BASELINES, PERMANENCE AND LEAKAGE IN REDD

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AWG-LCA: REDD – Policy approaches and positive incentives

• Bali Action Plan (1/CP.13):
COP decides to launch a comprehensive process to enable full, effective and sustained implementation of the Convention through long-term cooperative action, now, up to and beyond 2012, …

• Para 1(b) : Enhanced national/ international action on mitigation of climate change, including, inter alia, consideration of:

• Para 1(b) (iii): Policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries;
REDD - Target Ecosystems

- The world’s tropical forests cover only 12% of the world’s terrestrial land area but contains for 40% of the world’s terrestrial carbon
- Concern is on Volatile Carbon – 100% of vegetation and 25% in soils

Forest Volatile Carbon (Gt C)

- Country | Vegetation | Soil | Total
- Brazil | 76.6 | 10.4 | 86.9
- DRC | 34.0 | 5.1 | 39.2
- Indonesia | 21.5 | 5.7 | 27.3
- China | 13.5 | 4.6 | 18.1
- India | 4.8 | 1.4 | 6.2
- Malaysia | 3.8 | 0.8 | 4.6
- Tanzania | 3.4 | 0.7 | 4.1
- Vietnam | 0.8 | 0.2 | 1.0
- Nepal | 0.5 | 0.2 | 0.7

*Source: Terrestrial Carbon Group, 2009*
### Annual Deforestation Rates for Major Tropical Countries

<table>
<thead>
<tr>
<th></th>
<th>Area (Kha)</th>
<th>Forest Area (Kha) (%)</th>
<th>Deforstn (Kha) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>851,488</td>
<td>477,698(57)</td>
<td>2,822(0.52)</td>
</tr>
<tr>
<td>DRC</td>
<td>234,486</td>
<td>133,610(59)</td>
<td>461(0.38)</td>
</tr>
<tr>
<td>Indonesia</td>
<td>190,457</td>
<td>88,495(49)</td>
<td>1,871(1.61)</td>
</tr>
</tbody>
</table>

*Source: FAO 2005, p. 191.*

### REDD - Potential

- Deforestation rates in the 62 countries with tropical forests range from 0% to 5% annually (FAO 2005).
- Indonesia annually emits 2.5 billion MtCO2e solely through deforestation (PEACE 2007) – 50% of EU’s annual emissions.
REDD Potential in Asia

- Asia’s tropical forests account for 17% of the world’s tropical forests and have the world’s highest deforestation rates (Kumagai et al. 2004).
- Peat lands occupy 3% of the earth’s surface but store 15% of the terrestrial carbon (Takai 1996).
- Two thirds of the 21 world’s tropical peat forests are in the area of the South China Sea and Indonesia (Jauhiainen et al. 2005).
- Indonesia’s Kalimantan peat forests have a 27 Gt C stored, eminently threatened by deforestation.
- Asia’s forests are home to a high percentage of the world’s biodiversity.

Relative Sectoral Emissions from Major Emitting Countries

![2005 GHG emissions summary (MtCO2e)]
Mitigation Potential in AFOLU in South and South East Asia (Gt CO2e / yr)

Avoided Deforestation 0.7
Forest Sequestration 1.7
Agriculture 1.4
Total 3.8

Source
Smith et al, 2007

Baseline, Permanence and Leakage

• Baseline refers to emission profile that would have occurred under business as usual. In REDD, these are emissions that would have come from projected deforestation and forest degradation.

• Permanence refers to the propensity of reduced emissions NOT to re-enter the atmosphere. In REDD, permanent reduction would mean the protected area to remain forested or un-degraded permanently, or for the duration of emission reduction agreement.

• Leakage refers to direct emissions elsewhere caused by the emission reduction in the project/program. Example, protection of a forest area in one place may lead to deforestation another place.
Guidance on Baselines, Permanence, Leakage & Additionality in REDD

• Indicative Guidance in the Annex of Decision 2/CP.13 arising from the REDD demonstration activities points towards a national approach:

(i) **Baseline**: Reductions in emissions or increases resulting from the demonstration activity should be based on **historical emissions**, taking into account **national circumstances**

(ii) **Baseline**: Sub-national approaches (**activities within national boundary**), where applied, **should constitute a step towards the development of national approaches, reference levels and estimates**

Guidance on Baselines, Permanence, Leakage & Additionality in REDD contd.

(ii) **Leakage**: **emission reductions** from **national demonstration activities** should be assessed on the **basis of national emissions** from deforestation and forest degradation.

(ii) **Leakage**: Sub-national demonstration activities should be assessed **within the boundary used for the demonstration**, and **assessed for associated displacement of emissions**
Key Factors Causing Deforestation & Degradation

- Expansion of Plantation Agriculture e.g. Oil Palm, Rubber, cane sugar, etc
- Land clearing for Agriculture e.g. SAB
- Illegal logging
- Repeated exposure to Forest Fires
- Unsustainable forest management by concessionaires
- Settlements, communication lines e.g. roads, power lines etc

FOREST TRANSITION

1. Triggers (road, logging)
2. Reinforcing loops (local demand, infrastructure, population dynamics)
3. Stabilizing loops (off-farm jobs, increased land productivity, forest scarcity)
4. Reversal Loops: sub-urbanization, environmental activism, forest industry, CDM

Adapted from: Kaimowitz and Angelsen (1997)
EMISSION REDUCTION IN REDD

![Graph showing forest cover transition over time]

Adapted from: Kaimowitz and Angelsen (1997)

Forest transition: Indonesia – Region specific baselines

![Graph showing forest cover transition over time for Indonesia]

Adapted from R. Boer, 2009
PERMANENCE in CDM

- **Permanence** generally addresses the extent to which forests can permanently store carbon.
- Under CDM the issue is currently resolved via the use of temporary (t-CERs) and long-term (l-CERs) for crediting instead of permanent CERs
  - t-CER and l-CER must be replaced at the end of their certified period.
  - Makes land-use based carbon credits comparatively LESS attractive
  - Joint Implementation (JI) and many voluntary instruments do not use this concept but addresses permanence through insurance, or requirements to set aside a buffer amount of permanent credits
Temporary certified emission reduction (tCER)

- defined in 5/CMP.1, Annex, paragraph 1(g):

"Temporary CER" or "tCER" is a CER issued to project participants in an afforestation or reforestation project activity under the CDM which, subject to the provisions of section K, expires at the end of the commitment period following the one in which they are issued.

- When retired tCERs expire, they must be replaced by other Kyoto units such as AAU, CER, ERU or RMU.

Long-term certified emission reduction (ICER)

- ICER is defined in 5/CMP.1, Annex, para. 1(h):

“Long-term CER" or "ICER" is a CER issued for an afforestation or reforestation project activity under the CDM which, subject to the provisions in section K, expires at the end of the crediting period of the afforestation or reforestation project activity under the CDM for which it was issued.”

- When retired ICERs expire, they must be replaced by other Kyoto units such as AAU, CER, ERU or RMU.

- Unlike tCERs, expired ICERs cannot be replaced by other ICERs.
ICERs vs tCERs

- ICERs therefore differ from temporary certified emission reductions (tCERs) in that ICERs expire at the end of the crediting period of the project, while tCERs expire at the end of the commitment period in which they were issued.

Non-Permanence in REDD

- Non-permanence involves the risk that emission removals by sinks are reversed, because forests are cut down or destroyed by natural disaster.
- The modalities and procedures on REDD will specify the extent to which non-permanence is handled – subject to negotiations.
Non-Permanence IMPLICATIONS on REDD

- Extent to which Commitments can be met via REDD (Under CDM 5% of base yr emissions)
- Transferability across commitment periods as in ICERs
- Use of Buffer Accounts as in JI
- Other mechanisms e.g.
  - discounting by a factor corresponding to general reversal rate e.g. 70% of ICERs become CERs
  - Insurance schemes
  - Market to set a discount factor dependent in party' reliability and confidence building measures
  - etc

LEAKAGE

- Under CDM Leakage is defined as “the increase in GHG emissions by sources which occurs outside the boundary of an A/R CDM project activity which is measurable and attributable to the A/R CDM project activity (5/CMP.1, Annex, paragraph 1(e)).
- An afforestation or reforestation project activity under the CDM shall be designed in such a manner as to minimize leakage (5/CMP.1, Annex, paragraph 24).
LEAKAGE IN REDD

- Leakage in REDD could be defined as the increase in GHG emissions by sources which occurs outside the boundary of a REDD project/program area which is measurable and attributable to the REDD activity
- A REDD project/program activity shall be designed in such a manner as to minimize leakage

Accounting for Leakage

- Amount and estimation of leakage depends on the intervention to reduce deforestation and degradation
- Effort to explore possible migration of deforestation activity elsewhere
  - In the case of deforestation as land clearance outside the project boundary due to activity shifting, effects on all carbon pools shall be considered (EB 22, Annex 15, paragraph 3).
- Assess the leakage emissions and deduct them from the REDD emission reductions
- Attribution of Market leakage
Baseline, Permanence and Leakage

• National Baselines seem to be the most desirable in order to capture leakage and allow use of effective national policies
• Permanence and Leakage can be managed through using schemes like buffers, discounting, insurance, tCERs and ICERS, etc
• Market leakage not accounted under the current modalities and procedures of emission reductions.

THANK YOU

ASANTE
MERCI
GRACIAS
XIN CHAO