

## Building REDD: State, issues and options for SADC

### The terrain for REDD

Reducing emissions from deforestation and degradation in developing countries is an appealing idea. Carbon-emissions from the land use and forestry sector contribute one third of all greenhouse gas emissions of developing countries, and almost two thirds in the least developed among them. In SADC countries, biomass-carbon losses from deforestation alone account for 53% of all greenhouse gases. If developing countries are to participate in global emission abatement, then curbing emissions from deforestation and forest degradation makes a good beginning, not constraining but promoting future development. Beyond its direct GHG-emissions, deforestation reduces the terrestrial carbon sink which currently removes almost 3 Gt C annually from the atmosphere. Tropical forests furnish an unknown, but probably substantial fraction of this terrestrial sink<sup>1</sup>. Loss of forests also reduces the bio-geophysical cooling effect of tropical forests. In this sense, deforestation harms the climate more than fossil fuel emissions. Conserving tropical forests must be a global priority, even without considering ancillary effects on biodiversity and rural livelihoods.

Parties and observer organizations to the UNFCCC have by now (April 2009) advanced at least 44 submissions on various aspects of REDD. Yet, its features remain amorphous. Proceedings tend to concentrate on future rules, modalities and the pure mechanism of REDD. In doing so, they risk slighting work and lessons from decades of mostly fruitless attempts to combat deforestation<sup>2</sup>. Even with the powerful new leverage from climate change, awareness of past experiences and carefully crafted policies and measures (PAM) within the forest- and adjoining sectors will be necessary to overcome the recalcitrant problem of forest destruction. Countries will eventually have to devise specific PAMs for their national circumstances outside of international negotiations. However, provisions for these PAM's and a healthy respect for a virtual Pandora's Box of proximate and underlying causes of deforestation must be woven into the fabric of an eventual REDD mechanism.

Only two sessions of the SBSTA remain, before COP 15 in Copenhagen will decide the future structure and context for REDD. SADC countries have participated in negotiations and side events at past UNFCCC meetings before, and might make their voice heard again in the months to come.

### What drives deforestation and how can it be reduced?

A recent meta-analysis of the literature “What drives tropical deforestation”<sup>3</sup> analyzes 152 original studies. Even more up-to-date, “Tropical forests: Regional Paths of Destruction and Regeneration in the Late Twentieth Century”<sup>4</sup> employs 270 regional studies, from a total of 600 case studies of tropical deforestation and more than 400 studies applicable throughout the globe. Twenty-four of the studies apply to SADC. Starting from scratch is unnecessary.

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<sup>1</sup> Estimates range from 0.5-1.3 t C yr<sup>-1</sup> ha<sup>-1</sup>

<sup>2</sup> For example, documents for the negotiations do not contain even a reference to Agenda 21, Chapter 11: Combating deforestation, a previous concept crafted at UNCED 1992

<sup>3</sup> Geist, H.J. and E.F. Lambin. 2001. What drives tropical deforestation? University of Louvain.Louvain-la-Neuve.116 pp.

<sup>4</sup> Rudel, T.K.2005. Columbia Press. 231pp.

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Proximate causes fall into the broad categories of agricultural expansion, wood extraction and infrastructure extension, each combining activities ( e.g. shifting cultivation, fuel wood extraction) under several circumstances ( e.g. traditional or colonist shifting cultivation, domestic or industrial fuel-wood use) for a total of 42 proximate activities. Underlying causes comprise economic, policy and institutional, technological, cultural, and demographic factors for a total of 57 specific causes. Twenty additional pre-disposing factors and triggers (e.g. Wars, physiography, drought) modify the effects of proximate and underlying causes. Deforestation in specific regions results from a distinct array of proximate and underlying causes and synergies. Single factor causation is rare. For success, PAM will need to tackle all root causes.

For SADC countries, smallholder agriculture, excessive extraction of fuel wood, population growth that will eventually degrade the resource base and insecure land tenure contribute to resource depletion and forest decline in peripheral places that have access to urban markets. Without such market access, these factors and scarcity of capital and employment create “resource-degrading poverty traps” that drive forest decline. Lower government’s receipts from the mining industry, austerity plans of the IMF, wars, civil unrest and collective violence accelerate degradation of forests.

An arsenal of remedies against deforestation and forest degradation needs to be applied in a mix of policies for a specific area. Among them are transportation improvements, community forestry, farm forestry, agroforestry, environmental service payments, forest certification, parks and other protected areas, easements, and integrated conservation and development projects. Where countries have already traversed the phase of forest depletion on the typical forest transition path, planned acceleration towards the phase of net forest area increases is also an option. For SADC conditions, farm-, community- and agro-forestry, alternate energy sources for rural populations, agricultural intensification, and integrated conservation and development projects using REDD and CDM funding appear as the most promising pathways to curb deforestation. From the perspective of SADC countries, any REDD design must foresee and facilitate such PAM. In the remaining forests of SADC, conservation and sustainable forest management must be enhanced.

### **The state of forest management in developing and SADC countries**

Forests are not excludable. Managing and developing them sustainably offers the only realistic pathway to curb and eventually eliminate deforestation and degradation. Stakeholder processes in all world regions<sup>5</sup> have elaborated a body of principles, criteria and indicators (C&I) for sustainable forest management (SFM). They cover all prerequisites for SFM at the country and forest management unit level. Thus, they may offer a roadmap for necessary capacity development for SFM. They also provide a framework for rating progress of countries during a preparatory phase, before carbon marketing becomes feasible (s. below).

National forest resource assessments rank high among the C&I. Without reliable information on national forests, PAM within and outside the forest sector have little chance of success. Unfortunately, current management of forests in most developing countries rests on rudimentary information. More than half of all countries base data on forest area, growing stock, biomass and carbon on mere expert estimates. Five of the 15 SADC countries, comprising one third of the forest area, belong to this group. Moreover, even this information is outdated; the area-weighted average year of the last forest inventory is 1989. Clearly,

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<sup>5</sup> For Africa, the “ ATO/ITTO principles, criteria and indicators for the sustainable management of African natural tropical forests”. [http://www.itto.int/policypapers\\_guidelines/](http://www.itto.int/policypapers_guidelines/)

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planning effective PAM to reduce deforestation and forest degradation, or implementing carbon accounting and marketing is infeasible.

In addition, even scientific yardsticks for measuring forest carbon are unreliable (Table 1). Research will be necessary before reliable forest carbon estimates become available for a REDD carbon compensatory mechanism.

**Table 1: Range of scientific estimates for forest biomass carbon (Mt C) by country from Gibbs et.al. 2007**

<i>Country</i>	<i>highest estimate</i>	<i>lowest estimate</i>	<i>mean</i>
Brazil	82,699	54,697	68,698
Indonesia	25,547	10,252	17,8995
DR Congo	20,416	5,472	12,944
Colombia	11,467	2,529	6,998
Peru	13,241	2,782	8,0115
Venezuela	9,202	2,326	5,764
<b>Zambia</b>	6,378	1,455	3,9165

Not surprisingly, the status of sustainable forest management in developing countries, in Africa and in SADC is rudimentary (Table 2). Creating the right conditions for success of REDD amounts to a Herculean task. Any framework for REDD must recognize and facilitate these necessary efforts. Up to now, negotiations have at least crafted the contours, building blocks and options of REDD architecture.

**Table 2: The state of forest management in ITTO countries**

	<i>All ITTO countries</i>	<i>Africa</i>	<i>DRC</i>
total forest area	100,0%	100,0%	100,0%
% permanent forest estate	29,4%	53,0%	37,7%
% under management plan	10,7%	5,6%	0,9%
% under sustainable forest management	3,0%	2,9%	0,2%
<b>% certified</b>	1,00%	0,70%	0,00%

## **Building blocks and options for REDD**

### **Scope**

REDD, originally including only deforestation, has evolved into “REDD+”, to include forest degradation, carbon stock attrition within standing forests<sup>6</sup>, as well as activities to conserve or enhance forest carbon stocks through afforestation, reforestation, forest rehabilitation and sustainable forest management. Countries where deforestation does not proceed at a large scale (Congo Basin countries, Guyana), or those that have already cleared most of their original forests (India) or where forest rehabilitation could restock millions of ha (Indonesia), will opt for REDD+.

<sup>6</sup> deplorably termed “forest degradation”, contravening established international definitions of this term

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Carbon stock losses in standing forests through legal or illegal logging can exceed losses from deforestation (example DRC). In addition, mature or re-growing tropical forests furnish an average carbon sink of 0.5-1.4 t C yr<sup>-1</sup> ha<sup>-1</sup>. Thus, even countries with high deforestation rates may benefit additionally from REDD+, when their remaining standing forests accumulate carbon in natural carbon stock enhancement. Afforestation and reforestation project under the current CDM might be sub summated under REDD+.

SADC countries that would benefit most by curbing deforestation are Angola, Tanzania, Zambia, and DRC. However, these countries could also benefit from REDD+ because of carbon stock enhancement in large forest areas. Madagascar’s forest area and deforestation rate are small, but its carbon density very high. It would advantageously slow deforestation. Swaziland, the Seychelles, Mauritius stand to gain little by reducing deforestation, but might benefit from REDD+ by enlarging forest area. South Africa has stabilized net forest area. Together with Botswana, Malawi, Mozambique and Namibia is would benefit modestly from REDD+ carbon stock enhancement. Overall, SADC countries should aim for REDD+.

National and/or sub-national approaches to REDD may become eligible. Also, Parties need to opt whether to include only forest biomass carbon, or also carbon in soil, litter, and deadwood. .

### **Reference levels**

For RED to be effective, emission reductions must be additional to business as usual at the sub-national, national and global scale. Historic emission levels can serve as a point of departure to set reference levels, but, given the typical forest transition curve, deforestation cannot be assumed to proceed linearly over time. Statistical models that predict future deforestation under BAU as a baseline involve considerable uncertainties in the independent variables used. Most likely, reference levels will be negotiated, starting with historical deforestation rates and adjustment factors applied. Country GDPs might influence such adjustment factors, for instance by allowing more generous baselines for the Least Developed Countries.

Establishing a baseline for carbon stock losses in standing forests is all but impossible. Instead, existing carbon stocks in standing forests might serve as reference level, any decrease debited, and any increase credited. In this context, it is important to remember, that industrial countries are entitled to credits created by the natural re-growth of their forests under Art. 3.4., but must bear debits up to certain limits, should carbon stocks decrease.

National and sub-national reference levels must sum to a global total that is distinctly smaller than BAU. If a global reference line is set too low, countries will not be paid the first portion of emission reductions.

### **Monitoring, Reporting and verification (MRV)**

Monitoring spatially explicit areas of deforestation or afforestation (gross loss or gain of forest area) by remote sensing does not present a problem with current satellite technology. However, reliably measuring carbon stock losses or gains in standing forests necessitates combined remote sensing and ground assessments. In either case, considerable research efforts will be needed to establish the necessary parameters for forest carbon monitoring, such as allometric biomass equations. An update of the IPCC guidelines for GHG monitoring and reporting for REDD will be necessary.

The greater difficulty and higher costs of monitoring carbon stock enhancement, sustainable forest management or carbon stock losses are poor arguments for limiting REDD to deforestation. Omitting carbon stock losses from standing forests could produce national leakage. Eliminating forest conservation,

or SFM and carbon stock enhancement under REDD could easily produce international leakage. More importantly, the cost argument ignores the fact, that combined remote-sensing and ground-based inventories are quintessential for the design of PAM within and outside of the forest sector, even if limiting deforestation were the only goal. Only such assessments deliver indicators and reliable data for the state of SFM, and the underlying and proximate causes of deforestation and carbon stock losses.

Regional approaches to forest monitoring, such as those proposed by the Congo Basin Countries or Argentina are more efficient than national approaches. Alternatively, a global institution to monitor and/or verify REDD is an option. In any case, capacity building, transfer of technology and know-how appear essential. Reaching the stage in REDD, where carbon trading becomes feasible will require time, capacity building, and lasting commitment to providing considerable funds.

### **A phased approach**

Given the current state of forest information, forest management, available capacities and know-how in essentially all developing countries, it is obvious that the carbon market cannot deliver funding for REDD immediately. Funds, such as those already in place in the form of the World Bank Forest Carbon Partnership Facility (FCPF) or the mechanism of UN-REDD are necessary to build capacity for later carbon market participation. A phased approach serves these aims. ( see <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/ENVIRONMENT/EXTCARBONFINANCE/0,,contentMDK:21631703~menuPK:5216269~pagePK:64168445~piPK:64168309~theSitePK:4125853,00.html> )

In Phase 1, countries would work on forest resource assessments, research, needs assessment, awareness building, stakeholder consultations, national consensus building, policy design, agricultural intensification, and pilot projects. Forest sector reforms would involve tenure reform, management planning, reduced impact logging, building forest reserves, wildfire prevention, and forest legal reform and strengthening law enforcement. Forest dependent people must be fully integrated into the process. National Forest Programmes, an established and funded process, might be used advantageously. ( <http://www.nfp-facility.org/home/en/> )

Phase 2 of REDD would continue fund financing, but funds would be firmly committed by Annex 1 Parties, but disbursed only if progress towards SFM and REDD readiness is measurable and verifiable. In this important aspect, and by prevalently ex-post funding, REDD differs from conventional grants. Disbursement could come by ways of a clearinghouse of decentralized REDD funding or via a global central fund. Payments would depend on measurable commitment and progress. Since SFM is at the heart of REDD, one could imagine using, inter alia, C&I to objectively measure progress and assess further needs. The NFP process and FRA 2005 employ a similar approach to rate progress. Alternatively, the instrument of forest certification might also help in assessing progress.

Phase 3 entails entry into the carbon finance market where emission saving are credited and sold to Annex I countries or the private sector. Generally, negotiators oppose making REDD credits fungible with national Assigned Amount Units. In this manner, credits from REDD or REDD<sup>+</sup> could not substitute for the necessary cuts in fossil fuel emissions in industrial countries.

Proposed reduction goals range from 10% to a full halt of deforestation. Most proposals suggest a 50 to 75% reduction. Anticipated time horizons for REDD span ten to thirty years.

### **Costs and sources of financing<sup>7</sup>**

Widely varying, the costs of REDD will consist of preparation costs for readiness (Phase 1), opportunity costs of deforestation (Phase 2), and REDD implementation costs (Phase 3).

From 15 to \$ 100 Mio will be needed for a single country to prepare in Phase 1. Phase 2 costs include the opportunity costs of reducing deforestation by various proportions. Estimates range from \$ 1 to over 100 Billion per year worldwide. For comparison, the costs for combating deforestation estimated in Agenda 21, Chapter 11 amount to annually \$ 34 Billion.

Finally, implementing REDD will cost about \$14 Bio annually in transaction costs. Major sources for funding include the World Bank Forest Carbon Partnership Facility (\$300 Mio.), the G-8 Forest Investment Program (\$1 billion), the FAO Forest Programme Facility (\$48 Mio per year), ITTO (16 Mio per year), Regional Development Banks (\$94 Mio per year), the GEF (109 Mio), UN-REDD (\$35 Mio), the Norwegian Climate and Forest Initiative (\$2.5 billion), the Australian International Forest Carbon Initiative ( AU\$ 200 Mio), Germany (€500 Mio per year after 2012, and an additional €500 Mio for the first commitment period for forest and biodiversity conservation, which might include REDD).

In general, financing REDD may eventually rely on market- based processes (e.g. carbon offsets), on market-linked processes (e.g. linked to an auction of emission permits for countries or private entities) or on funds. In practice, all different sources of funding may be needed and applied in consecutive phases of a staggered approach. Modalities of disbursement might be based on outputs, e.g. carbon savings, or inputs, e.g. progress towards SFM.

### **Stumbling stones**

The negotiations will have to settle many additional issues, among them provisions for the distribution of carbon benefits within countries, the handling of national and international leakage<sup>8</sup>, uncertainty tolerance for carbon estimates, risks to the permanence of achieved emission reductions and the assignment of liabilities for reversed carbon storage, the treatment of naturally caused versus anthropogenic emissions, and social and environmental impacts of REDD activities. Options for these issues exist (see references below).

### **Processes intersecting with REDD**

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<sup>7</sup> Derived by averaging estimates in reducing emissions from Deforestation and forest degradation (REDD): an options assessment report. Available online at [http:// www.REDD-OAR.org](http://www.REDD-OAR.org)

<sup>8</sup> Leakage refers to emissions that occur outside of monitored REDD boundaries. National leakage is likely, if REDD covers sub-national areas or distinct projects within a country. In these cases, demand for land, forest, products and services might shift to areas not affected by REDD. In international leakage, demand for land, products and services of forests is likely to surface in countries that do not participate in REDD. Excluding countries with stable forest areas by rejecting REDD<sup>+</sup> could enhance international leakage.

Established forest policy processes might support development of REDD. Among them are National Forestry Programmes, forest certification and the initiatives by the EU and others for forest law enforcement, governance and trade (FLEG(T)).

The National Forest Programme Facility, supported by 12 donor countries and the EU, provides funding and information for national stakeholder processes to generate and implement National Forest Programmes. It promotes consensus on how to address issues relevant to forests at the national level and to translate international commitments into national forest policy and planning. The facility, hosted by FAO, appears tailor-made for the initial phases of REDD, particularly since most SADC countries are NFP –Members<sup>9</sup>.

<http://www.nfp-facility.org/30766/en/>

Forest certification can help to further and certify SFM as a source for added value of forest products. Conceivably, it could rate progress towards SFM under REDD and eventually even certify saved or accumulated carbon.

<http://www.fsc.org/>

<http://www.pefc.org>

Forest Law Enforcement, Governance and Trade (FLEGT) represents the EU’s effort to join the fight against illegal logging. The EU’s initiative is flanked by similar processes in Africa (AFLEG), Europe and North Asia (ENAFLEG) and South East Asia. Since illegal logging is a proximate cause of deforestation, and since FLEGT voluntary partnership agreements between producer countries and the EU foresee institutional strengthening and capacity building, FLEGT intersects with features of REDD.

[http://ec.europa.eu/development/policies/9interventionareas/environment/forest/flegt\\_en.cfm](http://ec.europa.eu/development/policies/9interventionareas/environment/forest/flegt_en.cfm)

Agenda 21, Ch. 11 is a comprehensive, previous attempt to curb forest destruction, elaborated at the United Nations Conference on Environment and Development in Rio de Janeiro in June 1992. For each of the following programme areas, it establishes a basis for action, objectives, detailed activities, data and information, and means of implementation:

- Sustaining the multiple roles and functions of all types of forests and woodlands
- Enhancing the protection, sustainable management and conservation of all forests, and the greening of degraded areas through forest rehabilitation, afforestation, reforestation and other rehabilitative measures
- Promoting efficient utilization and assessment to recover the full valuation of the goods and services provided by forests, forest lands and woodlands
- Establishing and/or strengthening capacities for the planning, assessment and systematic observation of forests and related programmes, projects and activities

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<sup>9</sup> Exceptions are Botswana, Madagascar, the island countries, Swaziland and Zimbabwe

Chapter 11 of Agenda represents in many respects a blueprint for REDD, but, given its state of implementation, a stark reminder of the hurdles faced by REDD.

<http://www.un.org/esa/sustdev/documents/agenda21/english/agenda21chapter11.htm>

## More information

The following freely available sources offer quick entry and good overviews on REDD and eliminate the pain of scanning country proposals

- Option Assessment report on REDD prepared for the government of Norway  
[http:// www.REDD-OAR.org](http://www.REDD-OAR.org)
- Moving ahead with REDD.  
[http://www.cifor.cgiar.org/publications/pdf\\_files/Books/BAngelsen0801.pdf](http://www.cifor.cgiar.org/publications/pdf_files/Books/BAngelsen0801.pdf)
- The little REDD book  
[http://unfccc.int/files/methods\\_science/redd/application/pdf/the\\_little\\_redd\\_book\\_dec\\_08.pdf](http://unfccc.int/files/methods_science/redd/application/pdf/the_little_redd_book_dec_08.pdf)

## Books

Eliasch, J. 2008. Climate change. Financing global forests. Earthscan. 264 pp.

Rudel, T.K. 2005. Tropical forests. Regional paths of destruction and regeneration in the late 20<sup>th</sup> century. Columbia Press. 231 pp.

Geist, H.J. and E. Lambin.2001.What drives tropical deforestation? University of Louvain-la-Neuve.116 pp.