

Reducing the use of non-renewable biomass: an eligible CDM project category?



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Land Use and Bioenergy in the Clean Development Mechanism*

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Outline

- Emission categories: IPCC Guidelines, Kyoto Protocol
- Non-renewable bio-energy in the CDM
- Solution 1: small scale projects
- Solution 2: COP decisions, post 2012
- Objectives of working meeting

Categories of national inventories (Annex A of the Kyoto Protocol)

- Energy (CO₂ from biomass **not** counted here)
- Waste
- Industrial Processes
- Agriculture (all EXCEPT carbon and liming, which are included in LUCF)

Not included:

Land-use change and Forestry (LUCF), carbon in croplands and grasslands

Bioenergy and land use in the CDM

- Afforestation and reforestation: eligible
- Biomass energy to replace fossil fuel: eligible
- Many developing countries do not have
 - Big opportunities for fossil-fuel reductions
- Most have large share of biomass in primary energy



Use of biomass fuels in 7 developing countries (1997)

Country	Total energy consump. [PJ]	Bio-energy consump. [PJ]	Share of bio-energy [%]
Brazil	5,155	1,604	31.1
China	36,632	9,287	25.4
Egypt	1,502	380	25.3
India	16,554	8,543	51.6
Malaysia	1,488	663	44.6
Tanzania	954	925	97.0
Zaire	435	362	83.2

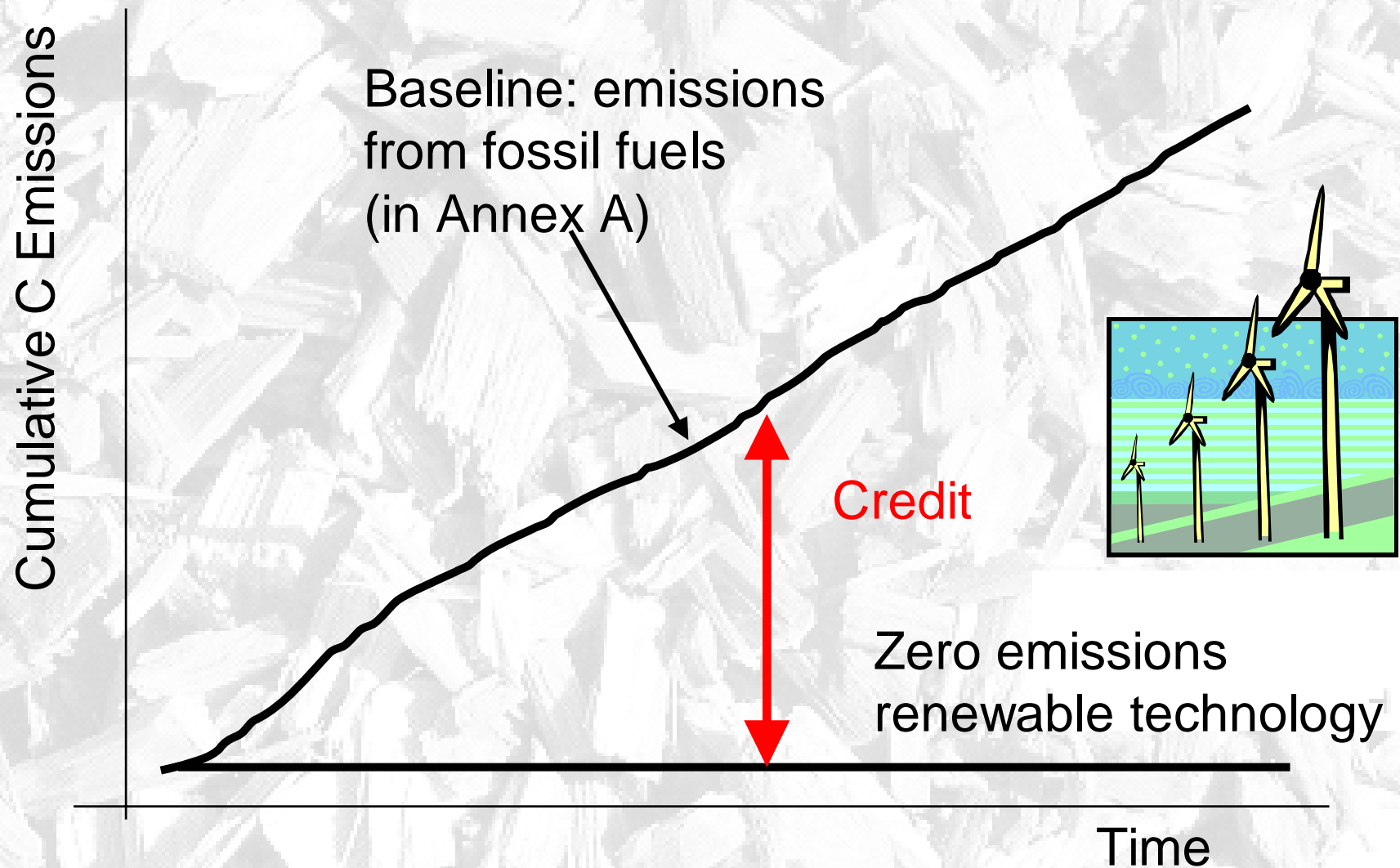
Bioenergy in the CDM

From Marrakech Accords (FCCC/CP/2001/13/Add.2, p. 36, para. 44)

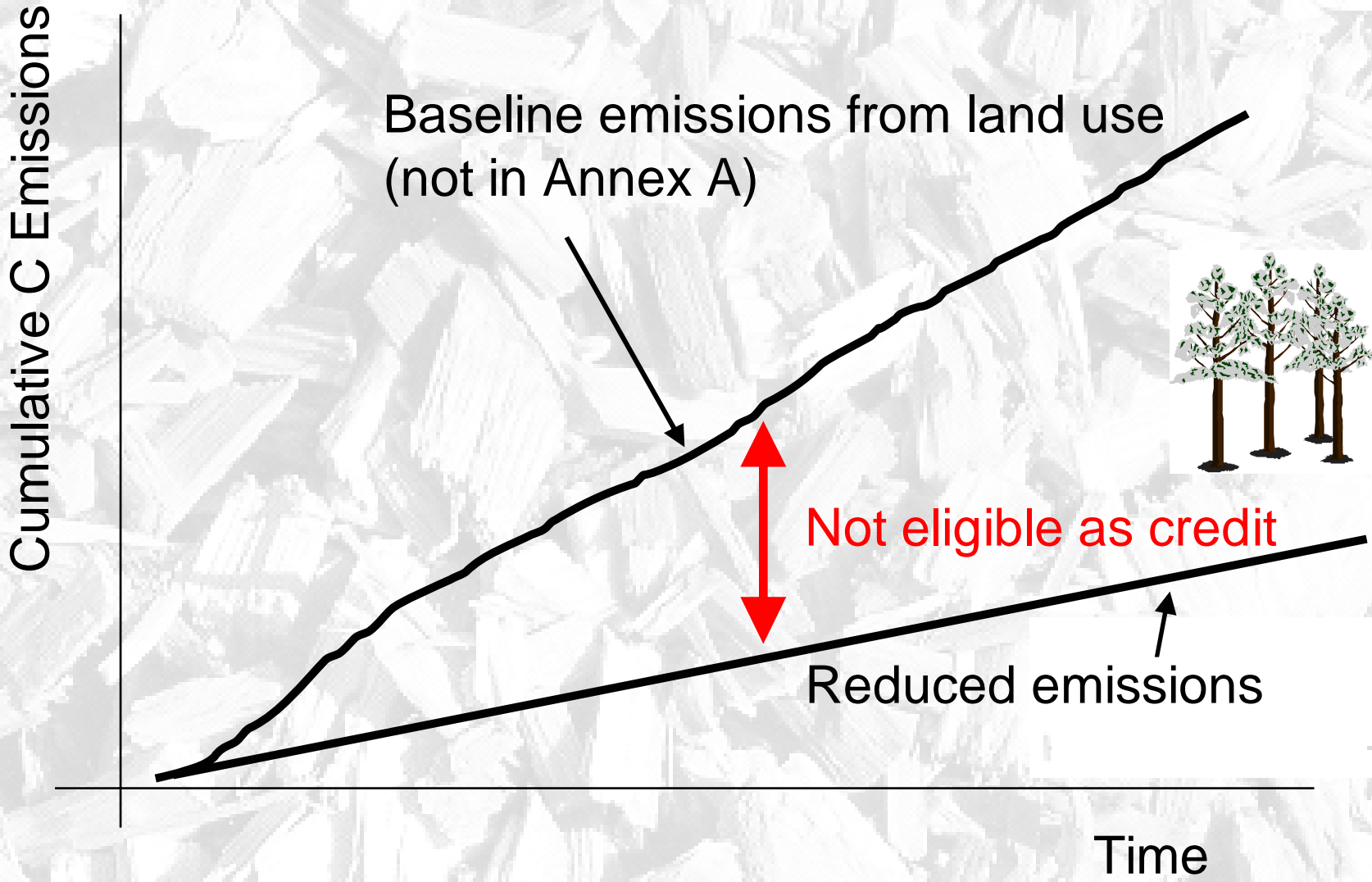
The baseline for a CDM project activity is the scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases that would occur in the absence of the proposed project activity.

A baseline shall cover emissions from all gases, sectors and source categories listed in Annex A within the project boundary.

Renewable energy in the CDM that replace fossil fuels



More efficient biomass energy



Bioenergy projects that are eligible

- Bioenergy displaces fossil fuel (most proposed CDM bioenergy projects)
 - Use of biomass residues (fuel switching, e.g. biomass residues)
 - Replacing coal, oil, natural gas, kerosene etc.
- Non-CO₂ greenhouse gases are reduced
 - landfill gas recovery
 - Methane recovery through enhanced animal waste management
 - N₂O and Methane avoidance in agriculture
- Small scale replacement of NRB for thermal energy (but no definitions exist, no projects approved)

Bioenergy projects that are not eligible

- All large projects to
 - replace NRB with renewable energy (> 15 MW) or
 - reduce NRB by efficiency improvements (> 15 GWh/yr)
- Small scale projects (< 15 GWh/yr):
 - Demand-side management to reduce NRB consumption
 - improvement of the efficiency of production and conversion of NRB

Why is this important?

- Excludes many countries from the CDM
- The connection between land-use and bioenergy has been neglected.
- Sustainable development
 - Indoor air pollution
 - Land degradation, soil erosion, biodiversity ...
 - Socio-economic issues

Fuel switching: rice husk instead firewood

1) Settled kiln

- They are built with adobe or over burned bricks
- ITDG introduced an improved settled kiln, with a capacity to burn more than five thousands.
- The brick makers from La Huaca and Lambayeque reply the pilot kiln, with a little modifications with capacities of 4 and 8 thousands.
- This type of kilns spends between 800 and 1000 kg. of rice husk for thousand of bricks.

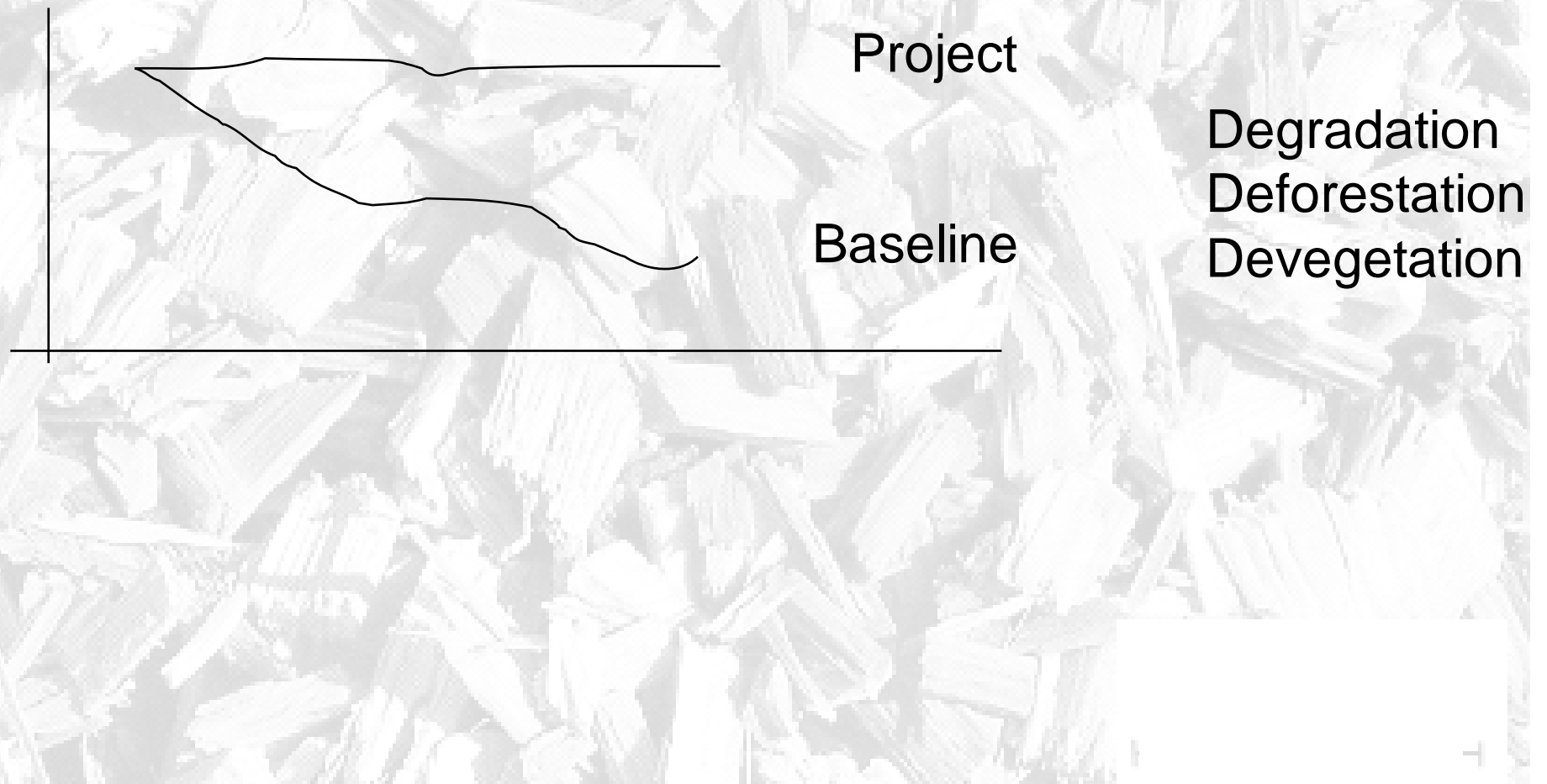


Categorization of biomass fuels

	No C stock effects/ residues	With C stock effects / direct harvesting from lands
Biomass from short turnover sources	Agro-industrial residues such as bagasse or rice husk	Annual energy crops (e.g., rapeseed)
Biomass from long turnover sources	Wood industry residues. Biomass not main driving force for extraction	Harvest of forests and woodlands; dead wood from forests and woodlands

Based on Dutschke and Lambert, AR WG

C stocks



Based on Dutschke and Lambert, AR WG

What happened to date

- Kyoto Protocol / Marrakech Accords
- Small-scale rules for CDM projects, Category 1C
- Submission by FAO and Joanneum Research to the CDM EB (March 2004)
- Discussions in the AR WG and SSC WG
- Response on submission (May 2005)
- First SSC project submitted (Bagapelli, Biogas)
- Decisions on NRB pending; leakage issue?
- No solution in sight yet for large-scale projects

A) Small Scale Projects

- TYPE I - RENEWABLE ENERGY PROJECTS, max output capacity <15 MW.
 1. Electricity generation by the user
 2. Mechanical energy for the user
 3. Thermal energy for the user
 4. Renewable electricity generation for a grid

- TYPE II - ENERGY EFFICIENCY IMPROVEMENT PROJECTS, reduce energy consumption, < 15 GWh per year
 1. Supply side energy efficiency improvements – transmission and distribution
 2. Supply side energy efficiency improvements – generation
 3. Demand-side energy efficiency programmes for specific technologies
 4. Energy efficiency and fuel switching measures for industrial facilities
 5. Energy efficiency and fuel switching measures for buildings

- TYPE III - OTHER PROJECT ACTIVITIES, cover other project activities, including methane capture and agriculture. Project emissions < 15 000 tCO₂/yr.

Small scale category 1C: Thermal energy for the user

- **Renewable energy** technologies that supply individual households or users with **thermal energy** that displaces fossil fuel or non-renewable sources of biomass.

BUT: ONLY RENEWABLE ENERGY PROJECTS.

In many cases biomass may remain non-renewable, although at lower level.

“Upgrading of existing equipment not allowed”

CDM Team: “improvements of efficiency of equipment such as stoves is a type II activity”

Focus on technology / equipment → fuel switch to renewable biomass not allowed

Minutes of SSC WG, May 05

TREATMENT OF BIOMASS (para 11)

The SSC WG noted that the AR WG and the Meth Panel shall, at their next meeting, prepare a joint recommendation to the Board on **definitions of renewable and non renewable biomass (R/RNB)**. The SSC WG acknowledges that after definitions for R/NRB have been developed **amendments to Appendix B to the simplified modalities** and procedures for small-scale project activities would be needed to ensure consistency of reference to R/NRB across different project types.

Modifications – small scale

1. Extend definitions of baselines to include **non-renewable biomass in all relevant categories**
2. Consistent **differentiation between renewable and non-renewable biomass**, in order to separate the respective baseline case from the project activity case.
3. The (explicit) **inclusion of typical bioenergy technologies and appliances** in the definition of the technologies and measures of the different relevant types of project activities.

Methodology to assess “NRB” and leakage

1. Define project boundary
2. Quantify (fuel) wood production in project area (including wood for charcoal)
3. Estimate available SUSTAINABLE (fuel) wood
4. Comparison shows whether non-renewable
5. Consistency check with deforestation, degradation and/or devegetation (including: is wood demand driving this?)
6. Emission factor between 0 and 100% of actual CO₂ emissions, depending on 4.
7. Estimation / monitoring of leakage, rebound effects

Possible short-cuts for small scale projects

- Country-level assessment of resource.
- Use of indicators as proxy for NRB assessment (e.g., decline of carbon stocks by more than 5% over last 10 years)
- Disregard leakage
- Conservative default leakage and rebound deductions (e.g., 50% and research to refine number), project developers can improve these if desired
- Direct link of wood use to certain tree species can limit the analysis
- Others?

B) Solutions via COPmop decision

- Generally allowing the replacement of NRB
- Post 2012: by admitting further land-use categories into the CDM
 - Reducing deforestation
 - Reducing forest degradation
 - Reducing devegetation
- Allowing land-use credits, but tied to a minimum amount of useful energy per ton C credited
- Debundling of large projects into small-scale projects

Objectives of this working meeting

- Present and discuss the issues identified
- Present examples
- Elaborate short-term solutions and methodologies (for CDM panels; small scale)
 - Definition and determination of “non-renewable biomass”
 - Leakage
- Long-term options (COP decisions; post 2012)
- Next steps
 - Press release
 - Article in CDM Investment Newsletter
 - Others



