **Pools and fluxes:** N₂O may compensate 10-60% of C sink, N₂O monitoring needed in “risky” areas and projects
6. **Monitoring and verification** of carbon stock changes and Non-CO₂ GHGs: combination of tools necessary and available

Strong evaluation and monitoring requirements ensure environmental and socio-economic integrity

Adequate definitions

Careful selection of projects necessary

Careful monitoring technically possible

<http://.bgc-jena.mpg.de/public/carboeur/>