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Challenges and Prospects for REDD+ in Africa:

Desk Review Of REDD+ Implementation in Africa A GOFC-ACRENET synthesis

Authors: Cheikh Mbow, David Skole, Moussa Dieng, Christopher Justice, Dominick Kwesha, Landing Mane, Mohamed El Gamri, Vincent Von Vordzogbe, Hassan Virji

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Cover photo: Wood extraction in Patako Forest-South Senegal (Photo: C. Mbow, 2009).

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GLP Report No. 5

Preface GLP

The GLP-Report Series was initiated in order to provide a rapid and informal channel for Global Land Project related work, which is believed to have a broader interest in the land change science community. When the long term member of the Scientific Steering Committee of the Global Land Project, Dr. Cheikh Mbow, approached GLP with the request to publish the present report as part of the GLP Report series, we were of course happy to accept. Not only is the REDD+ instrument a topic with huge potential land-change implications, as it was discussed at the recent GLP-Open Science Meeting at Arizona State University. It will certainly deserve more attention in the years to come by land change researchers in order to fully understand the complex dynamics of societal interventions, local livelihoods and environmental outcomes in relation to the implementation of REDD+. Hence, the research is well suited to fit into the conceptual backbone of the Global Land Project, the coupled human-environmental system. The REDD+ initiative is global in scope but its implications will deserve to be investigated at local, regional as well. This report provides a regional perspective which we trust is of interest for GLP and the land-change science community as a whole.

Anette Reenberg,
Chair of GLP

Foreword START

In Africa, the livelihoods of more than two thirds of the population depend directly or indirectly on natural resources provided by forest and non-forest ecosystems. Global climate change negotiations have provided an additional dimension to the value of forest ecosystems in terms of their carbon stock and carbon sequestration potential which have both mitigation and adaptation relevance. The REDD+ initiative of the UNFCCC is rapidly becoming a key element of climate change mitigation options adopted in developing countries because of this dual contribution to mitigation and adaptation.

While acknowledging the potential benefits of REDD+, several experts have raised concerns about the challenges of implementation and about its potential impacts on the livelihoods of forest-dependent communities. There is particularly strong apprehension about the ability of smallholder farmers to contribute to decisions made about the future of their agro-forestry systems, the conditions of their engagement through a more effective enforcement of existing policy and the influence of legislation at local, national and international levels. More importantly, it must be recognized that the REDD+ is not only about forest resources but also about agricultural practices. In Africa where more than 60% of population is rural, depending mostly on agriculture for survival, food security becomes a critical consideration. Measures for climate change mitigation must therefore recognize the trade-offs between the interests of land occupiers (not necessarily owners), governments and large commercial players and seek a balance between efforts to avoid deforestation and ensuring adequate nutrition for poor dwellers.

In fact, poor farming practices (shifting cultivation, use of fire) are attributed to be a major cause of forest loss. In recent years, about 70 million hectares in middle and low-income African countries have been grabbed in unsustainable land deals by international investors resulting in widespread deforestation and loss of benefits for the poor. In addition, the growing demand for food, biofuels, minerals and timber is also driving large deforestation trends in the continent. The complexity in

addressing the multiple drivers of forest loss and the diverse interest groups with a range of stakeholders requires a more stringent examination of the potential for combining climate change mitigation, adaptation and development agendas.

With prior identification and assessment of the challenges, a combined policy such as REDD+ that can address both mitigation and adaptation goals could potentially be suitable for the African context. At the local level, such a policy could contribute to poverty alleviation and increased resilience of poor communities. At national and global level it could contribute to reduced emissions of GHGs. The link between these two climate change negotiation pathways may therefore be viewed from the perspective of a sustainable development agenda and fulfilling the Millennium Development goals. The current status of REDD+ in Africa highlighted in this report can contribute towards negotiations and planning for such co-benefits at the national, regional and global levels for example at the COP in Durban 2011 and the Rio+20 2012.

Dr. Hassan Virji

Director, START

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The START Programme

This work has been supported by the START International Inc in Washington DC. START promotes research driven capacity building to advance knowledge generation and sharing on global environmental change issues in Africa and the Asia-Pacific. START accomplishes this through activities that include research grants and fellowships, curricula development, advanced training institutes, multi-stakeholder dialogues, knowledge assessment and synthesis, and place-based strategic planning that build capacities of both individuals and institutions for advancing global change education and research. START's work advances science and strengthens interactions between communities of science, policy and practices in areas related to disaster risk reduction, land-use/land-cover change, biodiversity conservation, urban development, human health, water resources management, agriculture and food security and regional climate modeling and climate services. On an annual basis START engages over a 1000 scientists, policymakers and practitioners from developing countries in its research, training and communications/outreach programs.

The support provided by START to do this synthesis has enabled us to bring together the GOFC-GOLD and ACRENET regional Focal Points in Africa to collect relevant and up-to-date information on the implementation of REDD in Africa.

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Acronyms and abbreviations

AR	Afforestation/Reforestation
BAP	Bali Action Plan
BAU	Business as Usual
BDS	Benefit Distribution System
CCBA	Climate, Community and Biodiversity Alliance
CDM	Clean Development Mechanism
COPs	Conference of Parties
DRC	Democratic Republic of Congo
FAO	UN Organization for Food and Agriculture
FCPF	Forest and Carbon Partnership Facility
FIP	Forest Investment Programme
FPIC	Free, Prior and Informed Consent
GCF	Green Climate Fund
GHG	Greenhouse Gases
IFM	Improved Forest Management
IGES	Institute for Global Environmental Strategies
IPCC	Intergovernmental Panel on Climate Change
LULUCF	Land Use, Land-Use Change and Forestry
MRV	Monitoring, Reporting and Verification
NAMA	Nationally Appropriate Mitigation Actions
NICFI	Norway's International Climate and Forest Initiative
NFI	National Forest Inventory
NGO	Non-Governmental Organization
NORAD	Norwegian Agency for Development Cooperation
NTFP	Non-Timber Forest Products
PES	Payment for Environmental Services
REDD	Reducing Emissions from Deforestation and Forest Degradation
R-PP	Readiness Preparation Proposal
SCF	Strategic Climate Fund
SES	Social and Environmental Standards
SFM	Sustainable Forest Management
UNDP	United Nation Development Programme
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNEP	United Nation Environmental Programme
UNCBD	UN Convention for Biological Diversity
UNFCC	UN Framework Convention on Climate Change
UN-REDD	UN Programme on Reducing Emissions from Deforestation and forest Degradation

Executive Summary

Climate change negotiations have resulted in significant discourse on mitigation and adaptation with varying levels of international commitment towards these objectives. Although mitigation and adaptation are separately addressed within the UNFCCC negotiations it is important to recognize the strong cross-cutting linkages between the two. One of the several initiatives that address both mitigation and adaptation is REDD+ that seeks to reduce carbon emission by reducing deforestation and land degradation while simultaneously triggering poverty alleviation in vulnerable communities. Since the Bali Road Map, REDD has grown in its content and functionality with the launch of many parallel activities within the program. The drawback is that these activities are widely distributed within different programmes and modalities of implementation and there are several redundancies among them. With the ever-growing number of activities under implementation, it is often difficult to get a comprehensive understanding of the actors, the objectives and the means of execution. It is therefore necessary to undertake a review on ongoing REDD initiatives in order to avoid methodological inconsistencies, conflicting aims and policies unnecessary competition and duplication of efforts. This report seeks to highlight the specific challenges in the implementation of REDD in Africa where forest degradation is one of the biggest contributors to GHG emissions.

The approach used is a desk review like process that lists the current projects in Africa to build a data base of existing REDD initiatives and their status of implementation. Extensive literature review was undertaken on current state of forests in Africa, strategies for REDD implementation and barriers encountered. The main issues addressed in this report are:

1. The political and institutional challenges and prospects for REDD
2. The technical challenges and prospects for REDD
3. Social and economic challenges
4. Resource and funding issues
5. Performance monitoring/reporting metrics being developed

The political and institutional challenges and prospects for REDD

1. **Preparation of national regulation:** In particular by adopting a national institutional framework to ensure equity, efficiency and accountability in verifying and compensating for carbon gains and ensuring local access to the benefits from REDD.
    - Link REDD projects to long term development strategies through effective local institutional capability.
    - Effective and equitable local property rights are needed and will be tightly related to internal democracy within communities including legal ownership of carbon rights.
    - Benefit-sharing and governance mechanisms that ensure the equitable distribution of carbon payments.
    - Collaboration and cooperation across region to strengthen negotiation capabilities.
    - Improved knowledge on forest status and trends to support the argument of site specific and context driven implementation of REDD.

- Review the land tenure forms that fuzz the state, the community, and the individual with various levels of legal title to land, and the resources therein.

2. **New level of forest governance:** Reframing forest policy in climate change context and capacity building for MRV
    - Integration and coordination among national agencies, programmes and among donors is vital to bring subsequent coherence in development policies.
    - Cross-sectoral coordination and cooperation between government departments
    - Establish a national level accounting and measurements Institution to avoid the problem of within-country inconsistency with project-based approach.
    - Development of the capacity for countries to enforce forest laws and control drivers of deforestation and degradation.
    - National REDD+ strategies need to be nested within broader national development strategies, because in most cases, the structure of national REDD+ strategies is not inherently different from that of other strategies

The technical challenges and prospects for REDD

1. **Appropriate emission accounting and transfer of incentives:** In the form of carbon credits or payments, rules need to be defined by integrating the various levels of accounting, management, and incentives.
    - Requirement of a "nested systems" that nest projects or programmes within national- or state-level REDD+ accounting systems.
    - MRV of forest carbon and related mitigation activities is necessary but there are several reasons for a broader than-carbon approach to monitor REDD+ projects including understanding and analyses of how REDD+ policies impact and are impacted by other management objectives as well as governance safeguards.
    - Ensuring the permanence and additionality of carbon stocks, preventing leakage, and setting an appropriate historical baseline or reference scenario for assessing reductions in deforestation and forest degradation.

2. **Establishment of an effective system for monitoring, reporting and verifying (MRV): In particular for** deforestation and degradation rates and carbon stocks.
    - Lack of technical capacities to implement Nation Forest Inventory (NFI) programmes, and the human resources that are needed for operationalizing a NFI strategy.
    - A strong focus on carbon without safeguards could present risks for preserving biodiversity; and ensuring the ecological integrity of forests would require additional transaction costs for REDD.
    - The huge capacity gaps for MRV developments prevent the understanding of the processes of deforestation and degradation and thereby formulate more effective policy interventions with a performance-based payment system.

- National inventories were never intended for the purpose of forest carbon accounting and there is little evidence that past initiatives have contributed to reducing national rates of deforestation.

Social and economic challenges

1. **The conditions that would enable the mechanism to endure: This** will depend in large measure on what financial resources are available and how they are deployed.
    - Catalyze and influence REDD+ investments so that they change the way that forests are used and managed, with development, improved conservation and improved livelihoods as the result UN-REDD projects implementation.
    - Creating incentives for projects is only one part of a national REDD+ strategy which may include governance reform, fiscal incentives, and other policies that address particular drivers of deforestation.
    - The benefits include reducing the cost of implementation and monitoring, strengthening the ability to monitor areas that are difficult to access, and further ensuring the monitoring and enforcement of regulations.
    - Risk management at the project-level may be needed to address the issues of permanence and project performance.
    - Strongly pay attention to subsequent needs of alternative livelihood options and sources for forest products to account with permanence of forest cover.
2. **Carbon is only one aspect of potential benefits from REDD+.**
    - Biodiversity is a defining element of forested ecosystems and should be seen as an equally important factor for population resilience within a forest ecosystem at many scales and thus secures the long-term stability of the forest carbon stock.
    - Promote community involvement and benefit sharing considering information sharing, consultation, collaboration, joint decision making and empowerment (safeguarding).
    - Managing incentives and social benefits in REDD by promoting the consent and adhesion of local communities (Free, Prior and Informed Consent (FPIC)).
    - The management of REDD investment funds could jeopardize the management of other benefits for carbon sequestration, forest services and land stewardship, conservation targets, sustainable forest management (including fire protection or unexpected severe drought), and forest restoration.
    - Link REDD with other agriculture and forest development activities and securing land tenure rights.

Resource and funding Issues

1. **Funding levels through public finance** do not cover all the expectations.

- The private sector must strongly come into play with the risk of marketization of ecosystem services, which in Africa is rather a livelihood assess and not purely an economic good.
- Developing REDD as a market mechanism challenges the traditional development paradigm based on resource extraction and requires a reversal of what in the past has been seen as a direct access to wealth.

2. **International fund to support reforms** and specific measures to tackle deforestation and degradation.
    - The selection of options between the voluntary fund-based approach rather than market-based system.
    - Co-Financing and public versus private funding.
    - There is need to capture more of the funds of the avoided deforestation in order to address both mitigation and adaptation.
    - There is a risk that while efforts are made to make African countries REDD+ ready, the investments required for implementation will not be forthcoming.

Recommended strategies for the effective implementation of REDD+ in Africa ?

Political and institutional	1. Understanding of the active drivers and processes of forest emissions. 2. Address the acceptable deforestation needed for socio-economic development including providing access for people. 3. Incorporate REDD+ in forest management. 4. Multilevel, multi-actor governance of REDD+ schemes will be needed to overcome differences between government ministries. 5. A national REDD+ strategy needs to encourage specific local actions. 6. Increase commitments to transparency. 7. Ensure institutional coherence among Government Ministries, Departments and Agencies
Technical	1. Demonstration activities are essential to establish a basic stock of practical experiences. 2. Establishment of an enabling framework for the full implementation of REDD+. 3. Need National Forest and Carbon Mapping to establish a baseline. 4. Explicit controls mechanisms are needed to prevent capture of benefits by elites. 5. Improve efficiency in harvesting, processing and use of forest products.
Social and economical	1. Enhancing tenure security through formal legal acknowledgement of local resource rights and sharing of benefits from forests. 2. Promote incentives and equity for avoided deforestation at multiple scales. 3. Increase the efficiency of land use by intensifying productivity on none forest lands and reducing pressure for use of forest lands. 4. Identifying non-income benefits and incidental environmental services. 5. Establish trade-off between REDD+ and poverty reduction.

A REDD that functions poorly will keep local forest communities and indigenous people imprisoned in extreme poverty.

Hajek et al., 2011

1. Introduction

1.1. Scope and Purpose

The serious and numerous implications of climate change have driven international commitments that target binding or volunteered reduction of greenhouse gases (GHG), mostly carbon emissions. In the framework of the United Nations Framework Convention on Climate Change), (UNFCCC) mitigation of GHG is an important issue for developing countries where deforestation and land use change are important contributors to global climate change, with 17% of total emissions associated with deforestation and land cover change (IPCC, 2007). Deforestation is the second largest anthropogenic source of carbon dioxide to the atmosphere, after fossil fuel combustion (Van der Werf et al., 2009). Until 2007 the Kyoto Protocol provided more incentives for carbon sequestration in reforestation activities through the clean development mechanism (CDM) offset projects, while little effort has been made to maintain carbon stocks in forests. Nevertheless, forest preservation (conservation) has been an active component of, and a strong asset for, biodiversity conservation addressed by the Convention on Biological Diversity (UN-CBD). The sustainable use of natural forests has been also addressed by the Millennium Ecosystem Assessment (MEA, 2005) as a practical and prudent way to support livelihoods of the world's poorest communities in developing countries. Only after COP13 at Bali in 2007, did recognition grow that the emission reductions needed to avoid catastrophic climate change are so large and challenging that they will not be achieved without reducing the extensive forest loss and degradation. The concept of *avoided deforestation* thus emerged in the policy discourse, coming to the forefront of mitigation options and viewed as a cost-effective route for GHG reduction in developing countries (Cotula and Mayers, 2009).

The targeted eco-regions for avoided deforestation have been tropical forest, mostly in South America, Africa and South East Asia. This new phase of climate change negotiations has shadowed substantively the CDM and is anticipated to be an additional focal point that can maintain momentum with GHG reduction policy after 2012. The COP16 in Cancun resulted in a mandate for negotiations to continue on a global legally-binding agreement, including components such as REDD+, LULUCF and NAMAs. The UN has therefore set in place a specific program dedicated to Reducing Emissions from Deforestation and forest Degradation (UN-REDD) supported by FAO, UNEP and UNDP.

In addition, there are have been several other focal points for REDD+, mostly in the area of investments for REDD-readiness under the World Bank Forest Carbon Partnership Facility (FCPF) and the Forest Investment Program (FIP) which is developed under the broader Climate Investment Funds portfolio being established by the multilateral development banks. These efforts emphasize increasing capacity in forestry and agriculture sectors of developing countries for low carbon forest management. Hence the mitigation and adaptation emphasis of UN-REDD, aimed at the international conventions on climate change, are being linked with international development strategies. As well, organizations such as the World Economic Forum have highlighted the need for REDD-investments and in strengthening institutions in both the public and private sectors.

The UN-REDD program and other related programs will directly affect people who depend on forests for their daily livelihood and who are among the world's poorest. Hence, REDD offers a critical opportunity to enhance forest communities' well-being, a principle upheld by several international initiatives addressing the issue of adaptation to climate change. In this perspective,

REDD+ is seen as a win-win approach to reducing deforestation while also alleviating poverty of vulnerable communities wherever possible. In this context REDD+ is one of the few significant actions under the UNFCCC that addresses both mitigation and adaptation to climate change.

Although a wider consensus is being achieved on the concept and its implementation, we still have many parallel activities within the broader REDD+, many of which are redundant and widely distributed within different programs (e.g. G-20 countries, EU-plans, etc.) and modalities of implementation. We have already mentioned parallel activities undertaken by the multilateral development banks, such as the FCPF and FIP which are generally large multi-lateral initiatives. There are also significant bi-lateral initiatives. In addition there is a long list of Non-Governmental Organization (NGO) and independent REDD-projects and initiatives across a range of scales.

With so many activities at play, it is difficult to have a comprehensive understanding of who is doing what for which objectives by which means. A conceptual organization of the suite of ongoing initiatives under a systematic typology will be extremely useful in order to avoid methodological inconsistencies and redundancies, as well as conflicting aims and policies that may emerge and could result in conflicts and unnecessary competition and duplication of efforts. In particular, there are several specific challenges in the implementation of REDD+ in Africa, where there are a range of activities in countries with a range of forest conditions and pressures, and a range of human resource capacities.

Most scientists and policy makers are convinced that forest degradation is worrisome enough for serious concern, to the detriment of the world climate and also to people's well-being. To reduce carbon emissions from land use change, the REDD+ initiative is seen as being one of the areas where there is strong agreement in addressing emissions from deforestation and degradation (TNC, 2010). The Kyoto Protocol's CDM and Payments for Environmental Services (PES) have been particularly used as approaches to mitigate climate change. However, these approaches have some shortcomings and the CDM approach has been criticized for promoting large monoculture tree plantation (Kill et al., 2010) and few countries have been able to have a CDM-project in forestry because of very complex procedures and demanding procedural protocols. Moreover, plantations for biofuel have been criticized in terms of competing land for food, particularly in Africa and the risky investment to such products because of a very volatile market. Hence protecting forest against degradation seems to have enough wisdom and tradeoffs to address both carbon emission and responds to local needs for poor communities.

Since their independence, many African countries have been managing forested lands without significant gains. Reasons for this include policy failures or absence of relevant policies in forestry and related sectors, human land use pressure, and international demand for industrial harvesting. The latter is the main reason for loss of dense forests, while agriculture, livestock and wildlife are predominant factors in the dry forests and woodlands. Overall, direct conversion of forests into permanent agriculture is the most important driving force for deforestation. Most of these drivers are linked to overall national socio-economic development goals. Further, efforts to support poverty reduction through forest projects have not achieved their desired objectives. Also, there are projects that have employed PES, an approach implicit in REDD+ that have mixed results including in areas of poverty reduction (Angelsen et al., 2009). In addition, experience with forest carbon projects in the CDM are reported to generate few benefits for the poor, mostly because of low carbon price and opportunity cost of competing activities such as extracting the forest to support local needs (Fisher

et al.; 2011, Mbow, 2009). This underlines the essence of combining national and location-specific policies and other measures to address these issues in the context of REDD+.

Although the REDD initiative can offer opportunities for the rural poor, it can also affect directly these people as they depend on forests for their daily livelihoods (Scheyvens, 2010). This is the reason why addressing the challenges and prospects of REDD in tropical countries, especially African countries is with great interest. To support a successful implementation of future REDD initiatives in Africa, the literature review will provide inputs and help share experience and approaches from other countries where REDD activities are underway.

The debate on climate change has clearly identified the forestry sector as having an essential role with mitigation (e.g. in REDD+ and CDM) but less with adaptation. Mitigation efforts are important for avoiding impacts of climate change; however, adaptation activities are very important (a necessity for Africa) in alleviating the unavoidable effects of climate change on food, water and other natural resource needs (Kowero, 2010). As a result, much of the initial debate has focused on the global REDD+ architecture and how REDD+ can be included in a post-2012 climate agreement. This discussion has moved from the broad conceptual framing to the local implementation of REDD+ on the ground. So now the debates and focus of actions have increasingly moved from global to national and local levels (Angelsen et al., 2009). Hence, as noted by the Institute for Global Environmental Strategies (IGES, 2010), there are a number of elements that a national REDD+ system must include to be able to provide a credible claim of national reductions in forest sector emissions. These are: (i) a national REDD+ strategy consisting of effective policies for reducing emissions; (ii) the necessary organizations and institutions to implement the national REDD+ system; (iii) a national reference emission level or reference level; (iv) a credible system to measure, monitor, report and verify the reductions in carbon emissions; and (v) a payment system to compensate those who have incurred opportunity costs in implementing REDD+. As no international agreement on REDD+ exists yet, there are no agreed modalities and procedures for REDD+ that countries can refer to when constructing their national systems.

There are a number of questions related to the implementation and prospects of REDD+ in Africa. Among these, it is increasingly needed to know the trends in REDD+ implementation in a multi stakeholder context, the challenges faced at various technical, social, environmental and administrative levels. In addition, the various safeguards needs and how REDD+ can be nested to current forest management strategies etc.

The debate on REDD which is now in the international spotlight, has produced a large body of literature that raise many issues and challenges. Addressing these issues and challenges requires reviewing lessons learned from countries where REDD activities have been implemented to better understand what mechanisms for REDD are successful, especially for the poor (Peskett et al., 2008). This raises the question of how REDD initiatives can deliver significant social co-benefits. Additional lessons from Latin American and Asian countries could be used to identify challenges and prospects for REDD in tropical Africa.

The key areas REDD+ is addressing such as deforestation and forest degradation; forest conservation; sustainable forest management (SFM) and enhancement of carbon stocks, are parts of the core business of forestry and not that new (Kowero, 2010) However, addressing these issues will clarify the role of Africa in coming negotiations and international debates related to forest protection, namely the Durban COP 17 meeting and the RIO+20 of the UNFCCC.

This report aims at assessing the current challenges, problems, obstacles and opportunities related to REDD implementation in Africa in order to improve prospects for the inclusion of a successful REDD mechanism in a post-2012 climate regime. We will assess the situation through a stocktaking process using formal and informal surveys of current activities, current challenges, and limitation of REDD implementation through a literature review on REDD in Africa.

1.2. What is REDD?

Throughout this report, we typically refer to REDD projects (without using the "+") but we also focus on REDD+. REDD+ is a term that has grown within international climate negotiations to describe a suite of activities beyond project-level interventions. REDD+ was first introduced in the Bali Action Plan in 2007 and was most recently defined in the 2010 UNFCCC Cancun Agreements to cover forest sector climate mitigation through five activities: a) reducing emissions from deforestation; b) reducing emissions from forest degradation; c) conservation of forest carbon stocks; d) sustainable management of forests; and e) enhancement of forest carbon stocks" (Paragraph 70, Decision 1/CP.16).

REDD+ is currently being pursued in international policy at national or sub-national/jurisdictional levels of accounting. This is in contrast to the prevailing project-level model for carbon projects, particularly sequestration projects, currently in use across the forest carbon markets. With many market actors convinced that the project-level model is indispensable for attracting private sector investment, an increasing interest has emerged to move toward national and jurisdictional accounting, with a system that still encourages the development of individual projects. This concept is commonly referred to as "nesting" and is receiving strong and growing interest among standards organizations, policymakers, and project developers. Within the context of the forest carbon project typology we have described, the current definition of REDD+ is expected to include AR (Afforestation/Reforestation), IFM (Improved Forest Management), and REDD (Reduced Emissions from Deforestation and Forest Degradation) project types; the inclusion of Agro-forestry may depend upon the definition of "forest" used. Further, there is growing interest in accounting for, and including trees outside of forests in predominantly agricultural landscapes, which is consistent with the inclusion of agroforestry and sustainable land management.
Typically forest carbon offset projects are classified into four basic project types based on the distinct approaches to reducing GHG emissions or increasing carbon sequestration:
Afforestation/Reforestation (AR): The establishments of forest vegetation on areas without forest cover, capturing additional carbon in new tree biomass and other carbon pools; emissions reductions occur primarily through additional sequestration.
Improved Forest Management (IFM): Existing forest areas are managed to increase carbon storage and/or to reduce carbon losses from harvesting or other silvicultural treatments; emissions reductions may occur through additional sequestration and/or avoided emissions.
Reduced Emissions from Deforestation and Forest Degradation (REDD): Existing forest areas with demonstrable risk of land-use change or reduced carbon storage are conserved, resulting in the avoidance of a business-as-usual scenario that would have produced higher emissions; emissions reductions occur primarily through avoided emissions.
Agro-forestry: Land is managed using intermingled agricultural and forestry strategies, sequestering additional carbon in trees and/or soil and reducing carbon emissions compared to business-as-usual agricultural practices; emissions reductions may occur through additional sequestration and/or avoided emissions.

2. Method for the desk review

There were three elements on the method: i) evaluation of the context for REDD in Africa; ii) appraisal of literature; iii) stock taking assessment of current REDD projects in Africa.

For the context of REDD in Africa, previous studies on forest trend and driving forces of land cover changes have been synthesized from various sources including FAO FRA-2010 compilation and also from peer review papers published in JRC and USGS mostly.

We have conducted a literature review based on a survey of information from reports, projects documents, web resources (from UN REDD, CCAFS, UNEP, FAO) program newsletters and other grey literature that broadly characterizes the scope of current opinion and analysis of REDD policy, process and actions. Peer reviewed literature on this topic is mostly limited to the technical aspects of REDD implementation.
We developed both formal and informal surveys and reviews of a range of African REDD projects across a range of institutional arrangements (bi-lateral, mutli-lateral, voluntary, etc.). The first review we conducted was a basic stock-taking examination of existing projects, where we organized the results by type of project, objectives, and other features. The second step was a formal key informant survey of projects through interviews and surveys. In this exercise we did a preliminary screening of existing initiatives, followed by a series of key questions that were structured around the following issues:

- The problem addressed: the focus of the project, scale of the study, etc.;
- The objectives, aims and main expected outcomes
- The activities developed to reach the goals, milestone
- The strategy of the project, with respect to its work plan, cooperation, implementation, information sharing, sustainability, etc.
- Sites for implementation; location of the project, scale and area covered
- Partners and beneficiaries included in the project: various stakeholders
- Challenges and problems (institutional, technical, financial, organizational, etc.)
- Funder and period of implementation
- Etc.

The information collected from these surveys was used to provide insight on the main issues of interest, including:

- The Institutional challenges and Prospects for REDD
- The Technical Challenges and Prospects for REDD
- Resourcing and Funding Issues Exist
- Performance monitoring/reporting Metrics being developed

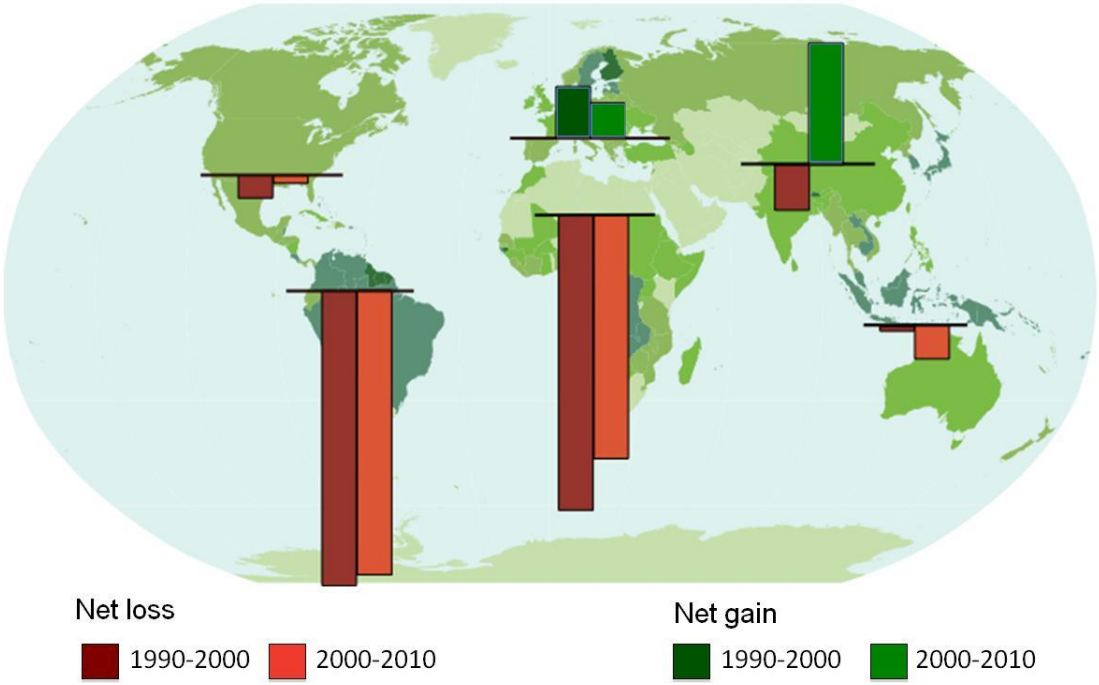
To gather the required information, the regional network focal points of GOFC-GOLD and ACRENET were contacted. Based on the results of this survey, this report has been prepared and could serve for negotiations in forthcoming COPs related to REDD implementation.

3. Results and Analysis of Findings

3.1. Evaluation of REDD in the Africa Forest Context: trends and conditions

A rich literature shows that the potential for significant emission reductions in the forest sector is highest in Tropical Latin America and Tropical Africa. For instance, in Africa, forests cover 67% of the Democratic Republic of the Congo (DRC) with an estimated area of 156 million ha, 99 million of which are dense humid forests. These forests represent nearly half of Africa's rain forests and explain why much more attention and funding going to the Congo basin (NORAD, 2011). Studies by Tappan, (2009), Brink and Eva (2009) provide regional analyses to evaluate land cover change in West Africa. For instance, Brink and Eva (2009) mapped land cover and its change for a 25 year period. They assessed land cover change in four broad land cover classes – forests, natural non-forest vegetation, agriculture and barren – using satellite data from 1975 and 2000. They showed a 57% increase in agriculture area at the expense of natural vegetation which decreased by 21% over the period, with nearly 5 million hectares of forest and non-forest natural vegetation lost per year. Similarly Tappan (2009) presented maps showing increased agricultural cover, while they are in actual cultivation remained quite stable. The overall status of forest trend in Africa is shown in figure 1.

Figure 1. Trends of deforestation in the world (FAO, 2010).



While the general trend is to see forest cover continuing to decline in many African countries, at a regional scale there are important sub-regional differences (Table 1).

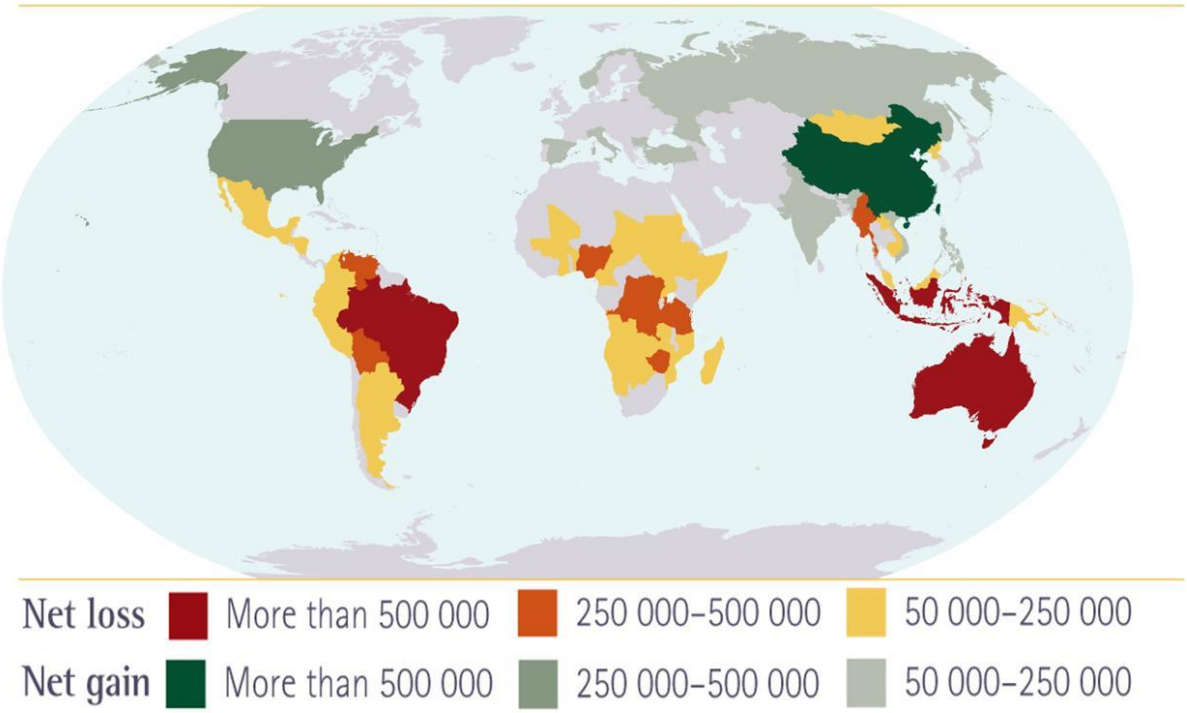
Table 1. Deforestation trend in Africa.

	1990-2000 (%)	2000-2005 (%)
East Africa	0.94	0.97
Southern Africa	0.63	0.67
Northern Africa	0.64	0.69
West Africa	1.17	1.17
Central Africa	0.37	0.28
Africa	0.64	0.62

(FAO 2009: State of World's Forests)

In Africa dense forests are undergoing a significant and steady decline, but the magnitude and extent of this change is less than in Tropical America and South East Asia (Figure 2). Hence, the potential to reverse these trends may still be less challenging than in other parts of the world, and this presents a real opportunity for forest investment in Africa

Figure 2. Net change in forest area 2005-2010 (ha/year) (FAO, 2010).

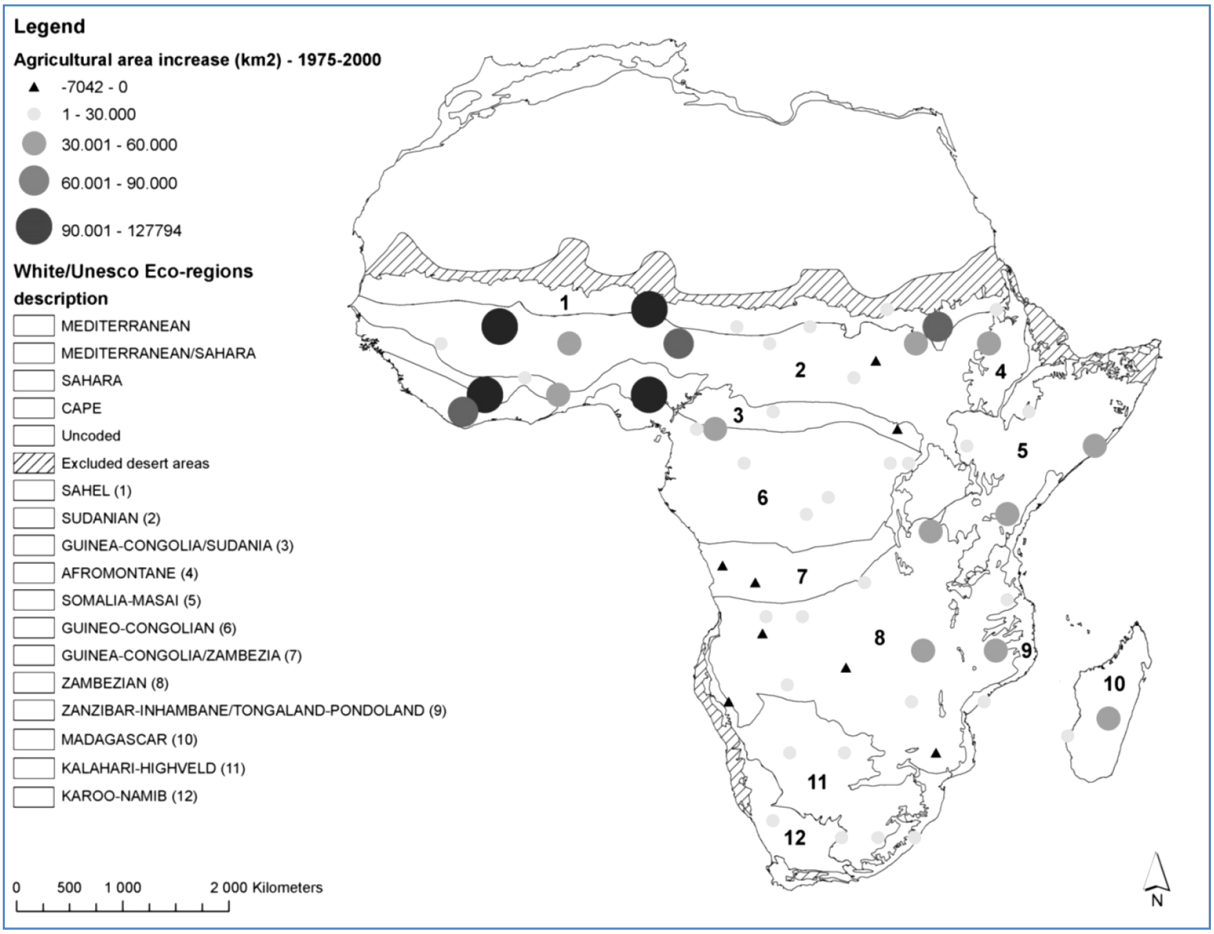


An analysis of such trends in sub Saharan Africa is provided by Brink and Eva (2009), where agriculture land expansion is an important driver of deforestation. These results are shown in Table 2 and Figure 3.

Table 2. Land cover dynamics in main ecological zones of Sub Sahara Africa (Brink and Eva, 2009).

	Agriculture (ha)	Forest (ha)	Natural non-forest vegetation (ha)	Barren (ha)
Land cover 1975	215 274	438 917	1 247 980	42 912
Land cover 2000	338 687	367 592	1 189 085	49 477
Total change	123 413	-71 325	-58 894	6565
Total (%) change	57.33	-16.25	- 4.72	15.3
Average annual change	4937	-2853	-2356	263
Average annual (%) change	2.3	-0.7	- 0.2	0.6

Figure 3. Increase in agriculture area (km2) from 1975 to 2000 per sample site (Brink and Eva, 2009).



To reverse these trends, it will be important to promote forest conservation actions that are also nested in a SMF (Sustainable Forest Management) strategy that seeks to improve ecosystem services and products, including carbon storage. Therefore REDD+ should be implemented in a way so that it becomes an important tool for achieving SFM with additional social co-benefits, such as reducing poverty. Rather than being a simple forest conservation approach, REDD+ can also be used to make conservation of forest carbon a livelihoods objective. This then raises the issue as to whether we are appreciably addressing poverty through forest management and policy in Africa? Are we really addressing deforestation and degradation in places where these trends are more extensive and damaging to livelihoods?

In the absence of new strategies such as REDD+, forests will continue to give way to land needed to meet the demand for agriculture. Policies based exclusively on past trends in forests alone are likely to be inadequate for REDD+ implementation, and current land pressure, and associated emissions, will significantly increase if REDD+ is implemented only within forest boundaries, without simultaneously reducing the need for the expansion of agricultural land (The Terrestrial Carbon Group, 2010) particularly in non-forest landscape.

The Terrestrial Carbon Group (2010) published two scenarios to estimate: 1) the total amount and spatial distribution of emissions arising from future conversion of the natural landscape for the

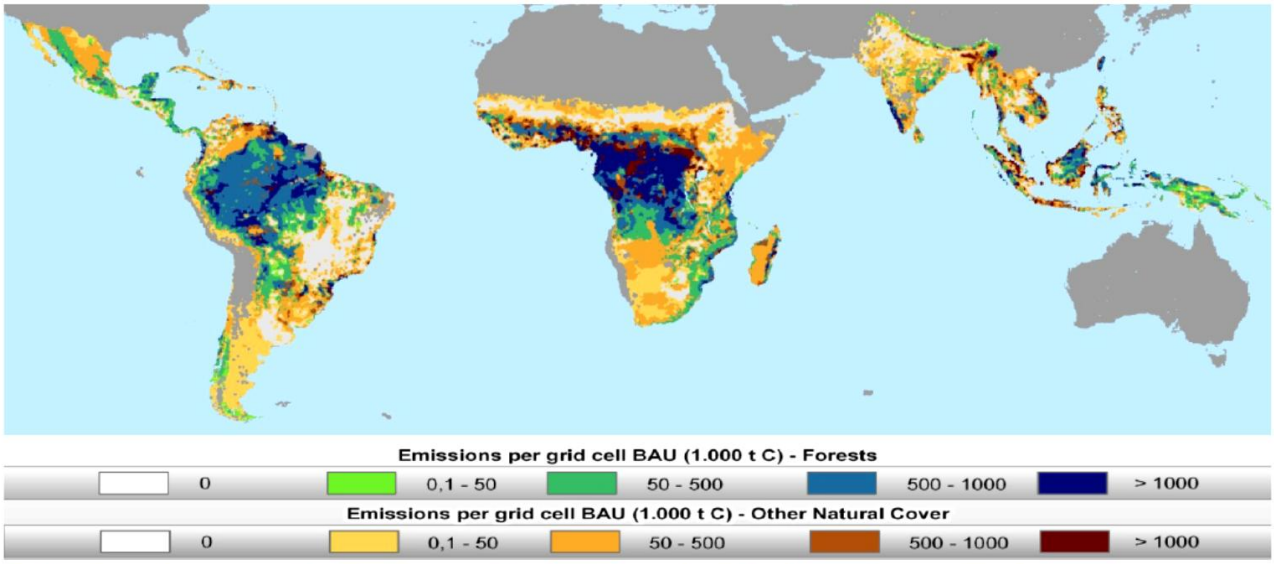
purposes of agricultural expansion; 2) the potential of REDD+ when fully implemented over the period from 2000 to 2050 (Figure 4 and 5).

• **Business As Usual (BAU)** scenario: The BAU scenario assumes an average of 12 million hectares of additional land will be required each year for agricultural expansion. This equates to 600 million hectares over the 50-year period from 2000 to 2050. This estimate is consistent with a mid-range of assumptions in the IPCC scenarios and the literature range as reported in a study of the Netherlands Environmental Assessment Agency.

• **REDD+ scenario**: The 'REDD+ is 100% successful' scenario is a hypothetical case where it is assumed that agricultural expansion is continued at the same rate as under business-as-usual, but expansion that would have occurred on forest land is displaced onto non-forest land. The purpose of this extreme scenario is to investigate an optimal mitigation impact of a REDD+ scenario, but it does not take into account landscape-wide risks and nor does it address underlying drivers of land use change.

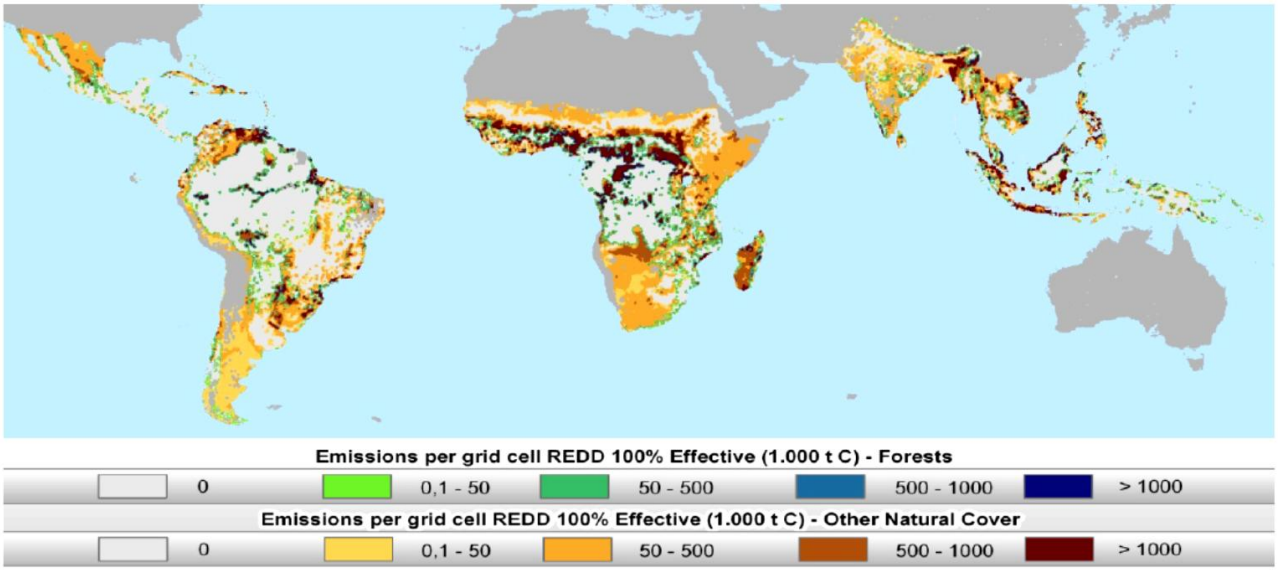
These scenarios did not include the potential sequestration or further emissions from subsequent agricultural practices.

Figure 4. Business as Usual Scenario (using trends in deforestation) (Terrestrial Carbon Group Project, 2010).



Total land use change area = 600 million hectares: 304m from forested land, 294m from other natural landscapes
Total emissions = 56Gt carbon: 38Gt from forested land, 18Gt from other natural landscapes

Figure 5. Assuming REDD+ is 100% Successful leading to no Further Deforestation (The Terrestrial Carbon Group Project, 2010).



Total land use change area = 600 million hectares: 0 from forested land, 600m ha from other natural landscapes
Total emissions = 36Gt carbon: 0Gt from forested land, 36Gt from other natural landscapes

Forest degradation is associated with several driving forces. According to a study by Lambin et al. (2003), land-use change is driven by compounding factors of resource scarcity, which leads to an increase in the pressure on the land resource base, and changing economic conditions created by new markets, outside policy intervention, loss of adaptive capacity, and changes in social organization and attitudes. In a recent review for GBO3 (Global Biodiversity Outlook-3), Mbow et al. (2010) listed several critical land change situations, or tipping points, in West Africa. These are:

Climate regime shifts: Future climate regime shifts are highly uncertain, especially in terms of precipitation for which projections range from a persistent increase, to increased variability, to long-term reductions in rainfall.

Overuse of (marginal) resources: The intensification of marginal land resources results in a downward spiral of productivity, poverty and biodiversity impoverishment. Accompanying permanent or long term land degradation then makes it difficult to restore biodiversity and ecosystem services, even when socio-economic and climatic conditions improve.

Globalization and overexploitation: Agricultural development and market globalization drive exploitation in areas of more abundant natural resources, with forest clearing having the most serious impact. Improvements in access and increasing local wealth in these areas of the region drive improved access and further increases in exploitation.

Instability and limited resources: Ineffectual governance caused by instability and conflict permits unregulated use of natural resources including those in protected areas. This also drives refugee movements to other regions, increasing stress on natural resources in those areas and triggering further social and political disruption.

Agricultural expansion is perhaps the single most important factor in the conversion of forests worldwide, and in Africa. The main agricultural factors driving deforestation are synthesized in Table 3, from FAO estimates.

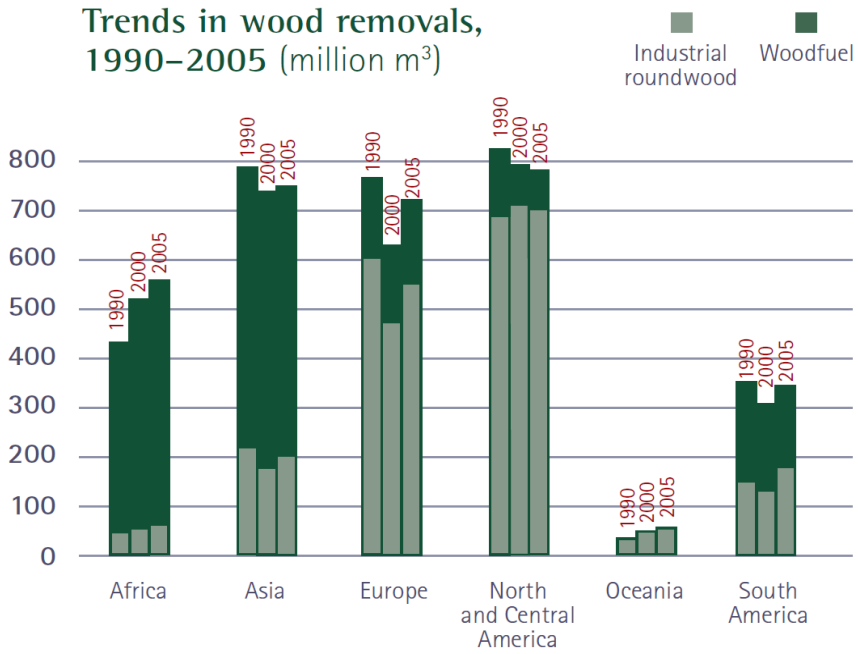
Table 3. Main causes of forest area changes (FAO, 2010).

Conversion to small scale permanent agriculture	59 (%)
Conversion to large scale permanent agriculture and industrial plantations	12
Intensification of agriculture in shifting cultivation areas	8
Expansion of shifting cultivation into undisturbed forests	4
Other causes	9
Gains in forest area and canopy cover	8

(FAO 2009: State of World's Forests)

In addition to agriculture, both fuel wood removal and industrial wood production are important forest extraction activities in Africa as it is in most parts of the world. However, in Africa, industrial round-wood extraction constitutes only about 20% of all forest extraction (Figure 6). Fuel wood removals at local and community scales are by far more important degradation forces. Thus, any REDD+ policy or initiative should seriously consider fuel wood consumption by local communities, which could occur as leakage (displacement of wood extraction).

Figure 6. Wood removals by Continent (FAO, 2010).



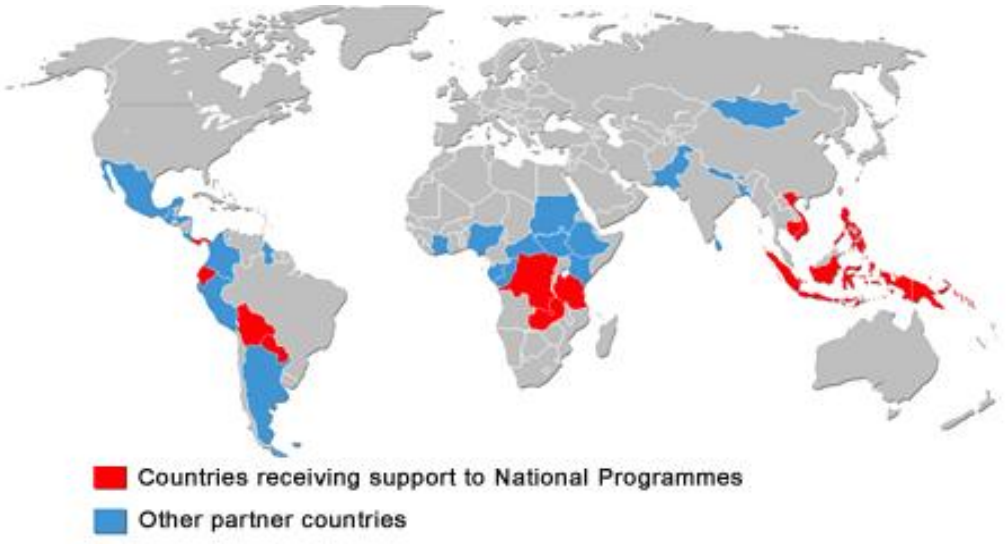
The African continent has a significant share of the global tropical forest cover, dominated by the massive dense forest of the Congo Basin. The forest resources are the basis for the economy of most countries, and for the livelihoods of local populations. They are the major supplies for natural wood and non-wood products that sustain livelihoods of poor communities. The human pressure on these resources is related to several factors, the major of which is encroaching agriculture in forested lands. Wood extraction for fuel and timber for exportation comes as an important driver for deforestation. In general the loss of forest in Africa is much lower than trends observed in Latin America and South East Asia. Therefore the challenges to revert this trend are theoretically easier to deal with. Nevertheless the poverty conditions of local communities make it difficult to promote forest protection without leaking the extraction of natural products in other lands particularly in non-forest ecosystems. In such conditions, challenges of REDD implementation will be less on the potential of ecosystem to recover degraded forest but on the human dimensions including technicalities, poverty, governance and benefit sharing. The following section raises the challenges and prospects that can prevent a swift implementation of REDD in Africa

3.2. Challenges for REDD+ Implementation in Africa.

In one sense the basic concepts behind REDD+ are not particularly new to the forestry sector in Africa. Forest protection, conservation and sustainable management concepts are at least part of the forest management regimes in many African countries. But for the most part REDD+ constitutes a new way of doing business in the forestry sector of almost all countries. At the most basic level, forest management is being asked to evaluate forests in the context of whole stand carbon rather than in terms of commercial volumes. This challenge of inventory and measurement alone will task the ability of most countries to participate in REDD, and especially in Africa. In addition to fundamental technical constraints, there are serious human resource constraints and institutional barriers.

It is clear from our survey there are few current fully operational REDD+ activities on the African continent of any kind, and as such there are no clear demonstrated paths to success, or a knowledge base to disseminate. Of those the few initiatives that have been started, they are predominantly early-stage REDD+ readiness and demonstration projects. The UN-REDD programme has already developed strong partnerships with a few countries in Africa, but most are being established in a limited geographic and ecological zone (Figure 7).

Figure 7. Distribution of REDD activities in Tropical countries (UN-REDD web page, accessed September 2011)



Based on our own survey data, it appears that, at least in these initial stages, progress with REDD implementation is slow and uneven. The concept itself is new and the operational conditions are not well defined and are facing multiple institutional challenges, which we summarize in the following sections.

- **Political and Institutional challenges: the need for strengthening and integrating**

Ultimately, the capacity for countries to enforce forest laws and control drivers of deforestation and degradation comes also under the political institutional domain. We surveyed these attributes across Africa and present our analysis here.

Much of the initial international dialog on REDD has broadly focused on the global REDD architecture and how REDD can be included in a post-2012 climate agreement. Parts of the dialog centers on how to link REDD projects to long term development strategies through effective local institutional strengthening (Angelsen et al., 2009). Under this agenda, assessing the role of local institutions will be needed to put good forestry management methods into practice for REDD projects. For this to be achievable, effective and equitable local property rights are needed. Particularly important is the development of national institutional frameworks that ensure equity, efficiency and accountability for verifying and compensating carbon financials and other benefits. This will include institutional strengthening to ensure local access to the benefits of REDD. It is critical to develop clear benefit-sharing and governance mechanisms that ensure the equitable distribution of carbon payments among all relevant stakeholders and within local communities.

In Cameroun, Brown et al. (2011) reported a basically strong awareness of institutional needs by decision makers, but this awareness did actually translate into an institutional response. Our analysis also suggests that generally across Africa adaptive capacity is low and the absence of strong links between state agencies and communities is an additional barrier. Civil society can play a significant role in strengthening the response capacity of government to REDD initiatives and requirements at local levels, while enabling the mainstreaming of new policies related to climate change and forests within their international agreements.

Our surveys suggest that both technical and institutional capacities to adopt REDD are weak in the country's most likely to be participating in REDD, and it will take time to build a critical mass of know-how and structures to implement REDD. Already we find that there are mounting pressures for some early-stage REDD countries to meet some of the performance terms of initial investment packages. There are numerous delays attributed to weak institutional capacity to channel financial resources into active programs within the key forest management agencies. Clearly building a solid governance structure is fundamental to the success of REDD+. Within participating countries, success of will hinge on its capacity to coordinate and collaborate with different governmental and non-governmental bodies, channel important amounts of funds, avert corruption and deliver transparent data on GHG emissions and removals from the forestry and other related sectors.

The implications of these findings for enabling basic emission mitigation goals are dire enough, and considering the need to couple mitigation to adaptation and development goals there is a critical gap between the fundamental aims of REDD+ as elaborated in the international dialog, and the realities on the ground. Clearly if it is difficult to see how basic emission mitigation can be achieved, it is even more difficult to be optimistic that the development goals can also be met.

Against this backdrop of findings, there are some important actions that need to be confronted for REDD+, as described below:

- Meaningful participation in global climate policy processes is needed. Most African country delegations to UNFCCC post-2012 negotiations are small, technically weak and lacking in well-articulated and coordinated positions. Delegations require diverse, multidisciplinary expertise on teams large enough to allow attendance of multiple and often parallel sessions.
- Across-region collaboration and cooperation would boost Africa's bargaining power in negotiations such as UNFCCC. The shift in emphasis from CDM to REDD, which focuses on humid forests, for example, may call for developing a common position among the countries with dry forests.
- There is little information on forest resources available in the public domain and the sector is highly dynamic (Wertz-Kanounnikoff and Kongphan-Apirak, 2009).
- The African socio-political context constitutes a serious dilemma for implementation of REDD+. The REDD+ mechanism provisions and related literature contain some recommendations that have proven incompatible with the prevailing social and political organization within some African communities. Among such contentious recommendations are the implementation of Western notions of property rights, improved governance, local participation, and sustainable development. The primary challenge in this regard is land tenure. The prevailing land tenure context on the continent is characterized by overlap and the co-existence of various land tenure forms which simultaneously allocate to the state, community, and the individual incongruous and various levels of legal title to land, and the resources therein. This situation is incompatible with the conventional concept of property rights and causes reluctances amid the state, local/traditional government and the individuals sharing of resultant or perceived benefits. Ultimately, expectations for the REDD+ mechanism in Africa may need to be significantly reworked, and brought more in line with existing in-country realities and current circumstances.
- REDD requires a new level of forest governance – reframing forest policy in Climate Change context and capacity building for MRV;
- Integration and coordination among national agencies, programmes and among donors is vital.

We have documented numerous examples of institution inefficiency or outright failure in our surveys. In Ghana for instance the institutional challenges undermines development goals and policies. For instance, the Agriculture and Mining Sector interests are at variance with the Forestry's interest on REDD+. Thus, the pressure to expand agriculture and mining to earn more foreign exchange promotes sun cocoa for higher yields. This, coupled with the extension of mineral extraction into forest reserves, results in significant deforestation. Mining laws are long in need for review and revision; the key policy document on mining has no clause prohibiting mineral extraction in forest reserves, or congruity with other existing environmental laws.

Using another example we have from the energy sector, the liquefied petroleum gas (LPG) policy in Nigeria originally designed with safeguards to ameliorate forest destruction is not producing these desired results dues to institutional and policy inefficiencies. A consistent shortage of LPG in both rural and urban areas is producing significant pressures to utilize wood sources for charcoal production as a domestic energy alternative. Other alternatives – biogas, solar cooking stoves etc. – still have not been fully exploited. As a result policy safeguards are overlooked because, among other reasons, the national and local institutions are not capable of ensuring proper implementation of the forest protection components.

We can draw another example from the Congo Basin, where the actions of foreign companies, particularly within the small-scale and artisanal mining segments of the mining sector, are triggering potentially a significant source deforestation and degradation in areas that attract large numbers of migrant diggers (Putzel et al., 2011). This picture is common in most countries where mining is taking place. In Senegal, the Kedougou Region has lost extensive forested land with no plan for the valuation of the harvested wood. In these cases both domestic and foreign mineral investment objectives obtain priority over forest conservation even when safeguards are explicitly included in policies and regulations

These conditions in Africa are similar to other parts of the developing world, such as the situation in Cambodia's REDD Readiness activities, as reported by Bradley (2011). There is a lack of clear legal framework for managing most of the land use change pressures on forests. Political and policy contradictions between REDD-goals and other development aims are common. In most cases they result from the fact that many countries implementation of REDD activities are in the formative stages. For other countries that have agreed to participate in REDD, it still is not a priority compared to other strategic development objectives, or that the national emphasis in climate change policy leans more toward adaptation rather than mitigation (McKenzie and Childress, 2011).

From our surveys, some countries that generally may have strong environmental or forest policies and institutions may nonetheless lack financial resources, or lack the needed analytical capabilities in economic, scientific or technical aspects needed to implement REDD-policies. The latter is particularly acute in most African countries, where even strong institutional capacity may exist in some parts of forest ministries or responsible agencies, the technical abilities to carry out such policies may be non-existent, particularly to the level or reporting required by most performance based REDD investment programs. In Africa, because REDD in practice is multi-stakeholder, multi-disciplinary, and multi-institutional, REDD is stressing governments *across* agencies and institutions in ways that previous single entity or single agency policies have not. In Zambia for example, "more than 30 different entities are responsible for formulating and implementing land use policies guided by outdated and inconsistent regulations" (McKenzie and Childress, 2011). Cross-sectoral coordination and cooperation between government departments will be an essential element of REDD, yet there is neither capacity nor apparent interest in this attribute of REDD implementation (McKenzie and Childress, 2011).

Another political consideration is the demarcation of the forest estate, or what legally defines the extent of forest lands. In the first instance there needs to be an acceptable and consensual definition of forest. In the second instance there needs to be a formal delineation of the boundaries of forests, especially for sub-national REDD projects (Bradley, 2011). Lastly there needs to be a formalized national system of demarcation, mapping and accounting to avoid problems of within- country leakage. Hence, the promotion of a national REDD MRV framework should include building the

institutional capacity to deploy: a national forest inventory, a national GHG accounting framework, national forest cover change assessments, and national carbon stock change assessments. In addition to these measurement capacities, reporting mandates will require the establishment of a national carbon registry, development of standard reporting procedures, and independent third party verification capacity and organizations (Bradley, 2011).

The broad consensus is that national REDD+ strategies need to be nested within broader national development strategies, because in most cases, the structure of a national REDD+ strategy would not be inherently different from that of other climate, environmental and development strategies. Hence, REDD+ readiness requires significant cross-sectoral coordination with multiple government agencies, including forestry and environmental authorities, land management authorities, finance ministries, sub-national government agencies, all of whom may have responsibility on some aspects of the process. It is important to highlight that in some countries forestry and environment agencies have to learn to work more closely together, as both have competencies related to REDD+.

- **Technical challenges: how performance monitoring/reporting metrics are being developed**

The physical, and environmental and economic context for REDD varies significantly across countries, reflecting differences in land tenure systems, deforestation and degradation drivers, recent experience with conservation, and governance capacity (Angelsen et al., 2009). Hence, there are a number of technical challenges that need to be addressed for a swift implementation of REDD projects.

Chagas et al. (2011) underlined that the emission accounting and compensation transfers require standards and protocols that integrate different accounting, management, and incentives systems at different scales of implementation and use. This multi-tier approach can be conceived as a "nested system" that layers projects or programs within local, state or national-level REDD+ accounting systems. Nesting is important because it allows incentives to be placed at the appropriate level of governance, as well as targeting approaches and methods that are suitable for the specific conditions at the place of deployment. While broader policy initiatives for national scale REDD may take years to be implemented, REDD+ actions can be developed faster at a project level, delivering near-term emission reductions. Across Africa we have found many project level activities where experience in establishing local investment and engagement mechanisms, as well as measurement, reporting, and verification (MRV) capacity can be documented. These cases can provide valuable experience to inform broader national policies.

REDD presents an opportunity to develop improved measurement, inventory and monitoring capabilities in countries that depend on the economic use of forest resources and products. The way to achieve that is a step-wise approach seen as the main advantages of the nesting approach we mentioned above (Chagas et al., 2011), which allows governments to move from independent project accounting, to multiple projects nested within state/provincial programs, and finally to a full-fledged national accounting system.

The UN-REDD Program (2010) recognizes that there are many challenges to the establishment of forest monitoring systems, which include MRV of forest carbon and related mitigation activities. At the same time the current dialog since Cancun suggests strong sentiment for a broader-than-carbon-only approach to monitoring REDD+ projects. One reason for this is the view that that any

implementation of REDD+ will require a deep understanding and analyses of how REDD+ policies impact and are impacted by other management objectives (that is, the wider range of benefits and issues related to forest resources and land use) as well as governance safeguards, such as for biodiversity, livelihoods in local communities, indigenous people and so forth. Another reason is that for MRV to fulfill the expected requirements of the UNFCCC, it will be more cost-effective if it is integrated with existing forest and natural resource management and monitoring systems in place for other objectives and programs. Furthermore, a strong focus on carbon without safeguards could present risks for preserving biodiversity; and ensuring the ecological integrity of forests would require additional transaction costs for REDD (Acharya et al., 2009). Taking into account these broader aspects of technical monitoring and reporting together with the fundamentals of MRV for carbon and GHG, the current under-capacity we find in most African REDD+ countries is acute and will require considerable investments to meet requirements of a future REDD+ mechanism.

Key technical and ecological challenges may also include ensuring the permanence and additionality of carbon stocks, preventing leakage, and setting an appropriate historical baseline or reference scenario for assessing reductions in deforestation and forest degradation. The establishment of effective national systems for MRV deforestation and degradation rates and carbon stock changes is technically possible but will be difficult to implement in Africa. Most countries in Africa do not yet have the technical capacities to implement Nation Forest Inventory (NFI) systems, nor the human resources that are needed for operationalizing a NFI strategy.

Full national participation in a global REDD+ system requires a far better MRV system than currently exists, and there is a huge capacity gap. Angelsen et al. (2009), shows that only three out of 99 tropical developing countries have very good capacity for monitoring forest area change and forest inventories. Development of MRV systems must also be closely linked to policy analysis, so that there is a better understanding of the processes of deforestation and degradation and thereby formulate more effective policy interventions with a performance-based payment system. MRV also includes certain regulatory functions that link project activities with the regulatory entity responsible for overseeing domestic implementation. These regulatory aspects include establishing approval procedures at international and domestic levels and creating a registry to support domestic policy options in the form of an electronic database that is designed to evolve over time as domestic MRV capacities grow.

Developing MRV is one of the main thrusts of the Readiness Preparation Proposal/Plans being developed by selected UN-REDD countries. Within the UN-REDD partnership, the Food and Agriculture Organization (FAO) of the UN takes a main responsibility for MRV development and sharing (UN-REDD, 2011). But FAO is regarded as slow and distant (due to management from Rome) and there are concerns regarding FAO's capacity to respond quickly to the specific situation in developing countries and coordinate MRV development with all the relevant local actors. In light of the major challenges involved, FCPF and UN-REDD have made MRV capacity development a priority. This study surveyed several near operational MRV systems that could and should be considered for adoption or collaboration. So far, the UN-REDD and FCPF have tended to look inward for solutions to the MRV problem posed here, when opportunities exist within a long standing expertise of the forest monitoring science community.

In this context it is obvious that developing countries are starting from a difficult position. Central to this is the fact that as their national inventory systems were never intended for the purpose of

forest carbon accounting and there is little evidence that the somewhat deep experience in forest inventory necessarily transfers to carbon. For instance, a stratification of permanent plots aimed at estimating the national volume inventory of merchantable wood, may not be the same sample design for reporting changes in GHG emissions with changing rates of deforestation and degradation. As well, most forest measurements aimed at wood volume for the merchantable stem are ill posed to capture whole tree or total stand carbon, including belowground carbon.

Thus where national forest inventories exist and can be used for the carbon MRV with some modification, those countries have a solid basis to start REDD by building on top of, and enhancing, existing forest measurement systems. However, for countries where REDD requires an initial and new sample, measurement, and inventory system these countries may face a difficult choice of selecting an efficient REDD focused MRV system that will not completely fulfill the requirements of a national forest inventory for national resource assessment.

To complicate things further still, many African countries are being "marketed" by purveyors of MRV systems based either on temperate zone systems or systems derived from carbon cycle science. In the case of the former, the ecology, geography, and a host of other differences prevent an easy (if indeed possible) transfer of this technology and know-how. In the case of the latter, science based system typically cover large landscapes at extremely coarse scales relevant to global carbon cycle science but extremely limited for national forest policy or REDD reporting.

The main technical Challenges will include the following issues: how can monitoring efforts generate information that helps policies and forest management reach their objectives, including REDD+ payments? What are the best tools and methods for an effective MRV system at various sectors, specifically suited to the ecology, geography, and conditions in Africa? The issues of REDD implementation in Africa has often been distilled into the question: will African countries be able to move from 1st Tier appraisals 3rd Tier appraisals?

Below we summarize in the list below our assessment of the main technical challenges:

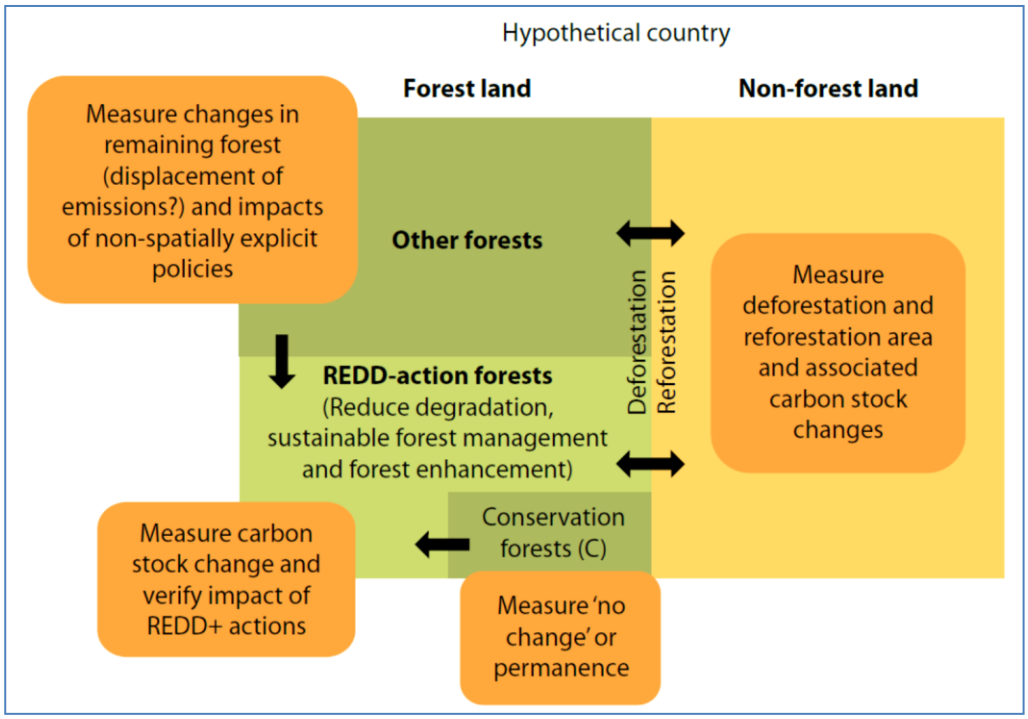
- limited experience in estimating and reporting national GHG;
- inventories, and in applying IPCC Good Practice Guidelines;
- challenges to continuously measure forest area;
- changes and changes in forest carbon stocks as part of a national forest monitoring system (reporting carbon stock changes on the IPCC Tier 2 level is considered a minimum requirement);
- account for country differences because specific challenges for REDD+ implementation that may not be relevant in all countries (e.g. currently they have different deforestation rates and institutional setup);
- monitoring drivers of changes resulting to significant emissions from forest degradation and fires, or their soil carbon stocks which are currently not measured regularly) and require significant investment to enable them to observe more IPCC key categories and move toward 3rd Tier level measurements; and identify where data sources for REDD+ monitoring are limited (e.g., satellite data such as Landsat, SPOT, CBERS may be limited due to lack of receiving stations, persistent cloud cover, seasonality, topography or inadequate data access infrastructure).
- capacity building activities should consider different entry points and aim for a minimum level of monitoring capacity in interested countries within the next few years.

Bond et al. (2010) references an example from Miombo woodlands, to summarize these challenges, concluding that they are primarily related to the difficulties of establishing baselines against which compensation levels for reduced deforestation can determined. This is not a simple determination, and must have documentation that reports: changes in land use, permanence of these changes, consideration of leakage (i.e. that deforestation is not simply displaced to another location), considerations of legal and policy issues to clarify who "owns" the carbon and who should benefit from its conservation, and the establishment of levels of payments.

Ramankutty et al. (2007) suggested that reviewing and summarizing a range of approaches that could be adapted to estimate forest carbon stocks across tropical countries at different tiers of detail and accuracy would be necessary. Gibbs et al. (2007) identified six available methods to estimate national-level forest carbon stocks with their benefits and limitations. These methods are: biome averages, forest inventory, optical remote sensors, very-high resolution airborne optical remote sensors, radar remote sensors and laser remote sensors. All these methods require a certain level of technical expertise, knowledge, financial underpinnings and skills. Some countries like Brazil have an excellent remote sensing capacity, both in terms of technical and human capacity (McKenzie and Childress (2011), but this technical capacity is not always available for most African countries.

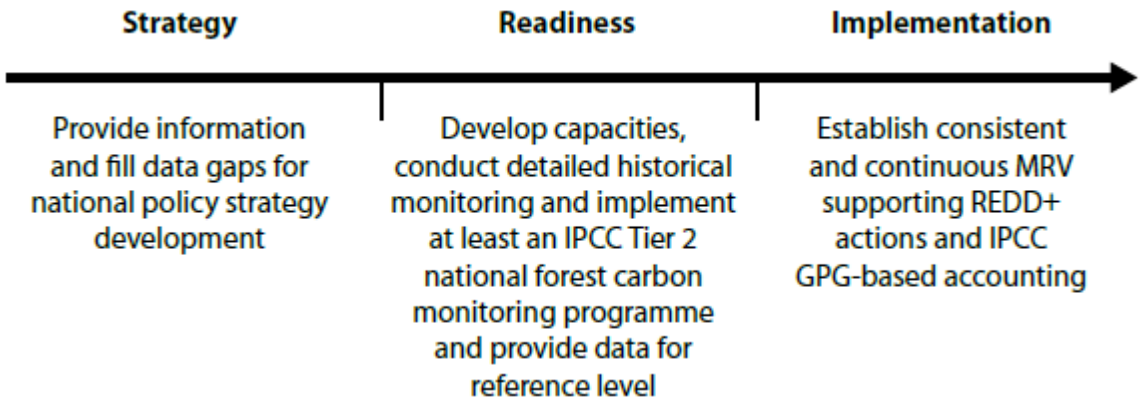
An important technical challenge to African governments is the REDD-program process; several steps need to be taken to fully implement a REDD-project (figure 8).

Figure 8. Technical requirements of REDD in various conditions (Angelsen 2009)



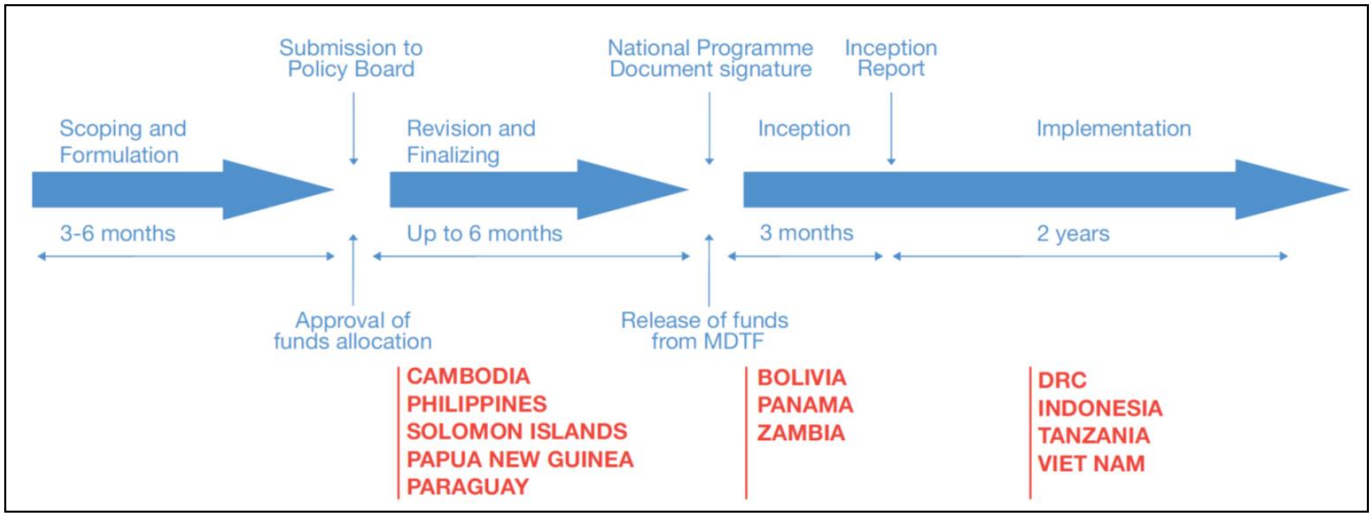
One component of this overall process is the development and deployment of a REDD-readiness phase, which is demanding, requires personnel, resources and investments. It also requires several technical outcomes, including a NFI for carbon, improved data (at least to 2nd Tier) and MRV tools (Figure 9).

Figure 9. Steps in the REDD process (Angelsen , 2009)



The UN-REDD program has a formal process that countries use, as shown in Figure 10. It is a challenging process. In 2011 only two African countries were fully through the process (DRC and Tanzania).

Figure 10. Country progress in developing their UN-REDD National Programmes (UN-REDD, 2011).



- **Social and economic challenges: REDD beyond carbon alone**

It we recognized in the Bali Action Plan (BAP) in 2007 during COP13 to the UNFCCC "*that the needs of local and indigenous communities should be addressed when action is taken to reduce emissions from deforestation and forest degradation in developing countries*" (UNFCCC 2007, 8). This includes capacity building, identifying drivers of deforestation, and piloting actions where emission reduction benefits are shared with multiple stakeholders beyond host governments alone. During COP16 in Cancun, the Parties affirmed their intention that several safeguards would be "promoted and supported," including the respect for intellectual property and other rights of indigenous peoples, and the full participation of all relevant stakeholders, especially indigenous peoples and local communities.

Fulfilling these intentions will depend in large measure on what financial resources are available and how they are deployed. Countries will be challenged to catalyze and influence REDD+ investments so that they change the way that forests are used and managed, not only in terms of carbon but also in the overall development context, and improved livelihoods (UN-REDD, 2010).

Distribution of benefits from emission reductions associated with REDD+ can be made in the form of market-determined carbon credits or performance-based compensation. Options to be considered in international negotiations include: direct distribution of benefits from an international REDD+ fund to projects, market allocation of allowance offsets for REDD projects, "over the counter" compensation from private sources, direct bilateral or multi-lateral assistance, or other mechanisms. Creating incentives through clearly defined benefits stream, rules and protocols is only one part of a national REDD+ strategy which may also include governance reform, fiscal incentives, and other policies that address particular drivers of deforestation. Consideration of these aspects of REDD is important for practical reasons (Chagas et al., 2011). The benefits of full social inclusion include: reducing the cost of implementation and monitoring, strengthening the ability to monitor areas that are difficult to access, and further ensuring the monitoring and enforcement of regulations (Raviet, 2011).

Our finding and view is that carbon emission reduction is only one of many potential benefits from REDD+. Biodiversity is a defining element of forest ecosystem structure and function as well as human well-being, and should be seen as an equally important factor for population resilience within a forest ecosystem at many scales. As such biodiversity, particularly in agriculture, can serve to secure the long-term stability of the forest carbon stock. Munang et al. (2011) underlined that REDD+ strategies go beyond REDD, and include the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in reducing emissions. As natural capital in a green economy, forest assets are important at many levels and in many sectors, and constitute the source of significant benefits to people, ranging from providing subsistence to mitigating the impacts of climate change. Therefore an investment in biodiversity and ecosystem services is also an investment in assuring forest carbon stocks. This has strong linkages with the leakage effect of forest protection; conversion pressure gets displaced to other ecosystems high in biodiversity or important for ecosystem services to sustain current livelihoods.

The major key concept of community involvement and benefit sharing is that information sharing, consultation, collaboration, joint decision making and empowerment are parts of the overall process and widely accepted modalities of operation. Such an approach ensures the safeguards guidance promoted by the FCPF and the UN-REDD Programme for the planning (REDD Readiness phase) and implementation of national REDD+ programmes in developing countries (Moss and Nassbaum, 2011). Safeguards are primarily designed for program implementation, but can also support the delivery of positive benefits and sustainable development goals over the duration of the program and thereafter.

Safeguarding needs to consider risk management. At the *project-level*, simple risk mitigation tools may be needed to address the issues of permanence and project performance. However, when rewards or benefits for sub-national project activities are linked to the overall performance of the *government*, additional risks can be generated beyond a local project's control. Commonly cited risk management tools include: (i) buffer and reserve accounts; (ii) insurance mechanisms for reversal of carbon stocks; (iii) government guarantees; and (iv) penalty fees for sanctioned deforestation. These tools could be applied in many different combinations (Chagas et al., 2011).

3.3. Managing incentives and social benefits in REDD

- **Consent and adhesion of local communities**

The UN-REDD (2010) introduced the concept of *Free, Prior and Informed Consent* (FPIC)[1] to account for the collective right of peoples-particularly indigenous and tribal peoples, to give or withhold consent regarding decisions that may affect the rights and interests associated with their lands, territories, and resources. The lands, territories and resources of indigenous peoples and other forest dependent communities constitute a large proportion of forested lands likely to be targeted by REDD+ actions in developing countries. Therefore, there is a strong need for safeguards for the land tenure rights to ensure permanence in REDD+ and to maintain the rights of all stakeholders.

[1] ***FPIC*** *is explicitly recognized in key international instruments such as the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) and ILO (International Labor Organization) Convention169. FPIC is increasingly being applied across a range of sectors, such as conservation, extractive industries, forestry, plantations, and even infrastructure development such as dam development. A number of key agencies (e.g., the UN and certain regional Multilateral Development Banks), NGOs, certification schemes such as CCB standards, and industry-related organizations, such as the Roundtable on Sustainable Palm Oil, refer to FPIC or principles of community consultation and consent in their policies and principles.*

UN-REDD Programme is currently developing guidelines for FPIC in its activities. The question to define is just how access to FPIC should be operationalized. Addressing this issue will certainly help decrease the probability of conflicts that could seriously disrupt or undermine progress with implementation of activities. This then places FPIC on extremely practical footing. Indeed, it is being widely adopted by private companies involved in the forestry sector more broadly.

From these observations we view that while avoided deforestation has great potential to benefit local livelihoods, the way REDD investment funds are managed could jeopardize realization of these other benefits of carbon sequestration, forest services and land stewardship, conservation targets, SFM (including fire protection or unexpected severe drought), and forest restoration (Wollenberg and Springate-Baginski, 2009). A REDD-activity should seriously consider the needs of alternative livelihood options and uses for forest products other than for carbon sequestration or conservation and reconcile these opportunity costs to permanent forest cover. More importantly, it is not yet clear how to manage and account for equity[2] in the distribution of benefits across multiple scales and stakeholders. In poor countries of Africa there is an objective risk that REDD benefit flows will be channeled to other national scale priorities. This is an especially critical concern for large scale, national REDD-initiatives, even while implementation is at a local level. The main hanging issue is therefore how to craft community participation that safeguards the interest of local vulnerable stakeholders regardless of whether the REDD-project is local or national. In that respect some concerns have been expressed that addressing multiple benefits will be difficult and costly and therefore lacking the returns on investments that will be required to safeguard the multiple benefits of forest (UN-REDD , 2010).

If REDD+ considers a whole range of multiple benefits and potential stakeholders, it could overwhelm the mechanism and reduce its capacity to carry out its primary aim of emissions mitigation through carbon storage and enhancement. Nevertheless, there is reason to believe that multiple benefits could strengthen the effectiveness of the mechanism. This would not only require identifying potential ecosystem services that are likely to deliver the highest economic and ecological returns, including considering trade-offs with other products and services, it would also involve clarifying and settling tenure issues, creating a conducive institutional and governance framework.

The legality and legitimacy of FPIC, as largely driven by international instruments such as the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), could take time to be included in national legislations. Respecting FPIC may require multiple consultations and time for communities to come to an informed and fully consensual decision. REDD+ has to account for and be responsive to the pace of all stakeholders, however there is significant urgency for implementation.

Most importantly, the REDD+ Social and Environmental Standards (REDD+ SES) has been suggested by a multi-stakeholder initiative facilitated by the Climate, Community and Biodiversity Alliance (CCBA) and CARE International to guide the design and implementation of government-led REDD+ programmes, and ensure that projects respect the rights of Indigenous Peoples and local

[2] ***Equity*** *as a goal in REDD+ may embody a wide variety of theoretical parameters, including most notably the following elements – Equitable compensation: all participants' rewards match contributions; Equal opportunity: safeguards to ensure poor and marginalized groups have equal chance to participate; Poor targeted: poor communities actively recruited, provided equal voice and rewards to all participants although programme not exclusively for poor; and Poverty alleviation: participation and rewards prioritized to those in greatest need, potentially irrespective of contribution or ability to perform (UN-REDD, 2011).*

communities, and generate significant social and environmental benefits for them (Moss and Nassbaum, 2011). The risk of not generating returns for communities raises the issue of opportunity cost of REDD implementation. Opportunity costs change due to fluctuations in markets, technologies, and national and political regulatory and social norm and is appended to a comparison between the value of REDD returns to their next best option for a given hectare of forest land (UN-REDD, 2011).

We find that in Burkina Faso, a rough calculation based on conservative estimate of deforestation trends suggest that even a complete halt of deforestation and forest degradation would not enhance incomes large enough to significantly reduce poverty in the country. However, the rural population of Burkina Faso is very poor and even small economic contributions may make a difference in strained household economies and various options they may take on their farms. For instance, farmers in Africa have difficulties moving from annual cropping systems to perennial systems, such as agroforestry, because of delayed benefits. That is, the lack of income precludes them from foregoing production in the agroforestry system while it matures. Having carbon payments in these early years can provide just enough supplemental income to enable the shift. However, to be genuinely pro-poor, a REDD+ scheme must not limit the possibilities of using the forest for collection of non-timber forest products (NTFP) and should ensure that livestock breeders are not expelled from the forests without compensation or alternative grazing opportunities (Westholm and Kokko 2011).

- **Distribution of benefits across multiple scales and levels**

Deforestation and land degradation are among the most important factors that impact on the environment and cause climate change. Researchers estimate that only 13% of the desertification is caused by natural factors but 87% of all cases are due to anthropogenic factors (IGES, 2009). Clearing land for agricultural intensification or shifting cultivation and removal of natural vegetation due to urbanization and wood extraction are the major human activities that contribute to deforestation and forest degradation. Subsistence agriculture and intensive agriculture, which represent respectively 54 and 35% or a total of 89%, are the dominant drivers of deforestation in Africa (Costenbader, 2011).

Because most of rural people in Africa rely more heavily on subsistence agriculture and exploitation of forest resource for their livelihoods, the implementation of REDD-initiatives must provide sufficient incentive for the communities to maintain natural forest cover. The REDD-mechanisms are more likely to succeed if they build on, rather than conflict with, the interests of local communities and indigenous groups; (Wollenberg and Springate-Baginski, 2009), as a result of engagement of land users "*who are unable to respond adequately to indirect factors like population pressure and globalization and who increase the pressure on the land in unsustainable ways*" (MEA, 2005).

Forest management interventions have shown that the design, strategic context and implementation of projects at the local level are key determinants of intervention success (Hajek et al., 2011). It becomes then to have a strong consideration on agricultural trends and need in the continent as it is one of the important drivers of forest degradation, but at the same time is a necessity to supply with food the rapidly growing population.

3.4. Managing trade-offs between sectors

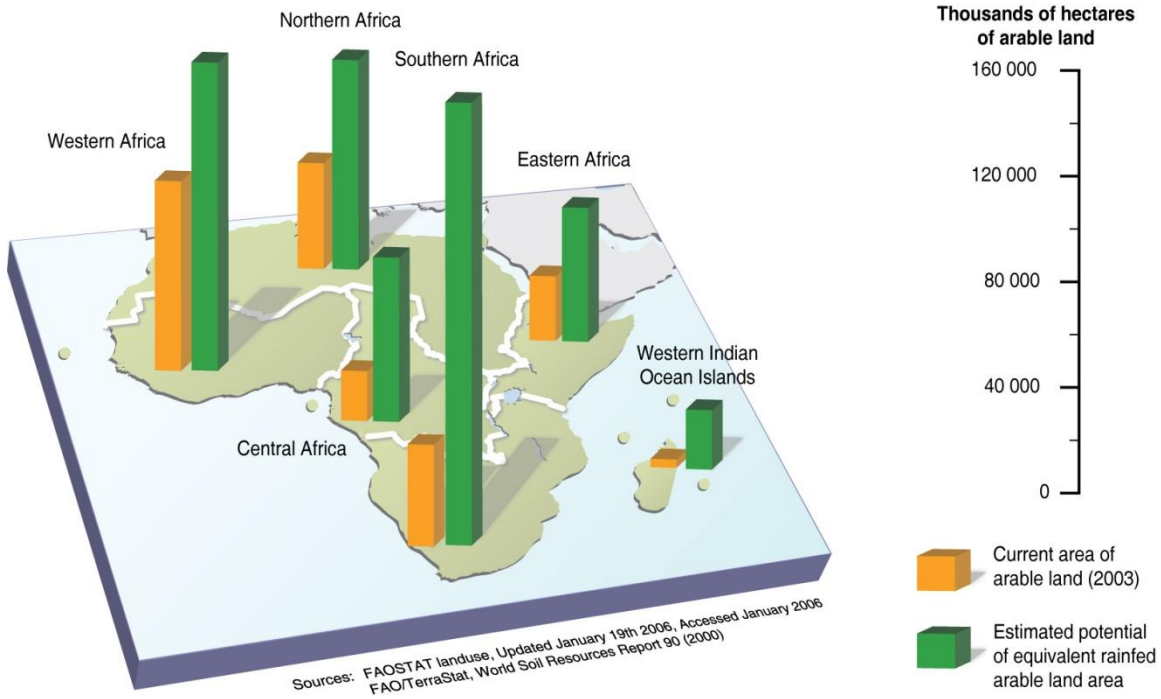
- **REDD and the agricultural sector: Links to long-term development**

A study based on 20 current country Readiness Preparation Proposals (R-PPs) from Kissinger (2011) reveals overall that REDD+ strategies and actions generally fail to address agricultural drivers. Agricultural production and expansion is reported as the primary driver of deforestation and degradation. Despite its major contribution to GHG emissions, agriculture can play an important role on mitigation strategies. However, most of the countries do not have a policy that encourage taking the opportunities of agriculture as a potential mitigation factor (Bradley, 2011).

Recent studies showed that Africa has large "unused" lands and cheap labor, compared with emerging economies (such as China and India) and oil-producing countries. As Figure 11 shows, the potential area for rainfed crops in Africa far exceeds the current area of arable land. A survey of studies cited in Cotula et al. (2009) suggests that the majority of the world's reserve agricultural land is in Africa and South America. Africa has thus become an attractive destination for both avoided deforestation activities and potential land for agribusiness. The land renters are rushing in the fertile lands of Africa.

The new "land grab", deals with large agribusiness activities from countries rich in financial capital but poor in suitable land for agriculture are acquiring large tracts of land in countries with land reserves. Many nations are contemplating a shift towards biofuels, a trend that has as much to do with securing long-term supplies of fuel as it has to do with reducing GHG emissions (Mbow, 2010). Approximately 300 million hectares of potentially cultivable land is estimated for Africa (for example, Figure 11), and the continent is thus fast becoming one of the favored destinations and will remain so for the next decade if strong international measures are not taken.

Figure 11. Available rain fed agriculture in Africa (FAO Stats).



The land reserves are not necessarily available. Much land already has other uses, such as wood extraction and livestock grazing, as well as providing vital environmental services (as do tropical forests, grasslands and wetlands) (HLPE 2011).

Agricultural drivers of deforestation include a full range of clearing activities related to plant and animal-based food products, ranging from smallholder impacts to large-scale commercial and industrial agriculture production, primarily soybean, oil palm and cattle for meat production. Most of the African countries reports population expansion into forest areas and the related resource needs, such as agriculture and livestock management combined with use of fire as the primary driver. Many countries cite shifting cultivation as the primary driver and raise the challenge for developing countries to confront the force of economic globalization, which seeks cropland that is shrinking in availability and triggers deforestation, (Kissinger, 2011; Lambin and Meyfroidt, 2011).

In DRC and Cameroon, Chinese agribusiness companies have recently been negotiating for parcels of agricultural land of 10 000 to 100 000 ha, for food and palm oil production projects. The initial land deals associated with these developments may not be in the best interest of local farmers with informal or customary tenure and usufruct rights over the same lands (Putzel et al., 2011). In addition, Chinese trade and investment in the forestry, mining and agricultural sectors in the Congo Basin might impact forests and forest-dependent communities in the heavily forested region (Putzel et al. 2011). The Chinese companies vary greatly in their compliance with legislation and other responsibility norms in their activities within the forest, and in their development and implementation of sustainable management plans.

Now, the issue is how countries more adequately can address agricultural drivers in their REDD+ strategies, including: identifying clear strategies to address demand-side and market pressures, and how government action can influence those; sorting out tenure and land access rights; strengthening cross-sectoral policies; linking mitigation to adaption; boosting efficiency and production of agricultural systems; and incorporating agricultural carbon measurement in national MRV systems. To implement such policy successfully, mitigation in agriculture will need to be compatible with national goals for food security, economic development and trade (Wollenberg and Negra, 2011). There is a necessity of linking REDD and agricultural policies, programmes and institutional and governance arrangements. As the primary driver of forest clearing, agriculture must be addressed by governments implementing REDD-programmes if they need to reach the REDD+ carbon emission mitigation targets (Kissinger, 2011).

For countries implementing land based mitigation strategies, key questions remain over how best to address the drivers of deforestation and to enhance sequestration and carbon stocks in both the forestry and agricultural sectors. The immediate priority is to build on the momentum of current efforts and to transition to the required scale. For developing countries, there is scope for agriculture to be addressed under REDD+ as a driver of deforestation (The Terrestrial Carbon Group, 2011)

- **REDD and the forest Sector (Carbon versus other ecosystem services)**

Wollenberg & Springate-Baginski (2009) and Angelsen (2009) stated that there are four main types of policies to reduce deforestation: policies that bring down agricultural profitability (rent) in forested areas, policies that increase the value of standing forests and enable forest users to capture

that value, policies that directly regulate land use, and broad, cross-sectoral policies that underpin the first three.

There appears to be a range of approaches to assessing the performance and success of REDD investments and interventions, with no clear consensus on what indicators would be best for a results and reporting framework. It is difficult to compare across projects and evaluate what works and does not work because many projects have different aims and implementation strategies with a range of emphasis on and assessment. In addition, success of REDD-projects will depend on better MRV systems so that there is accurate reporting of results. These reporting frameworks need to be accurate and cost-effective, and there is a large capacity gap in the necessary technical skills in Africa. The old debate of technology transfer has not been put forward to enhance low technical capacities for improved monitoring requirement and reporting needs that are necessary in these types of projects. In general skills exist to do vegetation inventory, but subsequent analysis using allometric equations or modeling platforms is generally lacking and will reduce the aptitude to fully benefit from the REDD-initiative. Development of MRV systems must also be closely linked to policy analysis to better understand the processes of deforestation and degradation and thereby formulate more effective policy interventions (Angelsen et al, 2009).

The issue of raising incentives for timber harvesters to practice reduced impact logging may face challenges with private companies that already own large contracts in dense forest in the DRC for instance. There is also the irregular logging activity both in forest and open vegetation cover that are mostly related to livelihoods together with environmental service-benefits that may undo efforts in forest conservation.

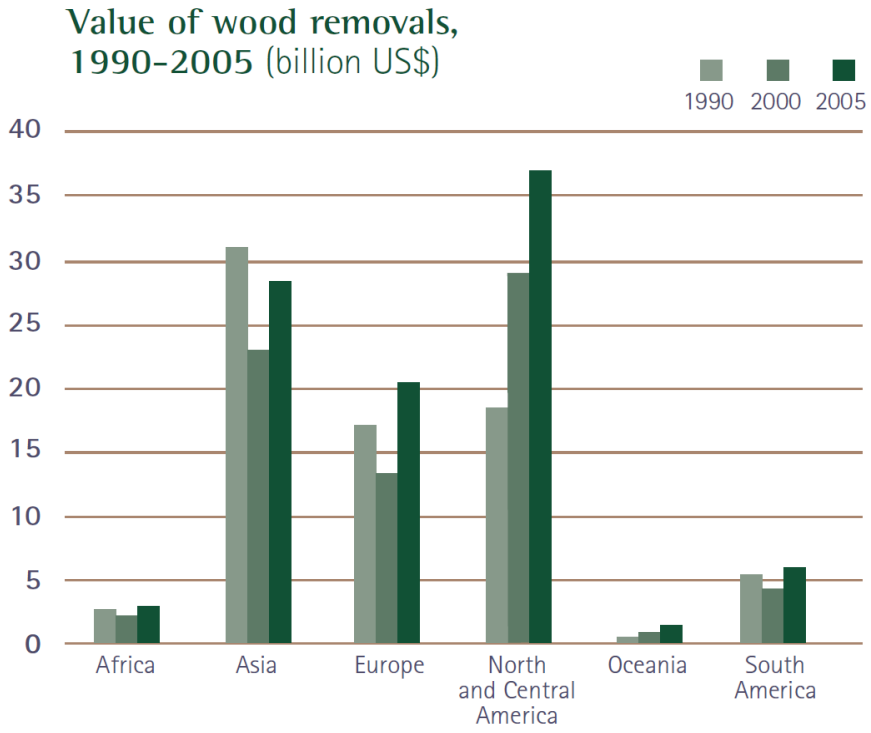
Hence, to ensure forest permanence, a lot will depend on the market and how forest carbon credits along with forest ecosystem services are valued in relation to land use alternatives (Bradley, 2011). This means that payments should be provided to local communities for reducing emissions from deforestation in order to address poverty and forest-dependent people's disenfranchisement. Revenues from REDD-activities should reach the intended beneficiaries and have significant impacts on their livelihoods. A prerequisite to address smallholder agricultural impacts is to sort out tenure and land access rights. This is also cited by many countries as critical. For example, countries such as Argentina identified clear conflicts between REDD+ and national agricultural policies (Kissinger, 2011). However, Brazil which offers a unique example of increased agricultural production while decreasing national rates of deforestation could be a good example for African countries regarding the link between mitigation and adaptation, especially when implementing REDD-activities.

The price of carbon is also yet a big issue to create enthusiasm for farmers to get involved in carbon sequestration project, in particular REDD-projects. The price of carbon should provide net economic returns be equal or more than the net economic returns from alternative uses of land in order to encourage communities to participate. Analyzing the issues and prospects for REDD in the Miombo woodlands, Bond et al. (2010) argue that the price of carbon that would make REDD+ attractive in the three countries reviewed varies between US$2.49 and US$3.71 per ton of carbon dioxide equivalent. However, the carbon market is not the only mechanism. The payment of emission reductions from REDD-activities could be rewarded in the form of carbon credits but also by building social infrastructure for local communities to promote community development and poverty reduction activities. Whether individuals or communities receive benefits or whether they receive it in cash or in-kind benefits, the payment design and the timing of payments should be

discussed with communities (Costenbader, 2011), requiring a large public participation. But, no matter which system is used, there is another important factor that need to be addressed which is the necessity of establishing a transparent and efficient benefit distribution system (BDS) to reward those actually providing the (emissions reduction) service. Countries such as Cambodia, despite its huge opportunities in REDD, is still facing challenges in distributing funds from central authorities to the local level with transparency and accountability (Mather, 2010). This is mainly due to politicization and interference from powerful patrons in the management of allocated funds.

This situation in Cambodia is not uncommon for African countries but the payment mechanism in Laos where local stakeholders are equitably rewarded for their services, thereby creating financial incentives for village participants provides valuable insights to inform the development of a REDD benefit distribution system for African countries. Overall, it is important to "institute separate rules and control systems to ensure that rural poor in developing countries do not become the losing party in the game over who should carry the costs for reducing global climate gas emissions (Vatn and Vedeld, 2011). The value of wood may buoy a general hold on forest protection rather than reducing deforestation (figure 12).

Figure 12. Market Value of wood removal (FAO, 2010).



The income from wood removal is very low in Africa. Unfortunately the price of carbon is very low too; and does not reflect the value of supporting the carbon ecosystem function of the forest. The problem is that there is a price for forest products and services, but not ecosystem functions that make those products and services available.

In the State of the Forest Carbon Markets new report (Diaz et al., 2011), it is stated that "average price for offsets across the primary forest carbon markets rose from US$3.8/tCO2e in 2008, to

US$4.5/tCO2e in 2009, and up to US$5.5/tCO2e in 2010" and that "prices reported for CDM forest credits fell slightly from US$4.7/tCO2e in 2009 to US$4.5/tCO2e in 2010".

If the price of carbon remains very low people will rather deal with concerns that are more immediate than tackling deforestation and forest degradation and these could be against REDD:

1. Cutting trees and clearing forests for cropland
2. Collecting fodder for livestock or grazing livestock in the forests and woodlands
3. Collecting firewood and burning charcoal
4. Harvesting timber and poles for domestic housing
5. Collecting of non-forest products that support livelihoods

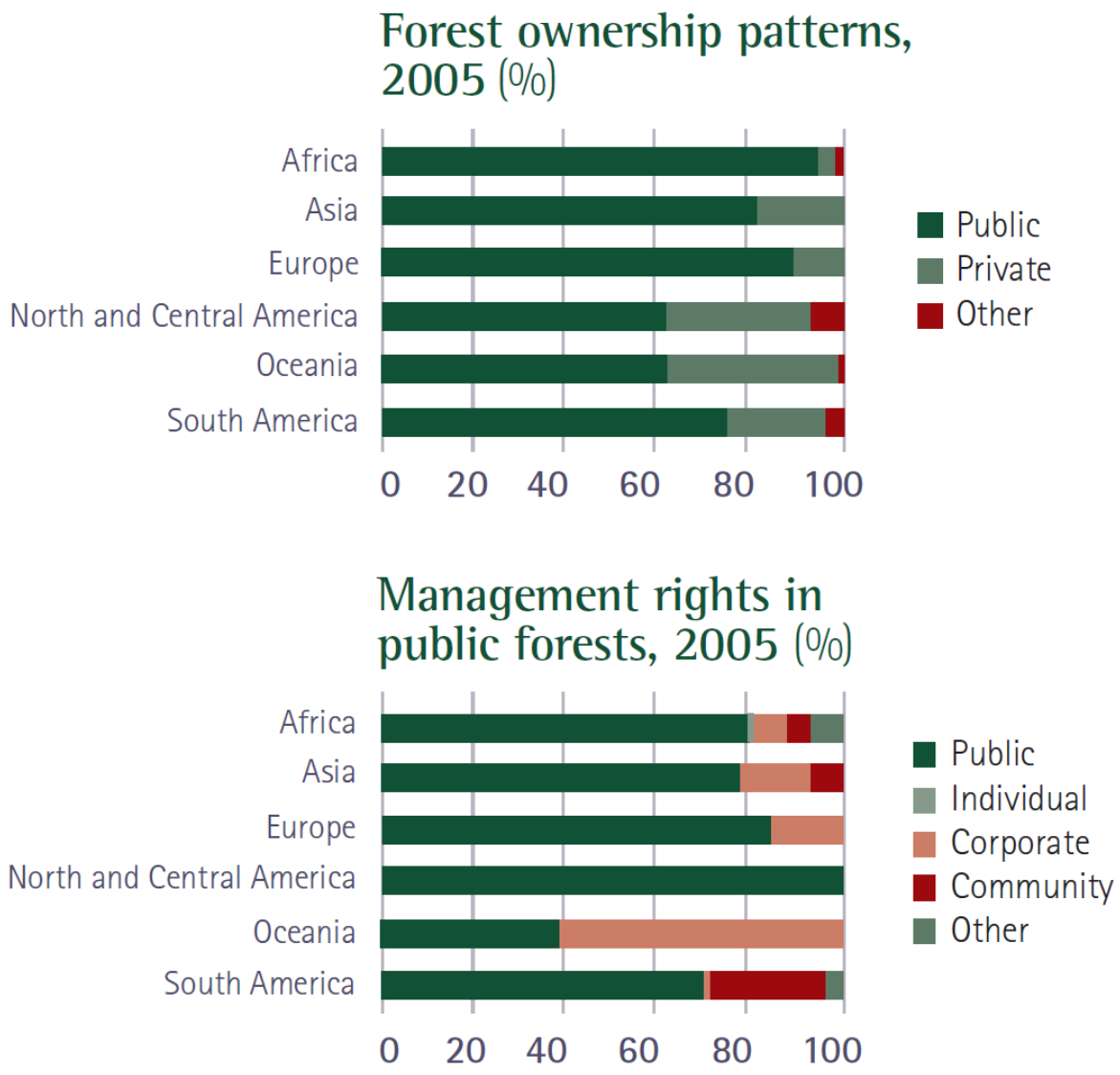
All these activities support individual and national economies, they are important for poverty eradication and they appear to go against the thrust of REDD+. So it is very important to address the issue of resourcing and funding within the REDD-concept.

3.5. Managing land access, tenure and rights

While REDD could restrict the use of forest resources and important livelihoods options may be lost by rural farmers living close to forests and dependent on forest resources, they will need compensation from REDD-programmes. In many PES and REDD+ pilot schemes developed to date, payments are made to individuals with secure land tenure (Costenbader, 2011). This is a sufficient reason why land tenure need to be clarified, especially when incentives are meant to target intended land owners and users as it is the case for REDD. However, these issues of land access, property rights, and land use are key challenges because "most African populations conduct their lives with the idea that 'ownership' of land and trees is based on occupancy, use, lineage, and other inborn rights" (Unruh, 2008). Hence little land owners have official documents for the sites they occupy. Even though African governments often ignore customary tenure systems and regard such areas as part of the public domain, there is a "lack of capacity to enforce such a claim or resolve the problems that such a claim produces" (Unruh, 2008). In many African countries, the land tenure system and property rights might constitute an obstacle for communities to receive payments because land belongs to the state. Tenure insecurity, along with the non-availability of land and the high transaction costs are important barriers to participation in REDD-initiatives. This raises the questions of how carbon will be regulated, defined, and owned. This uncertainty of carbon property rights includes whether they will be linked to tree and/or land tenure, as well as potential legal conflicts over carbon ownership (Richards, 2010). In Brazil for example, the systems of ownership is very complicated and have led to insecure tenure and disputes over land ownership, making it necessary for the government to regularize title over public land in the Amazon though the promulgation of the Terra Legal Programme (McKenzie and Childress, 2011). In DRC, most of the country's forest area can be considered as local community property but there is a lack of clarity in property rights and overlapping land, forestry and mining concessions are key issues that need to be resolved to allow for the implementation of payments to communities based on results (DRC, 2010). Insecurity in tenure could therefore be a great threat for forest management programmes and REDD-initiatives. REDD-programmes could have a bad impact on local and indigenous people's right, especially their right to land but the example of the Noel Kempff project in Bolivia is a relevant example of how REDD can also reinforce or augment certain customary property rights (TNC, 2009). In a case study from Ghana, Richards (2010) argues that it is more important to focus on how local stakeholders are compensated for their efforts to sequester or store carbon than to raise the question of who owns the carbon.

Land tenure and equity are closely correlated, as wealthier members of society can monopolize PES where tenure is weak or complicated. Traditional access, ownership and use rights systems, especially those in sub-Saharan Africa, present a challenge for PES where such rights are vested in entire communities (often with overlapping hierarchies of rights) rather than a single land owner (UN-REDD, 2011), Figure 14.

Figure 13. Forest ownership and management rights (FAO, 2010).



It is important to recognize that huge parts of African forest do not have a management plan (may be integrated/holist land use management plans) and if any the application is rather chaotic. The general rule is the free access of the resources, because this is how communities use to maintain their forest. The maintenance of forest in various part of Africa is related to practices over centuries of a swift balance between extraction and recovery. With the income and benefit motives driven by market rules and the growing population there are competing practices of forest resources

extraction including extensive agriculture that reduce forest stands over time. In Africa, a limited implementation of forest management plans is a general rule (Figure 15).

Figure 14. Forest with a management plan (FAO, 2010).

Closely linked to forest tenure are the questions of carbon rights and benefit sharing. Allocation of carbon rights is a precondition for subnational carbon crediting, but not for most other policies (Angelsen et al., 2009). In the case of REDD+, benefits may also depend to varying degrees on access to carbon markets, social networks, knowledge and information, and enforcement capabilities (e.g. for sanctioning encroachment and illegal logging). In order to ensure equitable REDD+ benefit sharing, a broader suite of governance reforms in and beyond the forest sector will therefore be needed in addition to tenure reforms.

3.6. Resourcing and funding issues

The role of REDD as an effective mitigation option and a potential development opportunity for developing countries is largely discussed. The concept has now gained much acceptance in such way that the question now is not whether, but how, it will be implemented and with which means. With the significant advancements made in forest and land-use carbon accounting standards in the last five years, the key barrier to implementation now is a lack of funding to this critical sector. But funding levels through public finance do not cover all the expectations. Hence, the private sector must be strongly come into play with the risk of marketization of ecosystem services, which in Africa is rather a livelihood assess and not purely an economic good. It is clear from current funding trends that private sector interest is increasing with growing business and consumer support for offsetting as a market-based mechanism that attributes value to forest preservation (Terra Global Investment Management, 2011). This is particularly true for the open market business.

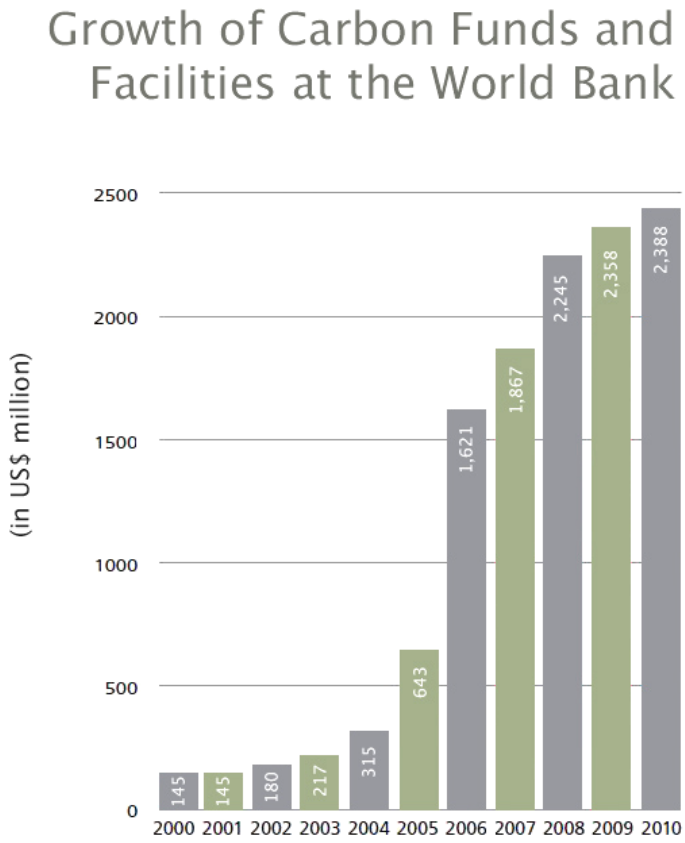
Developing REDD as a market mechanism challenges the traditional development paradigm based on resource extraction and requires a reversal of what in the past has been seen as a direct access to wealth. Therefore, the basis of income generation in targeted countries is being perceived both as a cause of deforestation (demand for timber, increased agriculture, etc.) and the as a potential solution to deforestation.

Within this framework, the funding of REDD-activities remains a more complex issue. While some specialists suggest an international fund to support reforms and specific measures to tackle deforestation and degradation (Karsenty, 2008), others are advocating the two basic approaches to REDD financing which are government funding and market-based instruments (Viana, 2009) or combining both public and private approach in an "hybrid approach" (Thies and Czebiniak, 2008). There is a considerable debate over which of these approaches but some countries such as Brazil who is involved in the Forest Investment Programme (FIP) prefers a voluntary fund-based approach rather than market-based system to prevent deforestation. Other countries like Cambodia are benefiting from a co-financing from the UNDP-GEF SFM project and FAO-TCP (McKenzie and Childress, 2011).

One important idea that support REDD-activities is that northern countries must provide the needed financial support to southern countries' climate change mitigation and adaptation activities as REDD must "generate a significant level of compensation or economic incentive to outweigh the income generated through deforestation" (FoEI, 2008). For example, in some countries like Cambodia, a number of donors have started delivering funding to REDD-initiatives but "the current levels of funding in the sector is not yet sufficient to meet national or sub-national project needs" (Bradley, 2011). To address such situation, it is recommended that REDD projects should have the capacity to attract private funding in addition to national funds with an objective of setting up systems that can avoid rigid bureaucratic rules and be able to keep corruption down (Vatn and Vedeld, 2011).

REDD+ may rely on the positive willing for PES-schemes in the sense that this may contribute to poverty alleviation. Although PES is not a panacea for African poverty, they provide opportunities for those who manage environmental services to benefit directly. The potential is especially great in the growing carbon markets. Global markets for carbon sequestration services are directly influenced by the global debate on climate change. Carbon markets is worth US$145 billion in 2000 to US$2400 billion in 2010 (figure 13), much more than projections from Carbon Funds & Facilities at the World Bank.

Figure 15. Evolution of funds avaliable for carbone transactions (Worldbank, 2011).



Africa's current share is only 2% of the market. The challenge is to capture more of these funds as a large part of the avoided deforestation is expected to happen in Africa and that is where challenges that combine mitigation and adaptation are the most paramount. This may require an "*affirmative action*" plan to direct funds in Africa.

It appears already that while it has not been easy to determine the sources of most existing global funds in absolute terms – NGOs are comparatively more involved in financing current REDD+ activities in Africa than in other parts of the world, such as South America and Asia. This is a good sign, but as raised earlier the success of REDD will strongly lies on how to distribute benefits to forest communities in a just, equitable (effective, exclusive) way that minimizes capture of the benefits by national governments or local elites remains a pertinent though as yet unanswered question on the continent. Reports from some countries, for example Cameroon, indicate that there is no empirical field project on REDD+ that has generated the information required to outline a benefit-sharing plan.

The costs of conducting carbon stock assessments have traditionally been considered prohibitively high. However, evidence on the continent shows that involvement of local communities in carbon assessments would considerably reduce costs. Reports from ongoing pilot projects in Africa have shown that assessments of carbon stocks can be done by local communities (Peskett et al., 2011; Skutsch and Ba, 2010).

In Ghana for example there is a long list of fund sources listed below:

- Bilateral and Multilateral sources; e.g. CIDA, IDRC, DANIDA, IFAD, UN-FAO, UNEP, IFS, etc.
- Private sources/Foundations; e.g. Gordon & Betty Moore Foundations of the USA as well as funding by NGOs.
- Available Carbon Markets; e.g. World Bank (Bio-carbon Fund, FCPF), The Strategic Climate Fund (SCF) through the FIP as a window that supports developing countries' REDD-efforts. It is hoped that FIP will provide up-front bridge financing for readiness reforms and investments for identified projects through national REDD readiness. Others include the Green Climate Fund (GCF) currently been negotiated.

Many projects in DRC have been funded with various donors for a range of goals. This huge amount of money invested may create subsequent assets but could well be a source of competition and money mismanagement (see Annex B for the list of projects reported).

That notwithstanding, another challenge is the problem of accessing these funds. There is the need to build capacity in that respect and finally coordination of activities.

The funding source may pay a special attention to the possible destination of funds. This means heavy emphasis in governance and accountability as well as in technical and social transparency across various decision making levels (NORAD, 2011). Also, enabling easy access to available funds may be instrumental in the swift implementation of projects on the ground.

4. Prospects of REDD+ in Africa

The following bullets are compiled strong statements on REDD prospects in Africa:

4.1. Political and institutional prospects

- National policies will need to target the key causes and processes that alter forest carbon on the ground. For an MRV roadmap, one needs an understanding of the active drivers and processes of forest emissions. This requires further studies in order to select actions which are likely to be successful in meeting REDD+ objectives.
- Assess how REDD+ policies in specific forest types will have to address the acceptable deforestation needed for socio-economic development including providing access for people who depend on these resources to enhance their livelihood. REDD+ cannot eliminate or sufficiently reduce poverty on its own. So, REDD+ should be seen as a whole and not only in terms of carbon.
- Apart from increasing emphasis on better forest management, REDD+ expands the horizon for managing forests for multiple products/services and uses. It is about to incorporate REDD+ in forest management. Managing forests with an additional objective of reducing emissions could gradually be promoted as a regular good forestry practice, with or without financial incentives.
- The pressure to reduce deforestation needs to be spread across many levels to reduce the burden on forest communities.
- Roadmaps to build and sustain capacity for MRV national REDD+ implementation according to national and IPCC requirements and principles must be effective, efficient and equitable.
- Countries with weak capacities and limited data will need more time to reach full REDD+ readiness than countries with stronger capacity and better data.
- Multilevel, multiactor governance of REDD+ schemes will be needed to overcome differences between government ministries, and to build the trust of investors and local citizens.
- There is a risk that while efforts are made to make African countries REDD ready, the investments required for implementation will not be forthcoming. So the future effort may be oriented on securing funding for REDD implementation.
- A national REDD+ strategy needs to encourage specific local actions. A national carbon monitoring system should provide data on these local actions, but also be flexible for more detailed, accurate measurement at these sites. More specifically, a national estimation and reporting system needs to incorporate measurement at the subnational scale driven by REDD+ related activities.
- With regards to low-carbon (energy) development, the wood-energy sector, the actions proposed have to do with reducing wood (charcoal) consumption through the introduction of cheap improved stoves especially in urban centers, while trying plantations for wood supply.
- Much of the policy and legal framework is quite new, and lessons must be gathered in implementing the frameworks that will inevitably be used to amend or replace existing instruments.
- Reinforcing institutional and governance capacities and increase commitments to transparency (Hufty and Haakenstad, 2011)
- There is a need for complete clarification of paradigm for stakeholders. In particular, Local Communities and Sector Ministries. There is the need to ensure institutional coherence among Government Ministries, Departments and Agencies (MDAs) so that REDD actors at the local

and community level would be seen as monitoring and enforcing mitigation strategies effectively together.

4.2. Technical prospects

- Demonstration activities are essential in order to establish a basic stock of practical experiences related to REDD+ that may inform national level implementation (Cerbu et al., 2011).
- REDD+ readiness activities are those measures and mechanisms deemed necessary for the establishment of an enabling framework for the full implementation of REDD+. Among these measures are land tenure reforms, effective enforcement of land use laws and regulations, and the establishment of systems to reliably monitor, report, and verify forest emissions.
- As the cost of community carbon monitoring is likely to be much less than from professional surveys there is a need to think about tradeoff between the cost of data collection vis-a-vis the value of carbon that communities could claim.
- Need National Forest and Carbon Mapping to establish a baseline. What is needed is verification of information on-the-ground.
- Explicit controls are needed to prevent capture of benefits by elites. PES, CDM and voluntary carbon forestry programmes have tended to reinforce existing power relationships, leading to disproportionate benefits for intermediaries and the elite. Weak collective action has allowed the wealthiest to accumulate benefits. Levies on certain kinds of projects, geographical quotas and voluntary standards for sustainable development would help programmes improve social equity (Brown, 2009).
- Participation in REDD+ requires much more emphasis on MRV than has been the case in most national forest monitoring to date.
- Without clear links between REDD+ MRV and policy from the outset, REDD+ compensation schemes that are based on results will be ineffective.
- Explore how to improve efficiency in harvesting, processing and use of forest products (e.g. fuelwood, timber, and non-timber products) and increase the supply of forest and tree products and services (e.g. plantation forestry, conservation agriculture with trees, agroforestry).
- Instead of trying to characterize BAU scenarios in areas where data are missing it would be far more realistic to define the extent (a percentage of the present) of forest that a given country commits to manage sustainably and be compensated for the effective implementation of this commitment.

4.3. Social and economical prospects

- Enhancing tenure security through formal legal acknowledgement of local resource rights and sharing of benefits from forests, forest land or forest product (Wollenberg & Springate-Baginski, 2009). This requires land tenure reforms as 86% of the 5.4 billion hectares of the world's forests are officially owned by central governments (Agrawal et al., 2008)
- Providing incentives that address drivers of deforestation at multiple scales (Karsenty, 2008) which require a coordination of actions at all levels.
- Tackling the issue of how REDD benefits should be distributed by conceiving an applicable benefit sharing system and ensure rights, benefits and equity.

- Increasing the efficiency of land use by intensifying productivity on non-forest lands and reducing pressure for use of forest lands (Wollenberg and Springate-Baginski, 2009).
- Identifying non-income benefits and incidental environmental services (Martin, 2009).
- Clarifying rights to land, resources and carbon and let them reside with farmers and communities and establishing legal and policy frameworks that value and reward land uses other than agriculture (Bond et al., 2010).
- There is the need to define Carbon Rights amid Land Rights to inform Policy Reform.
- Understand the complex set of proximate causes and underlying causes driving forest cover change in given location.
- Establish trade-offs between REDD+ and poverty reduction (Kowero, 2010)
- REDD+ and carbon finance should not be seen as a way of narrowing the focus on forestry development.
- More attention is needed to the balance of incentives, benefits, rights and political participation across levels of decision making, interest groups and administration (CIFOR, 2011).
- Incentives can include payments or other benefits for good practices, developing alternative livelihoods, formalizing land tenure and local resource rights and intensifying productivity on non-forest lands.
- Incentives must be linked to assets or to the building of capabilities that increase long-term well-being, as measured by standards such as the Human Development Index. Providing compensation for lost livelihood opportunities implies an exchange of equal value, potentially reproducing poverty. The impacts of payments may need to be weighted by associated risks to consider losses due to capture by elite groups, market shifts or policy changes (Malimbwi and Zahabu, 2009).
- Forest communities must be informed and have choices. From a social justice perspective, continuity in livelihood practices should be an option for indigenous groups, long-term residents or the very poor for whom alternative livelihoods may not exist, or where changing livelihood strategies or participating in newp may be too risky or unattractive. Prior and informed consent is essential to ensure this option, and the cost to participants should not exceed the benefits. Uniform programmes result in uneven net benefits, as user costs vary (Martin, 2009).
- Rights to carbon, forest and land are central to the question of who is accountable for managing forest carbon and who should receive incentives (Robledo et al., 2008). Yet many forest communities continue to lack secure formal tenure. Linking PES-schemes to local property rights is essential for successful outcomes (Corbera et al., 2009); informal land rights holders were more likely to be marginalized from benefits than formal rights holders (Brown, 2009).
- There are concerns about the country's long-term commitment to REDD and the permanence of forests. As global demand for food and biofuels increases, pressure is also increasing to convert forests to agricultural lands. It is not yet clear whether REDD will be a sufficient incentive to maintain natural forest cover. A lot will depend on the market and how forest carbon credits along with forest ecosystem services are valued in relation to land use alternatives.

5. Conclusion

In the African continent, the mitigation agenda of international organizations is found to be stronger than adaptation, largely due to the ideas and interests of the government and other actors (Somorin et al., 2011). Mitigation, especially REDD+ has been labeled to support a development agenda that could potentially deliver benefits such as poverty alleviation, economic development, biodiversity

conservation and even adaptation to climate change. REDD+ is seen as a potential financial mechanism that could trigger development agenda.

REDD+ could be implemented in a given area with the goal of reducing emissions and with a constraint that the people who depend on that forest resource will increase their livelihoods and standards of living. This is because the objective of reducing emissions and that of poverty reduction can hardly be achieved on the same forest; but both are rational development objectives. There has to be some trade-offs between the two objectives. Implementation of REDD+ cannot guarantee that poverty will be eliminated, and that should not be the focus of REDD+ because poverty alleviation can only be brought about by a much broader set of carefully structured and implemented policies and activities. Therefore, the implementation of REDD+ should be guided by policies and programmes that focus on attaining a certain level of reduction of emissions while not adversely affecting the poor (Angelsen et al., 2009).

Full participation of forested countries of Africa is instrumental in order to achieve the vision of UN-REDD Programme, which is: "*Developing countries will significantly reduce their forest and land-based emissions, as a result of incentives from a performance-based REDD+ mechanism, while achieving national developmental goals in a sustainable and equitable manner*" (UN-REDD, 2011).

REDD+ has potential to simultaneously deliver cost-effective climate change mitigation and human development. However, most REDD analysis has used coarse-scale data, overlooked important opportunity costs to tropical forest users and failed to consider how to best invest funds to limit leakage, that is, merely displacing deforestation (Hajek et al., 2011).

A REDD-scheme that functions poorly will keep local forest communities and indigenous people imprisoned in extreme poverty. There is the fear that a group of actors will exert its influence of REDD-revenues to the detriment vulnerable communities. In particular the people having access to land with secured land tenure (these people are not necessarily poor) will oppose their influence in equitable sharing of income. REDD could then exacerbate conflicts over ownership and access of forest resources. It is shown also that at government level a multi sector initiative is required in building confidence, based on clear role and responsibilities amongst actors and stakeholders.

6. Emerging issues

REDD+ is addressing reduction of emission through various forms of forest management. Hence, most of the activities are being carried out in dense humid forest of the Congo Basin. FAO, FRA-2010 showed that forest cover represent 674 mio. ha, or 23% of the continent, ***but other wooded lands are very significant*** and represent 350 mio. ha, or 12%.

In the other wooded land cover, mostly in savanna zones, there are a number of threats including agriculture, pastoralism, wood extraction and fires; those increasingly reduce vegetated land in a very rapid speed. ***Contribution of deforestation in these non forest ecosystems is as important as the dense forest because of important human factor and livelihoods in these productive areas***.

Therefore the issue of reducing deforestation may be addressed with equal importance both in forested land and other wooded cover areas. To analyze the relevance of REDD+ in a given country, considering the forest cover context, we suggest a conceptual model that plot forest cover rate to deforestation rate (Figure 16). REDD may be more relevant in areas with high forest cover and high deforestation rate (A) and less relevant in low forest cover and low deforestation rate (B). The other categories imply extreme forest degradation with a low forest cover and high deforestation rate (c). In high forest cover and low deforestation rate (d) countries the potential of quickly achieving REDD+ objectives may be easier given the low pressure on abundant resources.

Figure 16. Conceptual model of deforestation vs. forest cover.

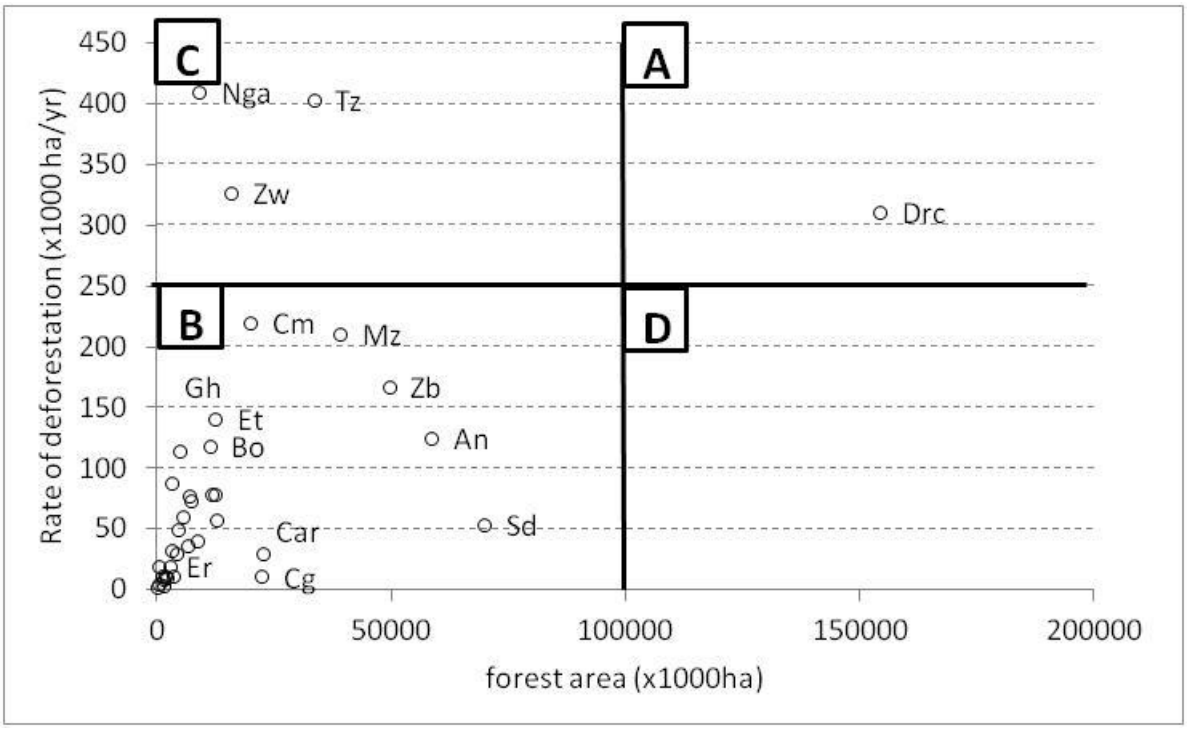
	LFC (Low Forest Cover)	HFC (High Forest Cover)
HDR (High Deforestation Rate)	C	A
LDR (Low Deforestation rate)	B	D

A: Democratic Republic of Congo (DRC); **C**: Nigeria (Nga), Tanzania (Tz), Zimbabwe (Zw); **B**: Ghana (Gh), Central Africa Republic (Car), Sudan (Sd), Cameroon (Cm), Mozambique (Mz), Angola (An), Botswana (Bo), Eritrea (Et), Senegal (Sn), and others; **D**: No country reported in this category

To test the conceptual model we extracted the forest cover and deforestation rate of sample countries where these data have been reported in the database of FAO-FRA 2010 (FAO, 2010)

The figure 17 shows that only DRC is in the "A" category, which makes it attractive for REDD projects. This may be the reason why most projects are concentrated in the Congo Basin. It is important nevertheless to consider "C" countries where deforestation is very high in low forest conditions. Examples of these countries are Nigeria, Tanzania and Zimbabwe. In this figure one can notice that most countries in Africa fall in the low forest cover and low deforestation rate ("B") with some significant differences in this group. Some countries such as Cameroon, Mozambique, Zambia, Angola and Sudan have much more forest cover than the other countries in the same group, while at the same time showing higher deforestation rates. These countries could be well suited for extensive REDD+ implementation.

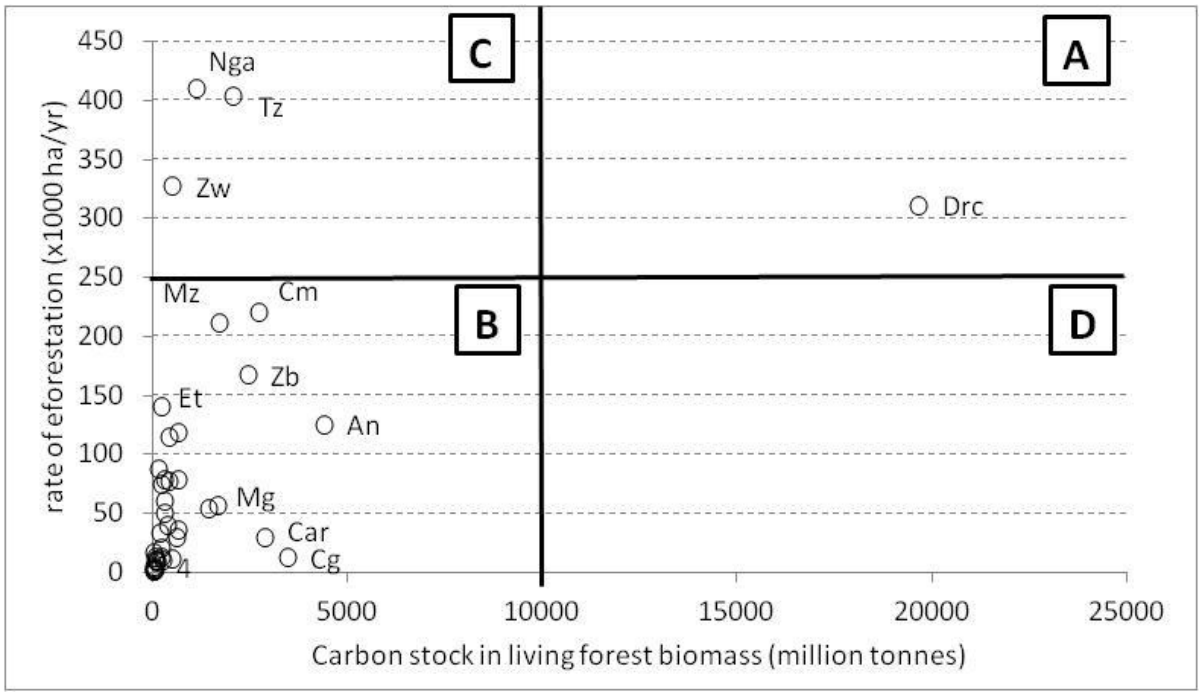
Figure 17. Rate of deforestation in versus country forest cover (data source FAO, 2010)



From this graphic we could argue that the implementation of REDD may be extended to other wooded vegetation cover which are mostly outside the Congo Basin.

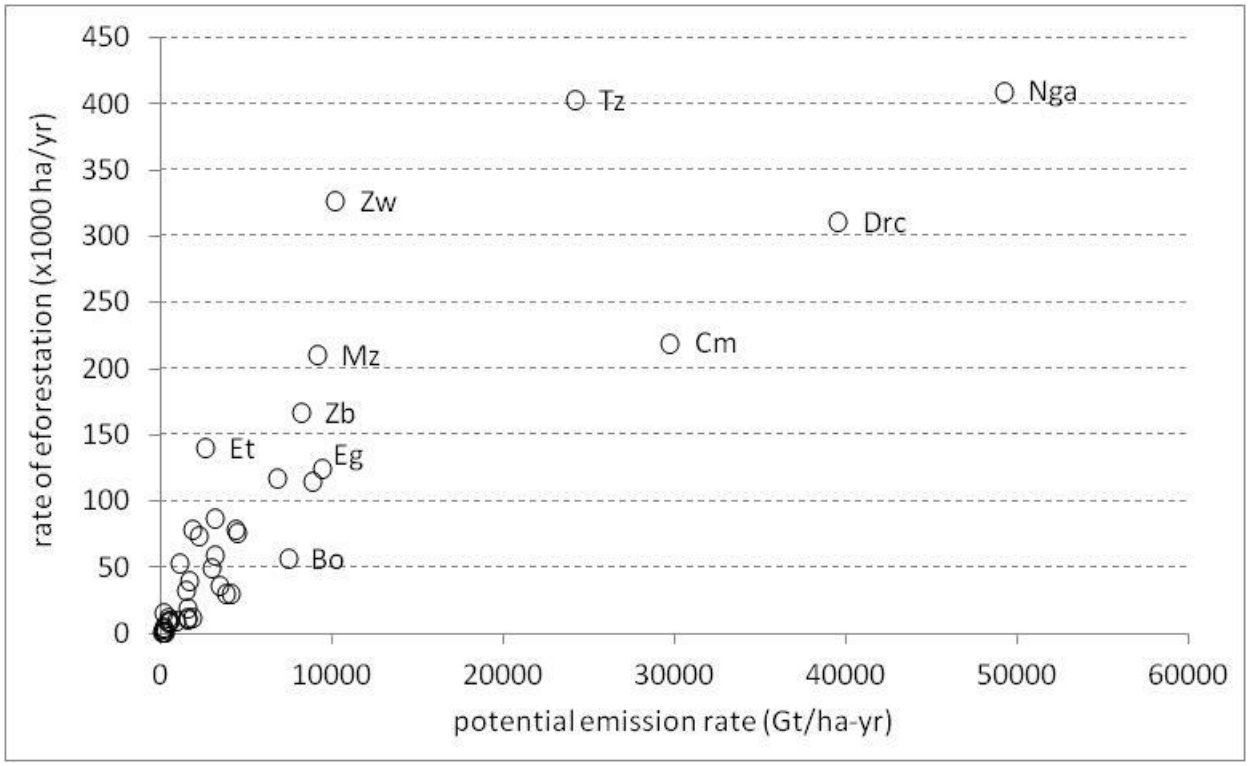
Applying the same logic using forest carbon content, the picture is almost the same (Figure 18).

Figure 18. Rate of deforestation versus carbon stock of forest biomass (data source FAO, 2010)



These categories do not show the potential of emission from deforestation (rate of deforestation * C stocks). We then plotted the potential emission rate to the rate of deforestation. The results shows that the countries contributing potentially to carbon emission from forest degradation are Nigeria, DRC, Cameroon and Tanzania (figure 19). This is another reason why REDD+ should diversify the intervention considering other forest conditions.

Figure 19. Rate of deforestation versus potential emission from deforestation (data source FAO, 2010)



This quick assessment of forest degradation and potential emission rate, raises the issues of REDD project location which is currently based on forest cover rather that deforestation trends in Africa. This raises the concern of having all the international focus only on dense forest while deforestation is a major threat in non forest ecosystems.

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Annex A: Template for the desk review

Organization (s) in charge of the REDD project	Project extent (area covered)	Duration, Relevant focus and beneficiaries	Strategies and activities	Where in Africa And funder (or partnership)	Website of project
Project 1 name and contacts					

Annex B. Tentative list of funded REDD-projects in the Congo Basin

Name of the project	**Funding in US$**	**Funder Institution**	**Countries covered by the project**
Building the foundations for success; ensuring community participation is at the heart of REDD (Stichting FERN)	US$ 2 285 985		Central African Republic (RCA); Republic of Congo (RoC); Democratic Republic of Congo (DRC) and Gabon
Making REDD work for the Congo Basin (CODELT)	Between US$ 50 000 and 100 000	The David & Lucile Packard Foundation	Cameroon; RCA; RoC; DRC and Gabon
Développement d'un scénario prospectif REDD à l'échelle du Bassin du Congo (IIASA)	US$ 185 000	World Bank, PROFOR Funds	Cameroun, Guinée Equatoriale, Gabon, RoC, DRC, Centrafrique
EcoMakala (WWF)	US$ 4 219 140	Mostly European Union & WWF-Belgium But also, with a lesser contribution : IFDC, Sida, Kellogg's & WWF-Sweden	DRC
REDD Cameroon Pilot Project	Between US$ 281 276 and 1 406 380	GAF AG Munich, Germany	Cameroon
Sustainable Opportunities for Improving Livelihoods (SOIL) - African Wildlife Foundation (AWF)	US$ 50 000	USAID-Livelihood DRC USAID-CARPE	DRC (Equator)
Processus REDD en RDC (programme conjoint UN-REDD FCPF)	US$ 2 000 000	UN-REDD (PNUD, PNUE, FAO) World Bank, AFD	DRC
A Carbon Credit Project for Tayna and Kisimba-Ikobo Community Nature Reserves in Eastern DRC	US$ 250.000 +		DRC
Quantifying carbon stocks and emissions in the Congo Basin forests (WRI)	US$ 25 314 840	CBFF	RoC, DRC, Congo Basin region
Monitoring forest structure/degradation in Central Africa and Brazil from canopy grain analysis	US$ 562 552	IRD, UE (FP7-People)	Cameroun, Gabon, Central African Republic (CAR), DRC and RoC

VEGECLIM « Integrating SPOT-VEGETATION 10-yr Time Series and Land-SurfForecast the Terrestrial Carbon Dynamics in a Changing Climate".	US$ 984 466	Belgian Science Policy Office	Central Africa
Projet « 1 Parisien, 1 arbre » Puits de carbone biologique au Cameroun (MDP)	US$ 562 552	Ville de Paris / AIMF	Cameroon
Pan–Tropical Mapping of Forest Cover and Associated Above-Ground Carbon Stock	US$ 2 000 000		Tropical regions of South America, Africa, and Asia
Projet autour de la Forêt de Misotshi-Kabobo dans le Katanga	US$ 1 548 734	Wildlife Conservation Society (WCS)	DRC
Working with communities to reduce deforestation and alleviate poverty in the Virunga-Hoyo region, DRC	US$ 3 260 294	Zoological Society of London (ZSL)	DRC
Bonobo Conservation Concession in Equateur Province, DRC	US$ 1 900 336	Conservation International Foundation (CI).	DRC
Phasing out slash-and-burn farming with biochar (Suppression progressive de la culture sur brulis en faveur du Bio char)	US$ 475 356	ADAPEL	DRC
Promoting Community Land Tenure Rights in the Congo Basin	US$ 730 451	RAINFOREST FOUNDATION (UK)	DRC
Gestion et Exploitation Durable et Innovante des Ressources Forestieres (GEDIRF)	US$ 1 548 734	AWF	DRC
Beyond timber: Reconciling the needs of the logging industry with those of forest-dependent people	US$ 2 152 588	Bioversity International	Cameroon, Gabon and DRC
The Sankuru Community "Fair Trade" Carbon Initiative	US$ 1 859 798	Bonobo Conservation Initiative (BCI)	DRC
Bonobo Conservation Initiative BCI/ ACOPRIK	US$ 1 859 798	Bonobo Conservation Initiative BCI/ ACOPRIK	DRC
Implication des peuples autochtones Bagyéli dans la gestiondurable du parc national	US$ 232 857	RESEAU DES ONG DE CAMPO-MA'AN ET	Cameroon

de Campo-Ma'an		ENVIRONS (ROCAME)	
Achieving Conservation and Improving Livelihoods through the Sustainable Management of Community-Based Forest Operations in Cameroon	US$ 1 709 779	RAINFOREST ALLIANCE, INC	Cameroon
Reboisement des espaces dégradés et valorisation des produits forestiers non ligneux dans la Sanaga Maritim	US$ 397 079	Cam- Eco	Cameroon
Alternatives to Mangrove Destruction for Women's Livelihoods in Central Africa	US$ 384 042	OPED	Cameroon
Partenariats pour le Développement des Forêts Communautaires (PDFC)	US$ 1 785 315	NATURE +ASBL	Cameroon
Mise en place d'un système de cartographie participative pour la REDD (MOABI)	US$ 54 000	WWF	DRC

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