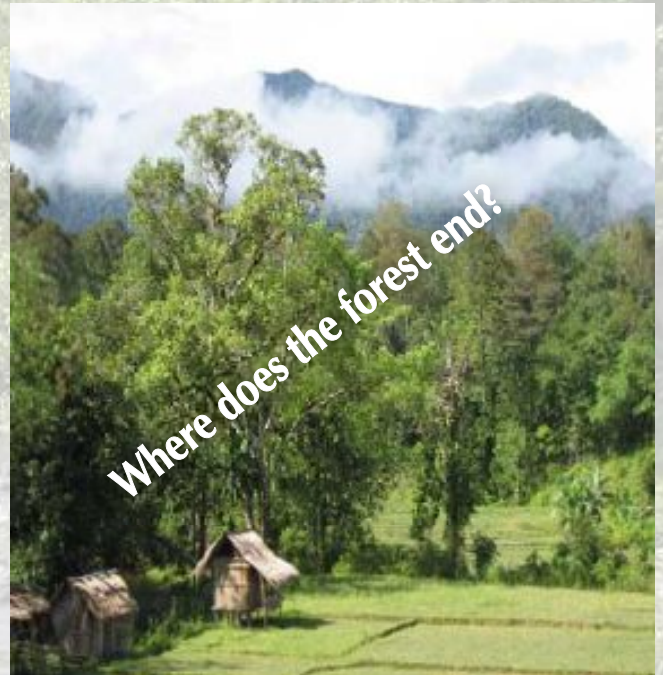


Avoided **Deforestation** with Sustainable Benefits (ADSB) in Indonesia

2

Deforestation: will agroforests fall through the cracks?

Old-growth forestlandscapes are rich in biodiversity and may store about 350-400 t C / ha, with much of the carbon in the biggest, oldest trees. When such forests are clear-felled the aboveground carbon stock goes back to zero either directly due to fire or slowly due to decomposition of dead wood. Young vegetation, either crops or tree plantations may have relatively high growth rates, but even at a high carbon accumulation rate of 5 t C / (ha/year) it takes a long time to restore the losses. Selective logging, targeting the large trees, can substantially reduce the carbon stock of the forests, partly due to damage to trees not cut. Within the 'logged-over' forest the carbon stock can be as low as 100 t C/ha or still as high as 250 t C/ha. Subsequent logging can continue to reduce carbon stocks and/or open up the forest to the more rapid spread of fire, which tends to kill the smaller trees and destroy many of the larger trees as well. Some vegetation that has only 50 t C/ha still meets the technical definition of forest based on the crown cover of trees. On the other hand, vegetation with farmer-grown trees and spontaneous tree establishment in between ('complex agroforest') may store more than 70 t C/ha yet such vegetation is not always formally considered to be a 'forest'.



What should be included in REDD?

Foresters have defended that clear-felling before replanting is a good practice for timber production and should therefore qualify as 'forest'. These institutional traditions impact the application of rules to an issue such as carbon emissions, and make it difficult to account for all emissions and net sequestration, regardless of the 'labelling' of the vegetation type.

- Will all tree-based vegetation be included in the new REDD accounting rules?
- Will the 'belowground forest' of the peatlands, that may store ten times as much as the best forest be included?
- How can reliable data be obtained that makes payments feasible and contracts deliverable?
- Do we know enough about the basics?

Key points of this brief

- 'Forests' have strong institutional support, but **non-forests may contain more trees**, providing both income and environmental services.
- The existing mechanisms of A/R CDM + REDD will cover less than 50% of the land-use based emissions from Indonesia, the country with the largest land use based greenhouse gas emissions.
- The full adoption of the IPCC's (Intergovernmental Panel on Climate Change) reporting guidelines for Agriculture Forestry and Other Land Uses (AFOLU) as the basis for accountability will ensure that no land uses fall through the cracks and that there is **carbon stock accountability** during **transitions to sustainability**.

1. Forests or trees

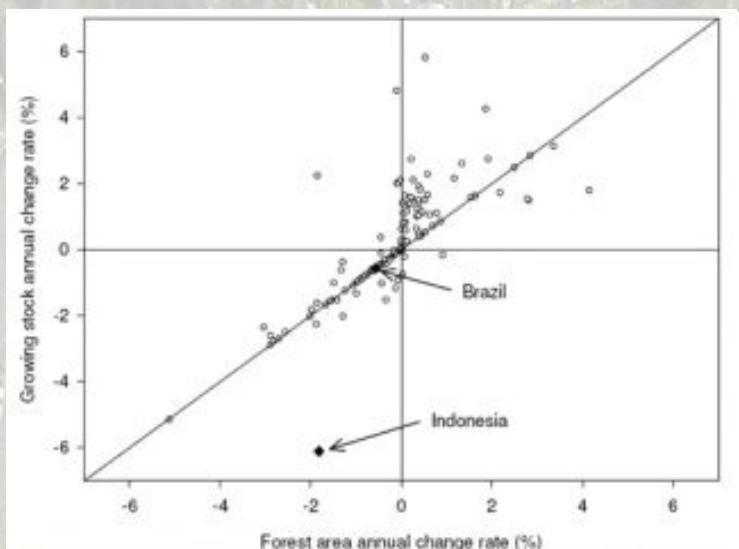


Figure 1. FAO's Global comparison of 'loss of forest area' versus 'loss of growing stock' suggests that Indonesia has a very high rate of 'degradation' and a high rate of 'deforestation'

A number of agroforestry systems store more carbon than most of the 'fast growing tree plantations', when assessed at the time-averaged C stock level. Yet trees grown in agroforestry will be excluded **by definition** from the discussions on REDD if the FAO definition of forests is used as a basis for 'eligibility'. Yet, "...areas normally forming part of the forest area which are temporarily unstocked as a result of human intervention such as harvesting or natural causes but which are expected to revert to forest." are included in the forest definition. This 'forest without trees' category is found in large parts of Indonesia, while many of the 'trees outside of the forests' are ignored.

These issues are further complicated by definitions of 'forest'. "Forests" without trees as well as "non-forest" lands with full canopy cover of trees can occur side-by-side. For REDD to work, payment systems must be able to transcend these differences to address all changes in carbon stocks. Local government entities (e.g. at Kabupaten (district) scale), may be the most appropriate for assessing net changes in terrestrial carbon stocks, regardless of the institutional control over the lands and vegetation. Current 'decentralization' laws specify the primary responsibility for maintenance of 'protective' land cover through forests at the district level, while timber exploitation rights are decided nationally. These different domains of decision-making would need to be reconciled.

Land use change and C stock (ASB Jambi 1995)

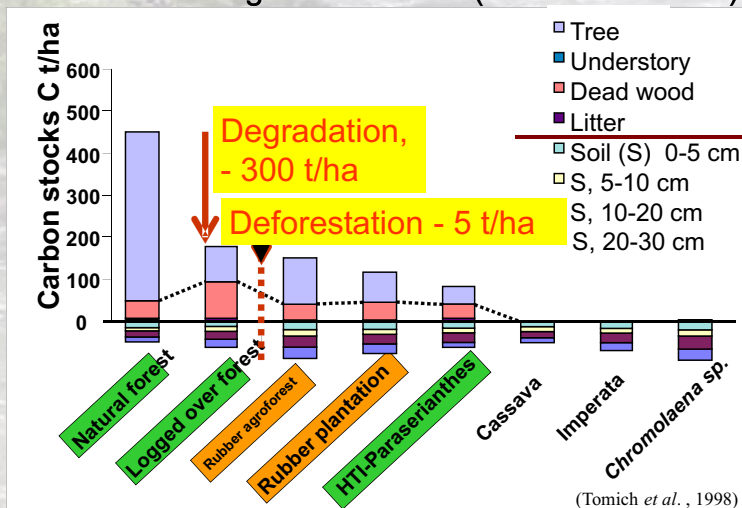


Figure 2. Comparison of above and belowground carbon stocks in a range of land use systems in Jambi

2. The gap between A/R-CDM and REDD

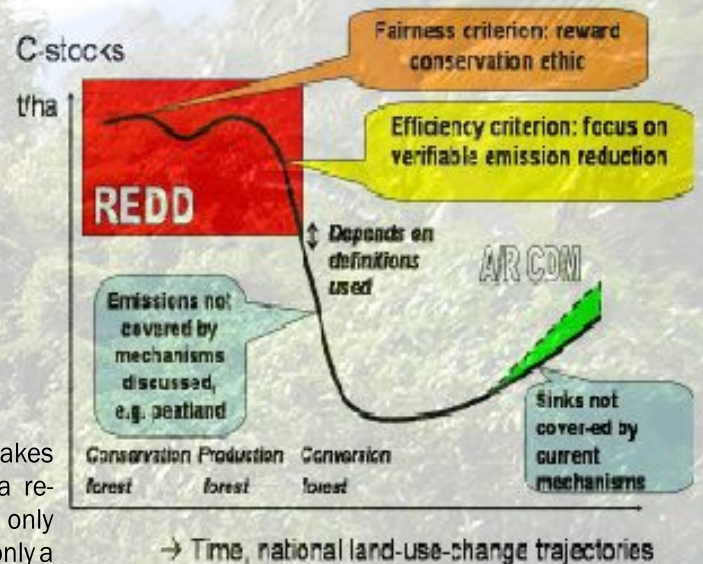
The current discussions on REDD focus on a subset of the total Land Use, Land Use Change and Forestry (LULUCF) or AFOLU emissions. It will likely focus on 'gross deforestation', i.e. on areas of forest that drop out of the 'forest' category (with a country specific definition, bounded by international rules), plus degradation of C stocks within the forest domain. In terms of the scope of the current discussions it is important to specify which parts of the LULUCF (AFOLU) emissions outside of Annex-I countries will not be covered:

- Emissions from lands that dropped out of the 'forest category' before reference year X or that never qualified as forest (as some of the peatlands do, despite their significant carbon stocks)
- Sequestration on lands that re-enter the forest category, even if they have been only marginally below the forest threshold.
- C sequestration through reforestation of lands deforested after 1990, and thus not eligible for A/R CDM.

The Afforestation/Reforestation Clean Development Mechanism (A/R-CDM) has not found widespread application, with only one project approved globally by mid 2007, despite considerable effort to develop proposals. The main challenges, according to a recent analysis are in: 1) the definition of forest and its institutional implications: 2) the projectization that is embedded in the definition of CDM: 3) non-linear baselines related to forest transitions that complicate attribution: 4) inherent lack of synergy with other development activities: and 5) high transaction costs and the temporary nature of credits.

Figure 3. On the 'transitions' that land historically makes from forest through a 'degraded lands' phase to a re-utilization, REDD as currently discussed will cover only part of the 'degradation', while A/R-CDM provides for only a tiny fraction of the 'restocking'

Conceptual framework: agriculture and forest transitions of tropical landscapes



3. Whole-system carbon accounting

Annex-I countries of the Kyoto Protocol report both losses and gains in their terrestrial carbon stocks, and are accountable for the net land-based emissions. This does not depend on definitions of 'forest' as all land use categories, regardless of name or institutional alignment, are included. The IPCC AFOLU guidelines apply (although its updates are not automatically reflected in Kyoto Protocol rules).

Table 1. Example of net versus gross land-use-based emissions for three provinces of Indonesia, expressed as average for the whole land area for 2000-2005

Net emissions = emissions minus sequestration t CO ₂ e/(ha year)	East Kalimantan	Jambi (excl. peat)	Jambi (incl. peat)	Lampung
Mean emission from total area	13.8	7.3	31.2	3.6
Mean sequestration from total area	0.349	0.683	0.683	0.564
Net mean emission from total area	13.5	6.6	30.6	3.1

Source: ASB-Indonesia, 2007

Currently, areas of high forest cover coincide with areas of low human population density. Net emissions will increase considerably if the existing human population will become more homogeneously spread over the archipelago, as the statistical relationship is logarithmic. There are many districts with a forest cover >15% above what is expected for their population size, and many districts with more than 15% less forest than this reference line. Both need incentives in order to increase Indonesia's C stock.

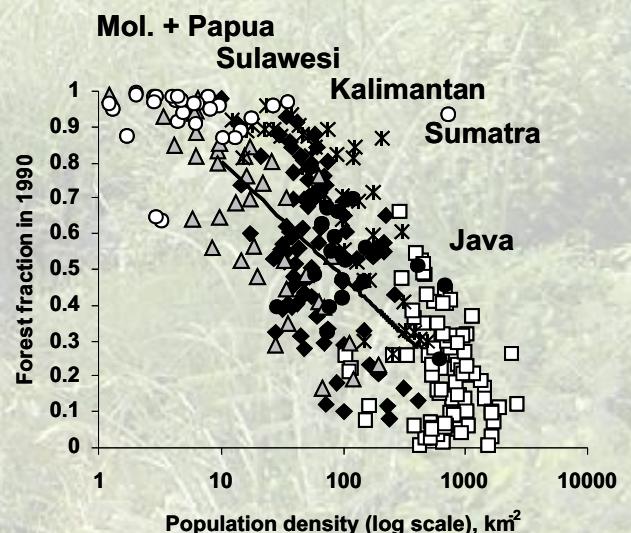


Figure 3. Indonesia's forest cover versus human population density

Bottom-line accounting can greatly increase efficiency and transparency, and help to avoid the 'micromanagement' that leads to high transaction costs. If these simple management rules are applied, it would be best for a country such as Indonesia to move towards the simple accounting rules for Annex-I countries and prepare for its status as a middle-income country that takes responsibility for its share of emissions into the atmosphere.

Issues surrounding international incentives for forms of 'avoided deforestation'

Issue	Why was no agreement reached five years ago on avoided deforestation?	Why do we think it can be resolved now in the form of REDD?
International relations -- See ADSB Research Brief Avoided		
Technical aspects		
3. Quantification and monitoring	There was substantial uncertainty over the quantitative aspects of emissions, while high quality monitoring had high costs	There has been progress in remote sensing techniques, both at the high quality and the public scrutiny level, although the tradeoff between quality and costs is still an issue
4. Baselines (Targets) for emission reduction	There is no objective choice between various ways to establish reference levels of emissions as basis for emission reduction; for Annex I countries an emission cap was negotiated per country; non-Annex I countries did not want to commit to a total emission level	With a shift from 'project' to 'national scale' accounting, the reference scenario will move towards 'shared responsibility' and negotiated targets (such as committed by Annex-I countries), without use of the word cap
5. Permanence	Avoided deforestation may only shift deforestation into the future, not shift towards a low emission future	Avoided emissions from deforestation are not essentially different from avoided emissions from fossil fuel use: neither is permanent, but they are equivalent
6. Leakage	The opportunities for shifting forest use (and associated loss of carbon stocks) to other areas, makes leakage a serious issue at project scale	National scale accounting, based on a summation over all areas within the country, can reduce the leakage issue to what is accepted between Annex I countries in the Kyoto protocol
7. Additionality	A complex network of causes has to be unravelled before the specific contributions of any activity or project can become the basis for incentives or rewards. Additionality is hard or near impossible to assess at project scale	A commitment to bottom-line accounting shifts the additionality issue largely to the establishment of reference scenarios for emissions at national scale; the way such targets can be met does not require international rules
Development benefits aspects -- See ADSB Research Brief Sustainable		
Relation to long term UNFCCC objectives -- See ADSB Research Brief Benefits		

This is the second of a series of four research briefs prepared in 2007 in the context of UNFCCC COP-13 (Bali) on:

Avoiding or reducing emissions at the tropical forest margins: urgent, cost-effective but not easy

Deforestation: will agroforests fall through the cracks?

Sustainable, efficient and fair: can REDD be all three?

Benefits, but not everybody will win

In Indonesia

Further information on the ASB Partnership for the Tropical Forest margins can be found at:

www.asb.cgiar.org ; see also www.worldagroforestrycentre.org and www.cifor.org

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How this document was prepared

This document combines analyses by ASB-Indonesia of land use change in three provinces of Indonesia with an 'issue paper' prepared for the Indonesia Forest Climate Alliance (IFCA) by ICRAF & CIFOR scientists.



Partnership for the Tropical Forest Margins



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