ASB Partnership for the Tropical Forest Margins

Policybriefs

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Reducing Emissions from All Land Uses: The case for a whole landscape approach

Photo: M. van Noordwijk/ICRAF

A whole-landscape approach to reducing emissions and managing carbon stocks can help address the drivers of deforestation, reduce problems like leakage, and eliminate the need for precise forest definitions.

Key Findings

1. Compared to schemes currently under discussion for forest-based emissions mitigation, Reducing Emissions from All Land Uses (REALU), using the full accounting scheme for Agriculture, Forestry and Land Use (AFOLU), will be more:

- Effective, in bringing major 'leakage' concerns into the accounting rules and allowing increased land use intensity outside forests as a contributor to net emission reduction.
- Efficient, by providing many cost-effective options for emission reduction, including tropical peatlands and smallholder agroforestry.
- Equitable, by applying the same accounting rules for Annex-I and non-Annex-I countries, and embracing low-forest-cover countries on a proportionate basis and rewarding the rural poor.

2. The absence of a globally agreed definition of 'Forest' will impede implementation of REDD or REDD+ schemes.

3. Trees outside forest, woody vegetation outside of institutionally defined 'forest' and peatlands contain large carbon stocks that are excluded from current mitigation discussions.

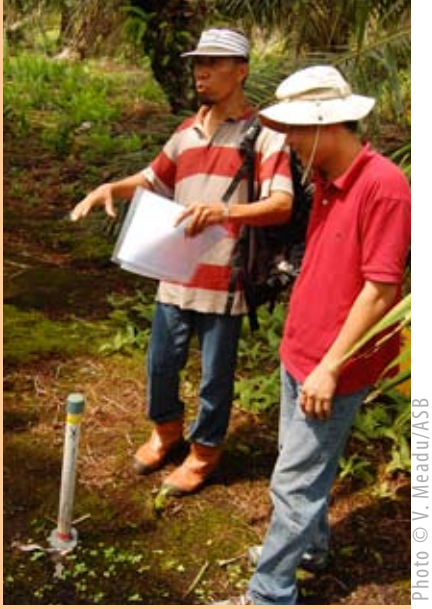
The way forward

- **Emission Reductions through High C-stock land Use.** Promoting high carbon stock land uses and reducing emissions from all land uses in a comprehensive manner remains the best way to achieve global climate goals, especially enabling low carbon emission development pathways and sustainable development in developing countries.
- **AFOLU accounting.** Whole landscape approaches and accounting (AFOLU) is needed as a way of minimising leakage and definition / eligibility questions that may hamper the implementation of REDD+, CDM and other mitigation options as currently framed under the UNFCCC .

Current efforts to obtain commitment and create incentives for Reducing Emissions from Deforestation and forest Degradation in developing countries (REDD) require clarity on what types of forests are targeted and how they relate to 'non-forest' land uses.

Different forest types and conditions represent varying degrees of emissions and options for sequestration. The absence of a commonly-agreed forest definition, inadequate appreciation of drivers of deforestation and degradation from outside the forest sector, potential leakage and shifts in emissions to non-forest land pose real threats to the success of any emission reduction scheme. However, the Intergovernmental Panel on Climate Change's accounting rules for Agriculture, Forestry and Other Land Use (AFOLU) provide a simple alternative: include all land use proportionate to actual emissions and emission potential.

The ASB Partnership for Tropical Forest Margins has compiled sufficient evidence that shows how developing countries can adopt strategies for high-carbon storing land-uses in order to reduce global emissions and benefit local people.



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Peatlands contribute to 3-5% of global emissions but are not covered under most REDD framings

1. REDD+ compared to a landscape approach through AFOLU

Since the 2005 UNFCCC Conference of Parties in Montreal, discussions on the scope of REDD have evolved to include various options, namely RED, REDD, REDD + and REDD++. Here is a summary of what each implies:

RED: Reducing emissions from (gross) deforestation; only changes from 'forest' to 'non-forest' land cover types are included, and details depend very much on the operational definition of 'forest'

REDD: RED and (forest) degradation, or the shifts to lower carbon stock densities within the forest; details depend very much on the operational definition of 'forest'.

REDD+: REDD and restocking within and towards 'forest' (as specified in the Bali Action Plan); in some versions REDD+ will also include peatlands, regardless of their forest status; details still depend on the operational definition of 'forest'.

REDD++ = REALU: We propose a definition that includes REDD+ and all transitions in land cover that affect carbon storage, whether peatland or mineral soil, trees-outside-forest, agroforests, plantations or natural forest. It does not depend on the operational definition of 'forest'.

Land use is a significant (20-30%) contributor of global emissions. REDD as just a partial accounting of land use is challenged by cross-scale issues such as additionality, leakage, and permanence. The drivers of deforestation that are largely outside the forest sector. **Box 1** illustrates the implications of the varied scope of REDD on effectiveness in emissions reductions in Indonesia.

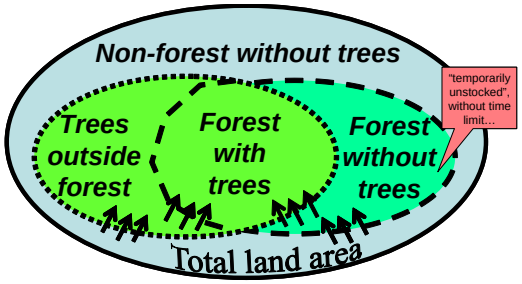

Figure 1 - When does a tree become a forest? Trees exist both inside and outside of the forest definition.

2. Forest definition and scope of REDD+

What is included or not included in REDD+ as currently framed is still subject to much debate. One main reason for this is the lack of a globally agreed definition of forest (1, 2). Tropical forests have high natural diversity, but are also subject to a wide range of human intervention. In practice the same word can have many different meanings (**Figure 1**). The term 'forest' refers to woody vegetation, but it is also linked to specific institutions empowered to manage forests. For example, the FAO statistics on forest cover suffer from ambiguity in definitions and the way these are used. In many countries, custodians of woody vegetation outside institutional forests tend to have an ambivalent relationship with forest authorities.

In the context of the Kyoto Protocol of the UNFCCC an attempt was made to provide an operational definition to distinguish between 'forest' and 'non-forest' land use. This definition contributed to the failure of A/R-CDM (Afforestation/

Box 1: Case study for Indonesia

Applying a range of RED(D)(++) rules to actual land use change data for three provinces of Indonesia yields results that depend on both the rule-set and the definitions; some combinations will 'see' only 20% of the total net emissions, for other combinations the (gross) emission counts exceed the net emissions of a whole-landscape C accounting (REALU).

Emission estimates for three provinces of Indonesia with different RED(D)(++) rules and different forest definitions; (ton CO2-eq/(ha y))

Lampung	RED (gross emissions, only from forest to non-forest)	REDD (gross emissions, from forest to lower C-stock forest or non-forest)	REDD+ (net emissions, from forest to any land cover)	REALU (net emissions, all changes
Forest definition A	2.55	3.14	3.14	3.08
Forest definition B	3.14	3.14	3.14	
Forest definition C	0.65	3.47	3.15	
Jambi				
Forest definition A	1.60	4.95	4.95	6.58
Forest definition B	4.95	4.95	4.95	
Forest definition C	6.17	6.57	6.56	
E. Kalimantan				
Forest definition A	7.71	11.83	11.83	11.79
Forest definition B	6.67	11.83	11.83	
Forest definition C	6.78	11.96	11.96	

Forest definitions: A. Only undisturbed forest; B. Natural forest (undisturbed and logged-over forests); C. Natural forest and agroforest (mixed tree-based systems)

Reforestation rules in the Clean Development Mechanism) (3). The REDD discussion has so far failed to address this issue. Its scope will depend on the way a 'forest' is interpreted (2). **Box 2** illustrates the implications of current forest definitions in Tanzania.

3. Trees outside the forest and peat

Trees on agricultural landscapes represent a globally important carbon stock. Forty-six percent of agricultural land globally has at least 10% tree cover (see figure 2). In Southeast Asia and Central America, 50% has at least 30% tree cover (4).

The carbon stocks in peatlands are equivalent to 70 years of current global CO_2 emissions. The current REDD+ scope does not include peatlands that constitute already lost forest cover but keep emitting CO_2. This is 3-5% of global CO_2 emissions. Ignoring this issue will undermine the success of global mechanisms for emission control.

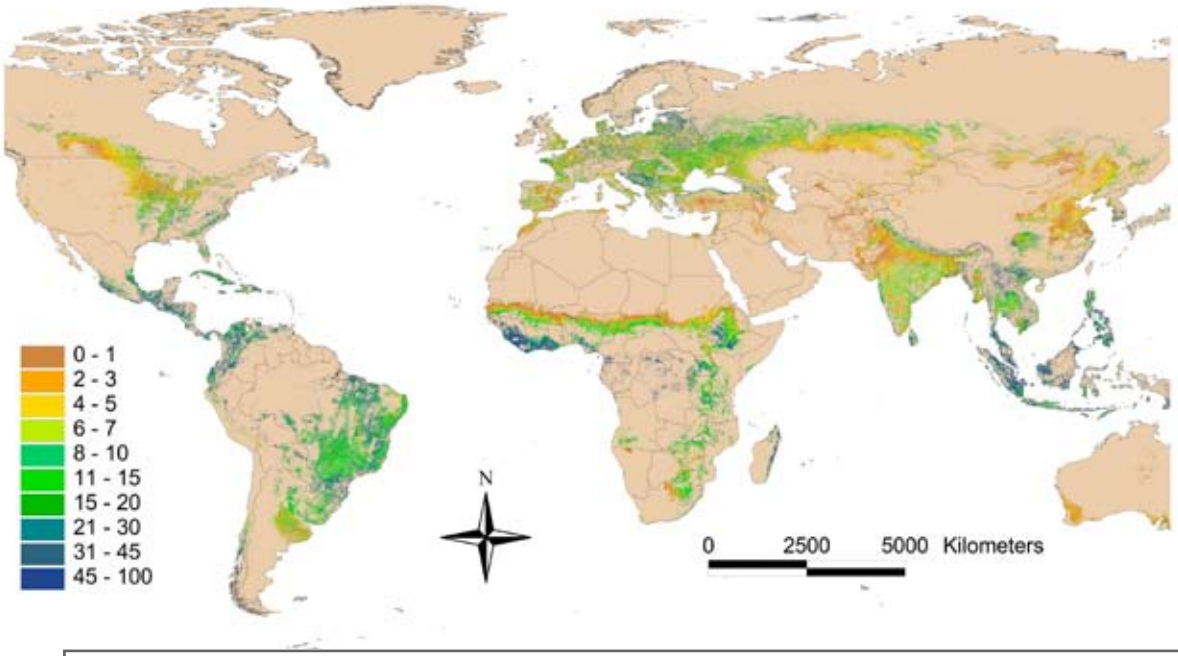

Figure 2 - Tree canopy cover on agricultural land is mapped out at the global level. Forty-six percent of agricultural land globally has at least 10% tree cover. Source: Zomer et. al 2009.

Box 2: Forest definitional issues and REDD: The case of the East Usambara Mountains, Tanzania

A case study on carbon stocks in the Usambara Mountains of Tanzania illustrates the implications of using uniform forest definitions for an assessment of actual changes in carbon stock resulting from REDD activities. The Tanzanian Forest Act (2002) includes a definition of forest, which has been adopted in the National REDD Framework : "Forest" means an area of land with at least 10% tree crown cover, naturally grown or planted, and/or 50% or more shrub and tree regeneration cover, and includes all forest reserves of whatever kind declared or gazetted under this Act and all plantations".

The East Usambara Mountains contain some of the most biodiverse and endemically rich forests on Earth. Native upland forest trees reach over 50m height, with up to 400 tons of living carbon per hectare. Most carbon in a tropical rainforest is held within a few very large trees. In the East Usambaras, the largest 10% of trees hold 96% of the biomass. The traditional spice agroforests in the East Usambaras, where cardamom is cultivated under partially cleared native rainforest canopy, contain between 100 and 200 tC/ha.

A study on land use change and effects on carbon stocks between 1992 and 2006 demonstrates that the forest definition adopted in the Tanzanian National REDD framework would not capture significant levels of deforestation in the East Usambaras. The authors estimated that by definition, the area would still be classified as forest if up to approximately 88% of trees were removed, resulting in a loss of carbon per ha of up to 87%. It would also mean that 8.8 million tons of carbon could be removed from the forests in the same period and 32.6 million tons of CO_2 emitted – while, by definition, no deforestation would have taken place in the East Usambaras.

Remote sensing data showed approximately 7500 ha of forests have been cleared or burned within forest reserves, in addition to significant deforestation outside the reserve boundaries. Since forest reserves remain under the management of the national forest authority and have the potential to regenerate, deforestation occurring within the reserves would not be counted as deforestation under the current definitions, but rather as 'temporarily unstocked' forests. However, it is unlikely that the cleared areas would regenerate due to continued grazing and burning activities inside the reserves. This shows how using legal status of an area for assessments of deforestation can prove problematic when law enforcement is weak.

Based on research by Jaclyn Hall, University of Florida and Salla Rantala, World Agroforestry Centre

The way forward

Emission reduction through high carbon-stock land use

Promoting high carbon stock land uses and reducing emissions from all land uses provide the best option to achieve global climate goals, especially enabling low carbon development pathways in developing countries.

Emission reduction outside of Annex-I countries needs to be based on:

- National sovereignty within differentiated global responsibility.
- Respect of rights of indigenous people and rules for free and prior informed consent.
- Integrity of global accounting systems. The goal is adaptive tainable livelihoods and climate resilience.

To achieve these objectives, four 'pillars' that support a whole-landscape agenda must be considered. Reducing forest-based emissions (REDD), Reducing emissions from peat (REPeat), restocking land through trees and soil carbon (REStock) and Reducing emissions from agricultural greenhouse gasses (N_2O and CH_4). **Figure 3** presents these four pillars in light of the principles and objectives mentioned above. The accounting guidelines exist (AFOLU). What we now need is a global commitment to move forward, comprehensively, across this agenda for reducing emissions from all land use.

Photo © V. Meadu/ASB

AFOLU accounting

Current UNFCCC discussions are touching on REDD, reducing emissions from peatlands, enhancement of carbon stocks, and reducing emissions from agriculture to a considerable degree. Besides REDD+:

- CDM is being discussed under the AWG KP
- A work programme for Agriculture is being discussed under sectoral approaches
- Discussions on Nationally Appropriate Mitigation Actions - NAMAs - remain open to multiple options and sectors.

AFOLU accounting might provide the best option for minimising leakage and definition / eligibility questions that may hamper the implementation of REDD+, CDM and other mitigation options as currently framed under the UNFCCC. The challenge would be to agree to an AFOLU accounting framework that involves all land uses.

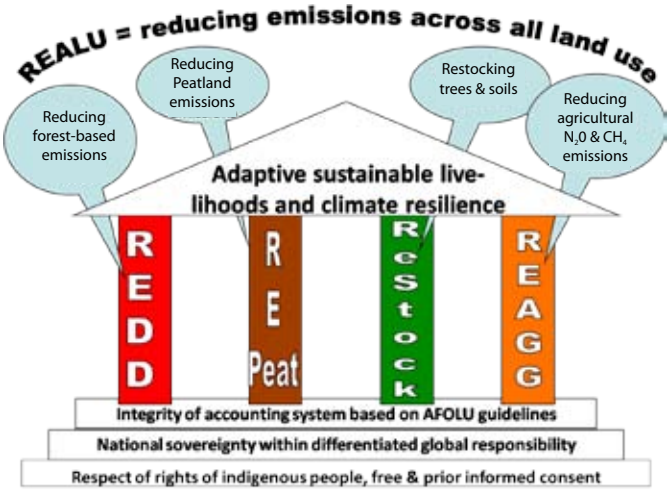

Figure 3 - The four pillars that support a whole-landscape agenda for carbon management

References and further reading

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Correct citation:

van Noordwijk M, Minang PA, Dewi S, Hall J, Rantala S. 2009. Reducing Emissions from All Land Uses (REALU): The Case for a whole landscape approach. *ASB PolicyBrief 13*. ASB Partnership for the Tropical Forest Margins, Nairobi, Kenya.

The ASB Partnership for the Tropical Forest Margins is working to raise productivity and income of rural households in the humid tropics without increasing deforestation or undermining essential environmental services. ASB is a consortium of over 90 international and national-level partners with an ecoregional focus on the forest-agriculture margins in the humid tropics, with benchmark sites in the western Amazon basin of Brazil and Peru, the Congo Basin forest in Cameroon, southern Philippines, northern Thailand, and the island of Sumatra in Indonesia.

The ASB Policybriefs series aims to deliver relevant, concise reading to key people whose decisions will make a difference to poverty reduction and environmental protection in the humid tropics.

This work was undertaken as part of the project Reducing Emissions from All Land Uses (REALU) with generous funding by NORAD, the Norwegian Development Agency. The views expressed in this brief are not those of the funder.

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